

Manual
on
**INFORMATION
TECHNOLOGY**
(IT APPLICATION)

VOL II
CLASS – XII

2015-16



STATE COUNCIL OF EDUCATIONAL RESEARCH & TRAINING
Varun Marg, Defence Colony, New Delhi - 110024



Manual_{on}

INFORMATIONTECHNOLOGY

(IT APPLICATION)

VOLII CLASS – XII

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STATE COUNCIL OF EDUCATIONAL RESEARCH & TRAINING
Varun Marg, Defence Colony, New Delhi - 110024

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Foreword ...

General or vocational education? This is a “tough choice” for many students. In the human capital framework, general education creates ‘general human capital’ and vocational and technical education ‘specific human capital’ (Becker, 1964). The former is portable across one’s life and from job to job, while the latter is not and hence many advocate general education, as more suitable to the flexible labour force that can change task and even the type of work; but the latter has an advantage, imbibing specific job-relevant skills, that can make the worker more readily suitable for a given job and would make him / her thus more productive. Hence both are important. Vocational education courses offered in schools at Grades 11 and 12 are aimed at developing skills to prepare the workforce that can contribute to the economy. They prepare students for wage employment or self employment. CBSE is offering Skill Competency Based Vocational Courses in Schools at Senior Secondary Level to create skilled manpower for the industry. Overwhelmingly, students who get through the vocational stream want to proceed to further education to improve their job prospects. The few rigorous evaluation of the impact of the programme, that have been undertaken, point to low levels of gainful employment of these students. For making the existing vocational education system relevant to market needs, a major restructuring of the system and how it is managed is needed. It is also important to ensure private sector participation to create labour market for the trainees. However, it is also important to provide quality education and training to students at both pre-vocational as well as vocational level based on the demands of the industry / employers. This demands excellent competency levels of their trainers – the vocational stream teachers. In the year 2007-08, SCERT took up the task of training vocational stream teachers/ trainers of office management and stenography with focus on imparting the knowledge and skills required to meet the demands of the fast growing industry, public sector and even the government, which is competing with the industry to recruit the best talent.

There is a need to develop appropriate and relevant skills in the students to enable them to use state of the art technology and compete globally as workforce. This will equip them to contribute to the economic development of the country. Skill development should be aligned to the needs of the industry. There is a need to continually upgrade the skills of the workforce to enable them to keep pace with rapid technological advancements. There is a need for the industry to partner educational institutions in designing competency based, industry relevant curricula, organizing on the job training for students so that they can get practical experience in the actual environment.

To meet the demands of the industry, the Information Technology vocational stream

curriculum has been revised by Central Board of secondary Education from the academic session 2013-14. The course intends to develop skills related to web applications and advanced web designing. Knowledge of network safety and security, digital designing, multimedia authoring, web content creation, interactive web page creating and troubleshooting will be taught. The curriculum is designed to develop appropriate technical knowledge as well as the professional skills of the students, so that they are equipped to take gainful employment in the said vocation.

This manual is based on the curriculum of vocational course : Information Technology **(IT Application)** [NSQF IT Level 4] for Class XII . It is developed to impart knowledge and skills in the areas of database concepts, operating web based applications, fundamentals of java programming, movie editing tools, customizing and embedding multimedia components in web pages, web scripting - Java script, etc., in the vocational course on Information Technology. While it is primarily aimed at vocational teachers teaching this subject at Class XII, it shall also benefit students of this stream apart from other teachers, students, educators and others who wish to upgrade their knowledge and skills in these areas. The Manual specifies the steps for each activity. It is illustrative, simple and easy to follow. It is written in a self learning format. The material is followed by questions and activities. Manual on Information Technology **(IT Application)** Vol-II Class - XII 2015-2016 has been written by a team of experts headed by Shri Naresh Kapoor. We appreciate and acknowledge the contribution of Shri Naresh Kapoor and the team of contributors for bringing out this manual.

The untiring efforts of the faculty of Work Experience & Vocational Education (Area :ICT) Shri Naresh Kapoor, in the preparation of the manual and that of the officers and staff of Publication Department as well as other concerned officers and staff are appreciated and acknowledged. We acknowledge all the web sites and the material which were consulted and used for their high academic value and relevance. This material is solely for educational purposes to be used by teachers and students and not for any commercial use.

This manual shares with the teachers the knowledge and skills required to be imparted in the area of vocational course : Information Technology [NSQF IT Level 4] for Class XII. This manual covers the syllabus laid down by Central Board of Secondary Education. Latest developments in the area of IT and material on further education / career opportunities available after studying this subject and developing the skills as well as the scope of the subject industry have also been incorporated.

It is hoped that the manual helps bring about qualitative improvements in transaction in the area of vocational course : Information Technology and meets the needs of the teachers.

Director, SCERT

For Teachers.....

Nowadays the term ICTs (Information and Communication Technologies) is used in place of computer because ICT has a wider scope and application than just computer. **ICTs stand for information and communication technologies and are defined as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information.”** The **“information and communication technologies”** (ICTs) includes technologies such as radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, and computer and network hardware and software, as well as the equipment and services associated with these technologies, such as video conferencing, e-mail and blogs. ICT has enormous potential to make teaching learning more interesting, interactive, illustrative, and participatory. ICT facilitates development of user friendly learning material accessible to all irrespective of age, grade, geographical distance, cultural diversity, etc. It can be used to give such experiences to learners that will help him learn. ICT can be used to develop higher order thinking skills. It can be used to provide an opportunity to learners to construct their knowledge. ICT can be used to connect to, share, interact with a large number of people simultaneously. ICT opens a window to the universe. The profile of learners can be developed and their needs can be assessed using ICT. This will help the teacher to identify appropriate pedagogy and plan his teaching. ICT provides tools to the teachers to write, edit, format, make a table, plot data on a graph, prepare presentation, prepare database, make and edit audios, videos, draw and edit a picture, perform computations on data and store the result for future reference or use, etc. ICT provides access to immense storehouse of knowledge which is constantly being updated and is ever expanding. The information and material provided by people, issues raised by them, their views and suggestions, etc. relating to a theme can be collected and collated timely and used to enhance learning material using ICT. ICT has immense potential which needs to be exploited by the teacher.

It is said that *schools must promote “learning to learn,” : i.e., the acquisition of knowledge and skills that make possible continuous learning over the lifetime. “The illiterate of the 21st century,” according to futurist Alvin Toffler, “will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”*

ICT can be very effectively used to facilitate the acquisition of knowledge and skills that 7

enable continuous learning The teacher can use LCD Projector, interactive whiteboards as presentation tools in the classroom to organise class room discussions and individual/small group work . This will reinforce knowledge, enhance understanding of abstract concepts.

Teacherscan share digital resources and educational tools with students to support learning. Using simulation the abstract concepts and processes can be concretised and explained to the students.Teacherscan make up to date knowledge accessible to students.Teachers design activities for students using ICT that will challenge their understanding and thinking.

The development of ICT/ computer technology skills has an enabling role in the teaching and learning process. In order to be able to tap the potential of computer and utilise it effectively in education, the teachers must have adequate ICTskills and must know to useICTsto perform various tasks efficiently. Hence continued professional development and capacity building of teachers in ICTs assumes great importance.

To facilitate the use ofICTby teachers, it is imperative that the teachers be continually trained in ICT to enrich and update their ICT skills. Software are being updated and newer tools are being evolved which further necessitate continuous professional development of teachers in ICT. Training must be contextualised to the National Curriculum Framework forTeacherEducation(NCFTE,2009), National Curriculum Framework(NCF2005), subject curriculum, training needs of the teachers and the environment.

It is very important here to mention National Curriculum Framework forTeacherEducation. *‘This National Curriculum Framework forTeacherEducation elaborates the context,concerns and vision underscoring that teacher education and school education have a symbiotic relationship and developments in both these sectors mutually reinforce the concerns necessary for qualitative improvements of the entire spectrum of education including teacher education as well. The new concerns of school curriculum and the expected transactional modalities have been emphasized in designing this Framework for all stages of school education. Issues related to inclusive education, perspectives for equitable and sustainable development, gender perspectives, role of community knowledge in education andICTin schoolingas well as elearning become the centre-stage in theFramework.....ICT can be imaginatively drawn upon for professional development and academicsupport of the pre-service and in-service teachers’ (NCFTE, 2009)* NCFTE further highlights the use of ICT including TV, radio, telephony and internet as a distance media providing access to ideas or for the wider dissemination of information.

The National Focus Group on Educational Technology has suggested 'Recognise the potential of ICT and the Internet, promote universal access, facilitate participatory forums, and develop communities and interest groups'... 'Work towards transforming all schools into ICT-rich environments'.... 'Create opportunities for administrators and educational leaders in the school system to become ET savvy and to be able to use ICTs competently' ... 'Encourage ICT literacy for official and personal use to build comfort and later creativity in educational work'.... (The Position Paper National Focus Group on Educational Technology, NCERT, 2006) National Skills Qualification Framework (NSQF) has been brought out by Govt. of India. It organizes qualifications according to a series of levels of knowledge, skills and aptitude. These levels are defined in terms of learning outcomes which the learner must possess regardless of whether they were acquired through formal, non-formal or informal learning. In that sense, the NSQF is a quality assurance framework. It is, therefore, a nationally integrated education and competency based skill framework that will provide for multiple pathways, horizontal as well as vertical, both within vocational education and vocational training and among vocational education, vocational training, general education and technical education, thus linking one level of learning to another higher level. This will enable a person to acquire desired competency levels, transit to the job market and, at an opportune time, return for acquiring additional skills to further upgrade their competencies. The teachers may browse the web for details on NSQF.

This manual is based on the curriculum of vocational stream : 'Information Technology'(IT Application) for Class XII [NSQF Level 4]. The purpose of this manual is to provide Information Technology skills to empower the teacher and the student to use them for education and for life. The scope of this manual is database concepts, operating web based applications, fundamentals of java programming, movie editing tools, customizing and embedding multimedia components in web pages, web scripting - Java script, etc. The aim of this manual is to equip the teachers with up to date knowledge and skills in the area of Information Technology so that they can transact them effectively using appropriate pedagogy. The objective of this manual is also to adequately prepare the students for self employment or wage employment in the area of Information Technology. The National Curriculum Framework for Teacher Education (NCFTE, 2009), National Curriculum Framework (NCF 2005), National Policy on Information and Communication Technology (ICT) in School Education, 2010 (Revised Draft 24-02-2011.) have also been referred and kept in mind while preparing this manual. Besides fulfilling the above objectives it is also hoped that the manual shall enable the teachers and other learners to use computers effectively for teaching learning, administrative work and other day to day activities.

This manual not only explains the various theoretical concepts but also elaborates the procedure for carrying out tasks using various software on computer visually. The manual may be used to apprise the learners with the interface, the features, tools, applications, *etc.* The manual may be used to develop the skills to enable the learner to perform tasks and carry out jobs in real world. The manual includes a number of activities. The learner may execute the various commands and try to use the various features and tools covered in the manual. The learner may carry out various activities given in the manual. The manual also includes questions to assess the content knowledge and skills of the learner. The manual is written not only for vocational teachers but also other teachers, educational administrators, other staff, students and other people who wish to learn computer, update their knowledge and skills and use it to carry out various tasks that will facilitate their work. They may upgrade their IT knowledge and skills in the areas covered by surfing the web and referring other supplementary material.

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Curriculum:

Information Technology

- Vocational Stream (Central Board of Secondary Education)

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IT Application (XIth & XIIth New)

Introduction to Computer Applications

I. Preamble

Computer is now affecting every sphere of human activity. It is instrumental in bringing revolutionary changes in industry, scientific research and education. This is not only the demand of time but also the demand of almost each and every subject to have an associated computer learning to equip a student with start-of-art technology to prove himself/herself a better candidate than those without computer knowledge.

Since the CBSE has been foremost in giving best to its clientele, a single paper as per requirement of industry has been designed in such a way that it can be taken as an independent subject along with any combination of vocational packages.

This paper has been designed keeping in view the need and demand of computer industry.

II. Objectives

The course is designed to fulfill the following objectives:—

- (i) Familiarisation with computer-dominated technological world.
- (ii) To impart adequate know how to the students to be able to take up entry level jobs in the area of Data Processing.
- (iii) Exposure of utility and applications of computers.
- (iv) To get acquaintance with the basics of Computer Science and lay foundation for higher education/careers in computers in conformance with industry requirements.
- (v) Application of computers in the specific areas such as accounting & auditing, stores accounting, office management & secretarial practice, textile designing *etc.*
- (vi) Algorithmic approach to problem solving.
- (vii) To use computer effectively and efficiently by acquiring working knowledge of PC softwares.
- (viii) Familiarisation with Data Processing environment and Data Processing terminology.

III. Career Opportunities

1. Field Service Technician
2. IT Support Specialist

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3. Executive (Web Development)
4. Data Processing Assistant/Documentation Assistant
5. Programming Assistant

The rapid changes in the area of Information Technology have significantly affected the fields of business, finance, trade, governance and communications which have not only resulted in global competitiveness in various fields but simultaneously have pushed the global technical advancements. The feasibility of easy access to information, data processing and modes of communication has made visible changes in the modes of administration at all levels. Due to the increasing demands for a deeper understanding of information technology, computer aided learning has necessitated curricular reforms incorporating basic competency and skills in the fields of information technology.

The course intends to develop skills related to web applications and advanced web designing. Knowledge of network safety and security, digital designing, multimedia anchoring, web content creation, interactive web page creating and troubleshooting will be imparted. The curriculum is designed to develop appropriate technical knowledge as well as the professional skills of the students, so that they are equipped to take gainful employment in the said vocation.

INFORMATION TECHNOLOGY (CLASS-XI)
[NSQF IT LEVEL 3] NSQFIT LEVEL 3 (CLASS-XI) IT TOOLS (795)

(Paper-I) Total Marks: 100 (Knowledge - 50: Practical -

50)

Unit Code	Unit Title	Total Hours
ITDC-301	Computer Organization & OS: User perspective ◦ Understanding of Hardware ◦ Basics of Operating System	15
ITDC-302	Networking and internet ◦ Network Safety concerns ◦ Network Security tools and services ◦ Cyber Security ◦ Safe practices on Social networking	10
ITDC-303	Office automation tools: ◦ Spreadsheet ◦ Word processing ◦ Presentation	40
ITDC-304	Multi Media Design: (Open Source Design Tools) ◦ Interface and Drawing Tools in GIMP ◦ Applying Filters ◦ Creating and handling multiple layers ◦ Using Stamping and Smudging tools ◦ Importing pictures	35
ITDC-305	Troubleshooting: Hardware, Software and Networking ◦ Commonly encountered problems ◦ (Monitor: No display, KB/Mouse not responding, monitor giving beeps, printer not responding, check for virus, Delete temporary files if system is slow, adjust mouse speed)	10
ITDC-306	Work Integrated Learning IT - ISM ◦ Identification of Work Areas ◦ Work Experience	14
		124

Unit Code	Unit Title	Total Hours
ITDC-310	Multimedia Authoring-Animation Tools ◦ Animation Concepts ◦ Frames and Layers ◦ Motion and Shape, Tweening ◦ Importing AV Files ◦ Publishing	30
ITDC-311	Digital Content Creation-Adding Styles to Web Pages (CSS) ◦ Review of HTML ◦ Adding Style Sheets ◦ External style sheets ◦ CSS Properties - border, box, font, margin, padding CSS classes	30
ITDC-312	Web Scripting-JavaScript ◦ Creating interactive WebPages with scripts ◦ Variables and Operators ◦ Decision making using if and switch ◦ Iterations - loops ◦ Window Object ◦ Location Object ◦ History Object ◦ Popup Boxes - alert, confirm	50
ITDC-313	Work Integrated Learning IT - WA-I ◦ Identification of Work Areas ◦ Work Experience	14
		124

NSQFIT LEVEL 4 (CLASS-XII):
DATA MANAGEMENT APPLICATIONS (CODE: 795)

Paper-I Total Marks:-100 (Knowledge—50: Practical—

50)

Unit Code	Unit Title	Total Hours
ITDC-401	Database Concepts - RDBMS Tool ◦ Basics of RDBMS ◦ SQL - Creating and Opening Database ◦ Creating and populating tables ◦ Modifying the content and structure of table ◦ Ordering and Grouping ◦ Operating with multiple tables	50
ITDC-402	Operating Web Based Applications ◦ Online Reservation Systems ◦ E-Governance ◦ Online Shopping and Bill payments ◦ Online Tutorials and Tests ◦ Project Management -WebBased Application development ◦ Project essentials and tips ◦ Case Study - Online Game ◦ Case Study - Online Quiz ◦ Case Study - Online Bill Calculator	30
ITDC-403	Fundamentals of Java programming, Introduction to Java, Object Oriented Programming, Java Language Elements, Operators, Control Flow, Array, Class Design, Exception Handling, Assertions, Threads, Wrapper Classes, String Manipulation	30
ITDC-404	Work Integrated Learning IT - DMA ◦ Identification of Work Areas ◦ Work Experience	14
		124

Unit Code	Unit Title	Total Hours
ITDC-410	Movie Editing Tools ◦ Familiarization of interface components ◦ Importing pictures ◦ Importing Audio and Video Files ◦ Splitting and Joining Movie Clips ◦ Adding Titles and publishing	40
ITDC-411	Customizing and Embedding Multimedia components in Web Pages ◦ Compatible Multimedia file formats for Web Pages ◦ Embedding Audio file ◦ Embedding Video file ◦ Embedding Flash file	40
ITDC-412	Web Scripting - Java Script ◦ Java Script review ◦ Functions - user defined ◦ String Object ◦ Math Object ◦ Array Object ◦ Events ◦ Case Studies	30
ITDC-413	Work Integrated Learning IT - WA-II ◦ Identification of Work Areas ◦ Work Experience	14
		124

Note: Practical will be based on a foresaid theory paper.

PRACTICAL ASSESSMENT

NSQFIT LEVEL 3 (CLASS-XI): IT TOOLS (CODE: 795)

Paper-I - Practical—50)

Details	Marks Distribution
Programs/ Practical Questions -Spreadsheets, Word, -Multimedia -Troubleshooting Presentation (15 Marks) Design (10 (5 Marks)	30 Marks
Project/ Practical File	10 Marks
Viva Voce	10 Marks
Total	50 Marks

NSQFIT LEVEL 3 (CLASS-XI): WEB APPLICATIONS (CODE: 796)

Paper-II (Practical-50)

Details	Marks Distribution
Programs/ Practical Questions -Animation Tools (-HTML (10 -WebScripting - Java 15 Marks) Marks) Script (5 Marks)	30 Marks
Project/ Practical File	10 Marks
Viva Voce	10 Marks
Total	50 Marks

**NSQFIT LEVEL 4 (CLASS-XII):
DATA MANAGEMENT APPLICATIONS (CODE: 795)**

Paper-I - Practical—50)

Details	Marks Distribution
Programs/ Practical Questions -SQL Queries (15 Marks) -JAVAPrograms (10 Marks) -OperatingWebBased Applications (5 Marks)	30 Marks
Project/ Practical File	10 Marks
Viva Voce	10 Marks
Total	50 Marks

NSQFIT LEVEL 4 (CLASS-XII): WEB APPLICATIONS II (CODE: 796)

Paper-II (Practical-50)

Details	Marks Distribution
Programs/ Practical Questions -Movie Editing Tools (15 Marks) -Customizing and Embedding Multimedia components inWebPages (10 Marks) -WebScripting - Java Script (5 Marks)	30 Marks
Project/ Practical File	10 Marks
Viva Voce	10 Marks
Total	50 Marks

SUGGESTED LIST OF BOOKS

1. Information Technology (IT) Student Handbook for level I, Published by CBSE
2. Database Systems: Design, Implementation And Management by Peter Rob, Carlos Coronel
3. Introduction to Information Technology by EfraimTurban(Author), R. Kelly Rainer (Author), Richard E. Pofer(Author)
4. Introduction to Information Technology by ITL Education Solutions Limited
5. JavaScript, A Beginner's Guide by McGraw-Hill Osborne Media, 2009
6. HTML and CSS: Design and Build Websites by Wiley (ISBN-10: 1118008189, ISBN-13: 978-1118008188), 2011
7. The Book of GIMP: A Complete Guide to Nearly Everything by No Starch Press (ISBN-10: 1593273835, ISBN-13: 978-1593273835), 2013
8. GIMP for absolute beginners by Apress Publishers (ISBN-10: 1430231688, ISBN-13: 978-1430231684), 2013
9. Microsoft Windows Movie Maker For Dummies by Keith Underdahl
10. Gefing StartED with Windows Live Movie Maker by James Floyd Kelly
11. Microsoft Windows Movie Maker 2 by Jan Ozer
12. Microsoft Windows Movie Maker Handbook (Book & CD-ROM) by Bill Birney
13. Filmmaking For Dummies by Bryan Michael Stoller

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Note: Practical will be based on a foresaid theory paper.

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CENTRAL BOARD OF SECONDARY EDUCATION

(An autonomous Organisation under the Union Ministry of Human Resource Development, Govt. of India) "SHIKSHA KENDRA" 2, COMMUNITY CENTER, PREET VIHAR, DELHI-110092

CBSE/PO/2013

To
The Heads of Institutions Affiliated to CBSE
17th January, 2013 Circular No. Acad-07/2013



Sub: Implementation of Skill Competency Based Vocational Courses in Schools at Senior Secondary Level for Academic Session 2013-14

Dear Principal

As you might be aware that the Board is offering 40 Vocational Courses in different sectors at Senior Secondary Level and 4 vocational courses at secondary level; many of these courses are offered in collaboration with the professional organisations to create skilled manpower for the industry, in order to upgrade the skills and proficiency of the younger generation and also to provide knowledge and awareness about various career options. A student can choose to avail competency based skill learning along with general education in order to enhance the skills in the chosen field. Also, these courses allow them to explore new avenues/ options available along with imparting the skills required to pursue a particular course.

The vocational education envisions imparting the procedural knowledge and skills to the students that will enable students to excel and emerge successful in real life situation of both work and life. It works towards imparting an education that is holistic, meaningful and skill oriented which instils among the youth a sense of usefulness and responsibility. Board aims to prepare our future generation to become global citizens and to make India a global leader. India has only 5 per cent skilled workers in its total workforce. It is projected that the labour force will grow by close to 2 percent or some 7 million or more a year over the next few years. The clear objective with this initiative is to teach real life applications at an early stage so that the required talent can be developed for a better future. This will go a long way in building 22

Biswajit Saha

up the skilled personnel that is required for India. Keeping this in view, the curriculum designed for classes XI and XII
 •Is Industry oriented •Focuses from academics to employability area through degree and diploma course •Will provide excellent opportunities for higher education in the specific area •Will provide employment potential in all sectors
 The Board is putting continual efforts for improvising the existing courses and devising new courses that are relevant to the current economy. To achieve the purpose of quality education the Board has collaborated with various organizations like ROLTA India Ltd, NIFT, WWI, CII, NHMIT, Med varsity Online Education, Intel etc.

Also, Board has partnered with Central Institute of Technology, Australia for introducing new vocational courses of CIT in the affiliated schools. It is also to mention here that teachers will be trained on by CBSE and its industry partners, throughout the year to enhance the training skills of the teachers to ensure effective curriculum transaction.

Therefore, you are requested kindly to choose and offer one or more of these competency based courses (list enclosed) in your esteem school on priority basis from the academic session 2013-14. Filled in proforma along with requisite fee in favour of secretary, CBSE, Delhi may be sent to the office of the undersigned within March 15, 2013, With Regards

Yours Sincerely

Dr. Biswajit Saha Associate Professor
& Programme Officer (Vocational)

Enclosures:

- List of Vocational Courses
- Teacher's Qualification
- Scheme of Studies
- Proforma for Affiliation
- Affiliation fee details

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Scheme of Studies Vocational Courses CBSE

Circular Jan 13

S. No.	Name of the subject	Period/week	Marks Distribution		Marks
			Theory	Practical	
1.	Language I (English)	7	100	-	100
2.	Two Subjects from Academic stream (Science Commerce Humanities)	7 +7	100 or as per subject concerned 70 30		100 each
3.	Two papers from any of 34 vocational courses	8+8	60 50 30	40 50 70	100 each
4.	One Optional Additional subject from academic stream (Science/Commerce/Humanities) or vocational stream	7	100 or 70 : 30 Or 60 : 40		100
5.	Work integrated learning	On the job exposure for 60 hrs. (level 1&2)=10 days 120 hrs. (Level 3& 4)= 20 days Min 6 hrs. per day			
6.	Personality Development and Soft Skills	2			
7.	Total	46			500+100(optional additional)

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Database Concepts - RDBMS Tool

- **Basics of RDBMS**
- **SQL-Creating and Opening Database**
- **Creating and populating tables**
- **Modifying the content and structure of table**
- **Ordering and Grouping**
- **Operating with multiple tables**

Outline of the Chapter

- Introduction
- Basic Elements of Database
- The Disadvantages of a DBMS
- Types of DBMS
 - Hierarchical Database Management System(HDBMS)
 - Network Database Management System(NDBMS)
 - Relational Database Management System(RDBMS)
 - Object-Oriented Database Management System(OODBMS)
- Manipulation And Query Languages
- Structured Query Language (SQL)
- Database Management System (DBMS)
- The Advantages of a DBMS

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INTRODUCTION

In the present age, databases play a critical role in almost all areas where computers are used including business, engineering, medicine, law, education, library science *etc.* For example, if we go to the bank to deposit or withdraw money; if we make a hotel or train reservation; if we access a computerized library catalog, chances are that our activities will involve someone accessing a database.

A database is a collection of related data *i.e.* known facts that can be recorded and have implicit meaning. The data related to some organization may be under consideration. For example, a school has recorded the students' name, address and phone numbers in an indexed address book or have stored it on CD/DVD using a personal computer and software such as Microsoft Access or DBASE.

It can also be defined as a collection of logically related data. A telephone directory consisting names, addresses and telephone numbers is one example. A database may be computerized as well as manually generated. For example, the database for library card catalog may be manipulated manually as well as it may be computerized. At the same time, a database may consist several related but separate databases. For example, a library database might include database of book details, database of books on order, database of books checked out *etc.*

Basics of RDBMS

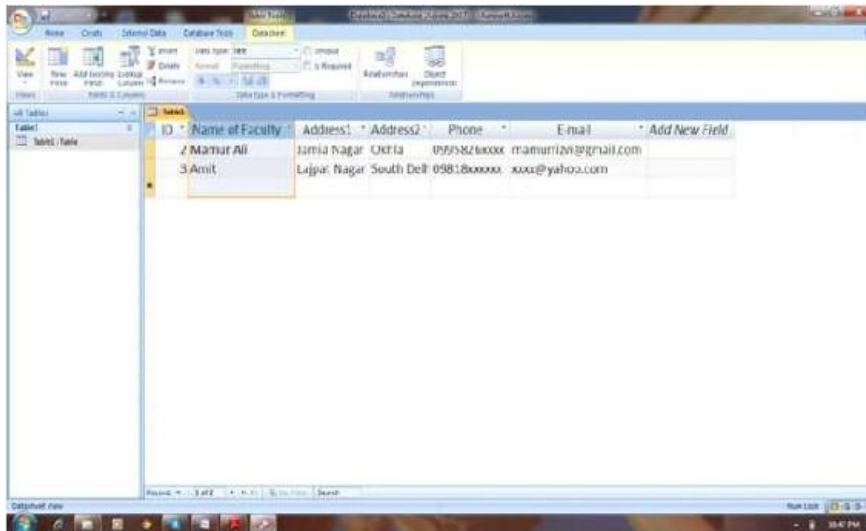
DATABASE MANAGEMENT SYSTEM (DBMS)

DBMS is a software system that facilitates the processes of defining, constructing and manipulating database. Defining a database involves specifying the data types, structures, and constraints for the data to be stored in the database. Constructing the database is the process of storing the data on a storage medium such as CD, DVD or computer Hard disk. Manipulating a database includes functions such as retrieving data, updating database and generating reports *etc.*

Let us discuss one example, a SCHOOL database for maintain information related to students, courses, teachers, examinations and results *etc.*

To define this database, one will specify the structure of the records of each file by specifying the different types of data elements to be stored in each record.

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BASIC ELEMENTS OF DATABASE

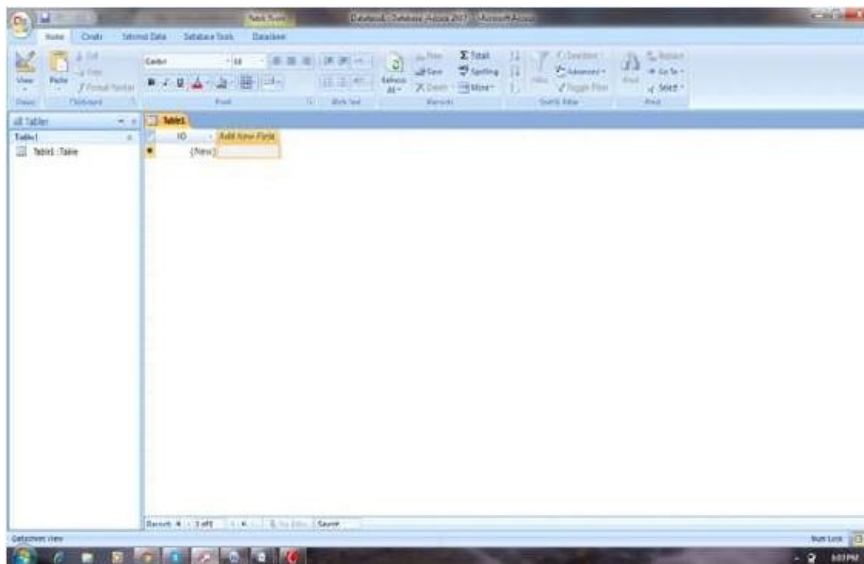
A computer cannot process data unless it is organized in special ways; into characters, fields, records, files and databases.

Character

A character is the most basic element of data that can be observed and manipulated. Behind it are the invisible data elements we call bits and bytes, referring to physical storage elements used by the computer hardware. A character is a single symbol such as a digit, letter or other special character.

Field

A field contains an item of data such as a character, or group of characters that are related. For instance, a grouping of related text characters such as "Mohd Rashid" makes up a name in the name field. Let's look at another example. Suppose 'The Times of India' action group advocating education in New Delhi and compiling the names and addresses of potential volunteers for the cause. For each person, they must identify the name, address, city, state, pin code and telephone number. A field would be established for each type of information in the list. The name field would contain all of the letters of the first and last name. The pin code field



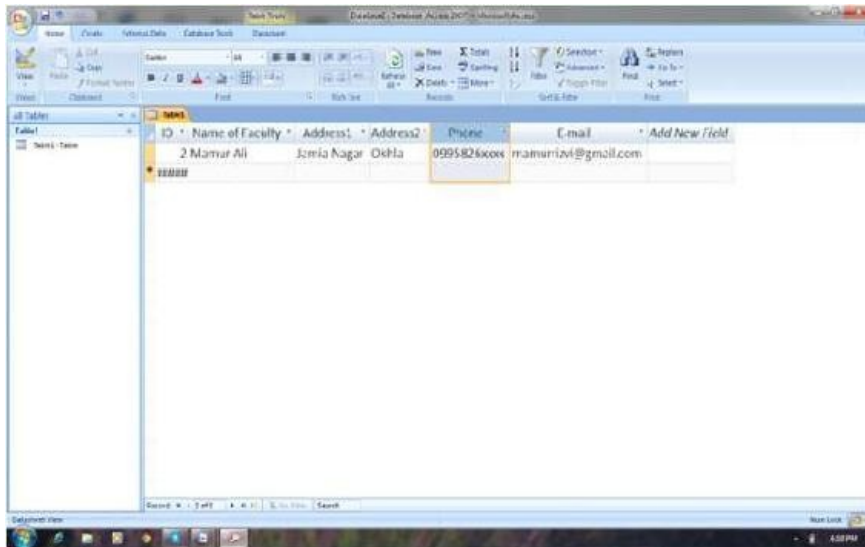
would hold all of the digits of a person's pin code, and so on. In summary, a field may contain an attribute (e.g., employee salary) or the name of an entity (e.g., person, place, or event).

It is the smallest unit of the data that has meaning to its users and is also called data item or data element. Name, Address and Telephone number are examples of fields. These are represented in the database by a value.

Field

Record

A record is composed of a group of related fields. As another way of saying it, a record contains a collection of attributes related to an entity such as a person or product. Looking at the list of potential gun control supporters, the name, address, pin code and telephone number of a single individual would constitute a record.



Record

Database File

As we move up the ladder, a database file is defined as a collection of related records. A database file is sometimes called a table. A file may be composed of a complete list of individuals on a mailing list, including their addresses and telephone numbers. Files are frequently categorized by the purpose or application for which they are intended. Some common examples include mailing lists, quality control files, inventory files, or document files. Files may also be classified by the degree of permanence they have. Transition files are only temporary, while master files are much more long-lived.

THE ADVANTAGES OF A DBMS

The main advantages of using a Database Management System are such as:

Information Availability Enhancement

The meaning of Information Availability Enhancement is that the same information can be made available to different users.

Redundancy Decrement

The data redundancy, that is the repetition of data, may be minimized by using DBMS. Therefore the cost of storing data on hard drives or other storage devices can be significantly reduced.

Accuracy

As we know that manual database requires changes in several different places to change or update a record while updates and changes to data in DBMS, only have to be made in one place. Therefore, the chances of making mistakes are lessor in DBMS and the data integrity is fostered.

Program and File Consistency

File formats and system programs are standardized in DBMS. The maintenance of data files are easier because of same rules and guidelines across all types of data. Even in the case of multiple programmers, the level of consistency of file and programs are maintained.

User-friendly

Access and manipulating data is much easier for the users with a DBMS as compared to manual Database management.

Security

DBMS protects and makes secured the data through the use of passwords and restricts the data access to only those who should access it. It means it can minimize the risks for the organizations.

THE DISADVANTAGES OF A DBMS

There are basically two major downsides to using DBMSs

Cost: Implementation of a DBMS may be expensive and time-consuming, especially in large organizations. And the Training of the DBMS personal can be quite costly.

Security: Though a DBMS is having safeguards of password and controlled access to users, there is a possibility that some unauthorized users may access the database. Once an unauthorized user gets into the database, they have access to all the files that will pose a threat to individual privacy.

TYPES OF DBMS

There are four structural types of database management systems: hierarchical, network, relational, and object-oriented.
Hierarchical Database Management System

Hierarchical Databases (DBMS), is one of the oldest methods of organizing and storing data. Some organizations are still using it. It is organised like the branches of a tree shown in the figure above. Related fields and records are grouped together to make higher-level records and lower-level records just like the parent and child in a family tree respectively. Here, it must be remembered that a child record has only one parent record to which it is linked while a parent record may have more than one child record linked to it. If one searches a record, he/she starts at the top and moves down through the tree from parent to child until the appropriate child record is found.

The advantage of hierarchical databases is that they can be accessed and updated rapidly because the tree-like structure and the relationships between records are defined in advance.

This type of database structure is having a disadvantage that is, each child in the tree may have only one parent, and relationships or linkages between children are not permitted. Adding a new field or record in Hierarchical databases requires that the entire database must be redefined.

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Network Database Management System

Similar to hierarchical databases, Network databases also have a hierarchical structure. A network database looks more like a cobweb or interconnected network of records. In network databases, similar to hierarchical databases, children are called members and parents are called owners. But the important difference is that each child or member can have more than one parent (or owner).

Since more connections can be made between different types of data, network databases are considered more flexible. Similar to hierarchical databases, network databases must be defined in advance. There is also a limit to the number of connections that can be made between records.

Relational Database Management System (RDBMS)

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In relational databases, the relationship between data files is relational, not hierarchical. Relational databases connect data in different files by using common data elements or a key field. Tables are used to store data in relational databases. Each table has a key field that uniquely identifies each row. In relational databases, tables or files are known as relations, a row or record called tuples, and columns are referred to as attributes or fields.

A key field(s) that uniquely identifies each row can be used to connect one table of data to another. For example, a table 'customer' might have a row consisting of a customer account number as the key field along with address and telephone number. The customer account number in this table could be linked to another table of data that also includes customer account number (a key field), but in this case, contains information about product returns, including an item number (another key field). This key field can be linked to another table that contains item numbers and other product information such as production location, color, quality control person, and other data.

The advantages of the relational database are that it can be used with little or no training and database entries can be modified without redefining the entire structure. The downside of using a relational database is that searching for data can take more time than if other methods are used.

Object-oriented Databases (OODBMS)

Object-oriented database is capable to handle many new data types, including graphics, photographs, audio, and video, while Hierarchical and network databases are all designed to handle structured data; that is, data that fits nicely into fields, rows, and columns. An object-oriented database can also be used to store data from a variety of media sources, such as photographs and text, and produce work, as output, in a multimedia format.

Object-oriented databases use small, reusable chunks of software called objects that are stored in the object-oriented database. Each object consists of two elements: 1) a piece of data (e.g., sound, video, text, or graphics), and 2) the instructions, or software programs called methods, for what to do with the data. For example, test scores would be within the object as would the instructions for calculating average test score.

The object-oriented databases have the ability to mix and match reusable objects that further provides incredible multimedia capability. Healthcare organizations, for example, can store, track, and recall CAT scans, X-rays, electrocardiograms and many other forms of crucial data.

The development of these databases is more costly.

MANIPULATION AND QUERY LANGUAGES

The data can be manipulated in two ways by using database software. One approach is that a special language called a query language is used to interact directly with the DBMS. In the second approach, a user interacts with the application program. The application program sends instructions to the DBMS, which then carries out the actions specified by the program.

Query Language

To perform information-processing tasks using data, Query language allows the user to interact directly with the database software. This language relies on basic words such as SELECT, DELETE, or MODIFY. To retrieve data from a database or update data in a database, the user enters these commands that instruct the DBMS.

SQL-Creating and Opening Database Structured Query Language

(SQL)

It is one of the widely used query language to perform operations using relational databases. Originally, SQL was called SEQUEL (Structured English QUery Language) and was designed and implemented at IBM in 1974. SQL is now the standard language for commercial relational DBMSs. As we know that relational databases are composed of tables with rows and columns, SQL can be used to retrieve information from related tables in a database or to select and retrieve information from specific rows and columns in one or more tables.

A typical SQL query contains three key elements: SELECT (the column names

to be displayed) FROM (indicates the table name from which column names

will be derived) WHERE (describes the condition for the query)

An Example of SQL

Assume a principal of an institution wishes to query a relational database containing 34

information about students. If he wants to know the name and address of all students who got aggregate marks percentage more than 75, the following query might be used: **SELECT Name, Address FROM Student WHERE Aggmarks > 75**

Once this command has been executed, the computer will display a list of students that meets the predefined criteria. In this case, all of the data are extracted from a single table. Similar queries can be made to extract data from multiple tables. Such a strategy might be used to analyze customer information involving billing data and order data, using two separate tables. In this case, the **FROM** command would list the names of the two tables involved.

SQL can be divided into two parts: The Data Manipulation Language (DML) and The Data Definition Language (DDL).

The DDL part of SQL includes the creation and modification of database. It also creates table, modifies and deletes a table. The most important DDL statements in SQL are: **CREATE DATABASE** - creates a new database **ALTER DATABASE** - modifies a database

CREATE TABLE - creates a new table **ALTER TABLE** - modifies a

table

DROP TABLE - deletes a table

Creating a Database

In SQL, there is a specific command **CREATE DATABASE** to create a database. The syntax of the command is as follows: **CREATE DATABASE database_name**

Example: suppose we want to create a database called "school_database". **CREATE DATABASE**

school_database

Creating and populating Tables Opening a Database

Creating a Table

The CREATE TABLE command is used to specify a new table by giving it a name and specifying its attributes. The attributes are specified first, and each attribute is given a name, a data type to specify its domain of values.

Syntax

```
CREATE TABLE table_name (  
column_name1 data_type, column_name2 data_type,  
column_name3 data_type,  
....  
)
```

The data type specifies what type of data the column can hold. Example 1

Now we want to create a table called "Persons" that contains five columns: P_Id, LastName, FirstName, Address, and City.

We use the following CREATE TABLE statement:

```
CREATE TABLE Persons (  
P_Id int,  
LastName varchar(255), FirstName varchar(255),  
Address varchar(255), City varchar(255)  
)
```

The P_Id column is of type int and will hold a number. The LastName, FirstName, Address, and City columns are of type varchar with a maximum length of 255 characters.

The empty "Persons" table will now look like this:

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P_Id	LastName	FirstName	Address	City

The empty table can be filled with data with the INSERT INTO statement.

The CREATE TABLE command may also specify its attributes with some constraints. The attributes are specified first, and each attribute is given a name, a data type to specify its domain of values and constraints.

Syntax: CREATE TABLE table_name (Attribute_name1 data_type constraint_if_any
Attribute_name2 data_type constraint_if_any,
Attribute_name_n data_type constraint_if_any)

Example:

```
CREATE TABLE EMPLOYEE  
( FNAME VARCHAR(15) NOT NULL, LNAME VARCHAR(15) NOT NULL,  
SSN CHAR(9) NOT NULL,  
BDATE DATE SEX CHAR  
SALARY DECIMAL(10,2)  
)
```

Modifying the content and structure of table Altering Table

The possible alter table actions include adding or dropping an attribute(column), changing a column definition, and adding or dropping table constraints. For example, to add an attribute for keeping track of jobs of employees to theEMPLOYEEtable in theSCHOOL database, following command will be used: ALTER TABLE SCHOOL.EMPLOYEE ADD JOB VARCHAR(10);

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DATA MANIPULATION LANGUAGE

SQL provides basic Data Manipulation statements: select, update, delete and insert.

Select Statement

The basic form of the SELECT statement is formed of the three clauses SELECT, FROM, and WHERE.

Syntax: The SELECT-FROM-WHERE statement has the following syntax:

SELECT attribute list FROM table list

WHERE condition;

Example: The table EMPLOYEE is given below

S_Id	LastName	FirstName	Address	City
1	Yadav	Ramesh	Kishan garh	New Delhi
2	John	Adam	Bandra	Mumbai
3	Kuller	Daljeet	Kriti Nagar	New Delhi
4	Rizvi	Akram	Khan Road	Kolkata
5	Rizvi	Akram	Laban	Shillong

Retrieve the address and city of the employee(s) whose name is "Akram Rizvi", the SQL command is—

SELECT ADDRESS,CITY FROM EMPLOYEE

WHERE FNAME="Akram" AND LNAME="Rizvi";

The result-set will look like this:

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Address	City
Khan Road	Kolkata
Laban	Shillong

Here the result may have duplicate records, if exists. To eliminate duplicate records, the DISTINCT option is used with SELECT command.

SELECT DISTINCT ADDRESS, CITY FROM EMPLOYEE

WHERE FNAME="Akram" AND LNAME="Rizvi";

The result-set will look like this:

Address
Khan Road
Laban

A missing WHERE clause indicates no conditions on records (also called tuples) selection. Hence, all records of the specified table in the FROM clause will be shown in the result of the query.

Example: Retrieve the addresses and city of all employees in the EMPLOYEE table

SELECT ADDRESS,CITY FROM EMPLOYEE;

The result-set will look like this:

Address	City
Kishan garh	New Delhi
Bandra	Mumbai
Kriti Nagar	New Delhi
Khan Road	Kolkata
Laban	Shillong

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To retrieve all the attribute values of the selected table, we do not have the list of attribute names. We just specify an asterisk(*), which stands for all the attributes.

Example: Retrieve all the attribute values of the table EMPLOYEE.

```
SELECT *
```

```
FROM EMPLOYEE;
```

The result-set will look like this:

S_Id	LastName	FirstName	Address	City
1	Yadav	Ramesh	Kishan garh	New Delhi
2	John	Adam	Bandra	Mumbai
3	Kuller	Daljeet	Kriti Nagar	New Delhi
4	Rizvi	Akram	Khan Road	Kolkata
5	Rizvi	Akram	Laban	Shillongi

The INSERT Command

In its simplest form, INSERT is used to add a single tuple(record) in a table. We must specify the table name and a list of values for the record in the same order in which the corresponding attributes were specified in the CREATE TABLE command.

Example: To add a new tuple to the EMPLOYEE table INSERT INTO EMPLOYEE

```
VALUES ('Mohd', 'Ali', '000100240', '1977-3-12', 'M', '45000');
```

If a table(relation) has many attributes, but only a few of those attributes are assigned values in the new tuple, a second form of INSERT statement is used.

```
INSERT INTO EMPLOYEE (FNAME, LNAME,SALARY)
```

```
VALUES ('Shradha', 'Vasisht', '50000');
```

The DELETE Command

The DELETE command removes the tuples from a relation. It includes a WHERE clause to select the tuples to be deleted. A missing WHERE clause specifies that all tuples in the table are to be deleted.

are to be deleted; however the table remains in the database as an empty table.

```
DELETE FROM EMPLOYEE WHERE LNAME="Ali";
```

DELETE FROM EMPLOYEE;

The UPDATE Command

The UPDATE command is used to modify attribute values of one or more selected tuples. The WHERE clause selects the tuples to be modified.

Example: To change the salary of an employee whose first name is 'Mohd' as '70000'

```
UPDATE EMPLOYEE SET SALARY='70000' WHERE
```

```
FNAME='Ali';
```

Ordering and Grouping

The ORDER BY keyword is used to sort the result-set by a specified column. The ORDER BY keyword sorts the records in ascending order by default. If you want to sort the records in a descending order, you can use the DESC keyword.

Syntax

```
SELECT Column_name(s) FROM table_name
```

```
ORDER BY column_name(s) ASC/DESC
```

Example

The "Student" table:

S_Id	LastName	FirstName	Address	City
1	Yadav	Ramesh	Kishan garh	New Delhi
2	John	Adam	Bandra	Mumbai
3	Kuller	Daljeet	Kriti Nagar	New Delhi
4	Rizvi	Akram	Khan Road	Kolkata

Now we want to select all the persons from the table above, however, we want to sort the persons by their last name.

We use the following SELECT statement:

SELECT * FROM Persons ORDER BY LastName
The result-set will look like this:

P_Id	LastName	FirstName	Address	City
2	John	Adam	Bandra	Mumbai
3	Kuller	Daljeet	Kriti Nagar	New Delhi
4	Rizvi	Akram	Khan Road	Kolkata
1	Yadav	Ramesh	Kishan garh	New Delhi

Grouping

The GROUP BY statement is used in conjunction with the aggregate functions to group the result-set by one or more columns.

SQL GROUP BY Syntax

SELECT column_name, aggregate_function(column_name) FROM table_name
WHERE column_name operator value GROUP BY column_name

SQL GROUP BY Example

We have the following "ORDERS" table consisting the details of the orders given by the teachers to purchase books

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O_Id	OrderDate	OrderPrice	Teacher
1	2008/11/12	1000	Hari
2	2008/10/23	1600	Neelam
3	2008/09/02	700	Hari
4	2008/09/03	300	Hari
5	2008/08/30	2000	Naved
6	2008/10/04	100	Neelam

Now we want to find the total sum (total order) of each teacher.

We will have to use the GROUP BY statement to group the customers. We use the following SQL statement: **SELECT Teacher, SUM(OrderPrice) FROM ORDERS GROUP BY Teacher**

The result-set will look like this:

Teacher	SUM(OrderPrice)
Hari	2000
Neelam	1700
Naved	2000

Let's see what happens if we omit the GROUP BY statement:

SELECT Teacher, SUM(OrderPrice) FROM ORDERS
The result-set will look like this:

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Customer	SUM(OrderPrice)
Hari	5700
Neelam	5700
Hari	5700
Hari	5700

Naved	5700
Neelam	5700

The result-set above is not what we wanted.

Explanation of why the above `SELECT` statement cannot be used: The `SELECT` statement above has two columns specified (`Teacher` and `SUM(OrderPrice)`). The `SUM(OrderPrice)` returns a single value (that is the total sum of the `OrderPrice` column), while `Teacher` returns 6 values (one value for each row in the `Orders` table). This will therefore not give us the correct result. However, you have seen that the `GROUP BY` statement solves this problem.

Operating with Multiple Tables `SELECT` Statement

The `SELECT` command can also be used to get data from more than one table.

We have tables namely `EMPLOYEE` and `ORDERS` consist the details of the teachers and orders given by the teachers to purchase books.

EMPLOYEE TABLE

E_Id	LastName	City
E1	Yadav	New Delhi
E2	John	Mumbai
E3	Kuller	New Delhi

ORDERS TABLE

O_Id	OrderDate	OE_Id
O1	2008/09/13	E1
O2	2008/08/30	E3
O3	2008/10/04	E1

SELECT * FROM EMPLOYEE, ORDERS;

The result-set will look like this:

E_Id	LastName	City	O_Id	OrderDate	OE_Id
E1	Yadav	New Delhi	O1	2008/09/13	E1
E1	Yadav	New Delhi	O2	2008/08/30	E3
E1	Yadav	New Delhi	O3	2008/10/04	E1
E2	John	Mumbai	O1	2008/09/13	E1
E2	John	Mumbai	O2	2008/08/30	E3
E2	John	Mumbai	O3	2008/10/04	E1
E3	Kuller	New Delhi	O1	2008/09/13	E1
E3	Kuller	New Delhi	O2	2008/08/30	E3
E3	Kuller	New Delhi	O3	2008/10/04	E1

SELECT *

From ORDERS, EMPLOYEE WHERE OE_Id=E_Id

The result-set will look like this:

E_Id	LastName	City	O_Id	OrderDate	OE_Id
E1	Yadav	New Delhi	O1	2008/09/13	E1
E1	Yadav	New Delhi	O3	2008/10/04	E1
E3	Kuller	New Delhi	O2	2008/08/30	E3

```
SELECT LastName, City, OrderDate From ORDERS, EMPLOYEE
WHERE OE_Id=E_Id
```

The result-set will look like this:

LastName	City	OrderDate
Yadav	New Delhi	2008/09/13
Yadav	New Delhi	2008/10/04
Kuller	New Delhi	2008/08/30

Knowledge Check Points

- 1.DBMS stands for
- | | | | |
|---------------------------------|-----------------------------|-------------------------------|------------------------------------|
| a)Data Base Manipulation Scheme | b)Data Base Marginal System | c)Data Base Management System | d)Directory Base Management System |
|---------------------------------|-----------------------------|-------------------------------|------------------------------------|
- 2.In a Database, each row is called
- a)Recordb)Informationc)Horizontal datad)None of these
- 3.SQL stands for
- a)Sequential Query Languageb)Structured Query Languagec)Standard Query Language d)Structure Question Literature
- 4.Which of the following(s) is/are the element(s) of a database
- a)Relationsb)Data c)Constraintsd)All of these
- 5.What is database or database management systems(DBMS)?
- 6.What's the difference between file and database?
- 7.What isSQL ?
- 8.What's difference betweenDBMSandRDBMS ?
- 9.What areDMLandDDLstatements? Give two examples for each. Q.10.How doweselect distinct values from a table?
- Q.11.Can you explain Insert, Update and Delete query? Q.12.What is order by clause?
- Q.13.What is " Group by " clause?

Skill Check Points

Q.1. Write the SQL statements(commands) to create the table and to insert the data into the table given below: COURSE

CourseName	CourseNo	CreditHours	Department
Teacher Education	ED1210	6	EDU
Elementary Education	ED1211	4	EDU
Computer Network	CS3101	4	CS
Introduction to DBMS	CS3102	4	CS

Q2. In the table given in Q14, insert a new course <'Education Technology', 'ED 1213', '4', 'EDU'> in the table COURSE.

.3.What is the result of the followingSQL statements:

**(i) SELECT CourseName FROM COURSE
WHERE Department="EDU";**

(ii) SELECT CourseNo FROM COURSE;

**(iii) SELECT CourseName, SUM(Credit) FROM COURSE
GROUP BY Department**

ITDC-402

Operating Web Based Applications

- Online Reservation Systems
- E-Governance
- Online Shopping and Bill Payments
- OnlineTutorialsand Tests
- Project Management -WebBased Application Development
- Project essentials and tips
- Case Study - Online Quiz
- Case Study - Online Game
- Case Study - Online Bill Calculator

Introduction

Webservices are open standard (XML, SOAP, HTTP etc.) based Web applications that interact with other web applications for the purpose of exchanging data. Web services may be defined as follows:-

- A web service is any piece of software that makes itself available over the internet and uses a standardized XML messaging system. XML is used to encode all communications to a web service. For example, a client invokes a web service by sending an XML message, then waits for a corresponding XML response. Because all communication is in XML, web services are not tied to any one operating system or programming language—Java can talk with Perl; Windows applications can talk with Unix applications.
- Web Services are self-contained, modular, distributed, dynamic applications that can be described, published, located, or invoked over the network to create products, processes, and supply chains. These applications can be local, distributed, or Web-based. Webservices are built on top of open standards such as TCP/IP, HTTP, Java, HTML, and XML.
- Webservices are XML-based information exchange systems that use the Internet for direct application-to-application interaction. These systems can include programs, objects, messages, or documents.
- A web service is a collection of open protocols and standards used for exchanging data between applications or systems. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to inter-process communication on a single computer. This interoperability (e.g., between Java and Python, or Windows and Linux applications) is due to the use of open standards.

To summarize, a complete web service is, therefore, any service that:

- Is available over the Internet or private (intranet) networks
- Uses a standardized XML messaging system
- Is not tied to any one operating system or programming language
- Is self-describing via a common XML grammar
- Is discoverable via a simple find mechanism

ONLINE SHOPPING

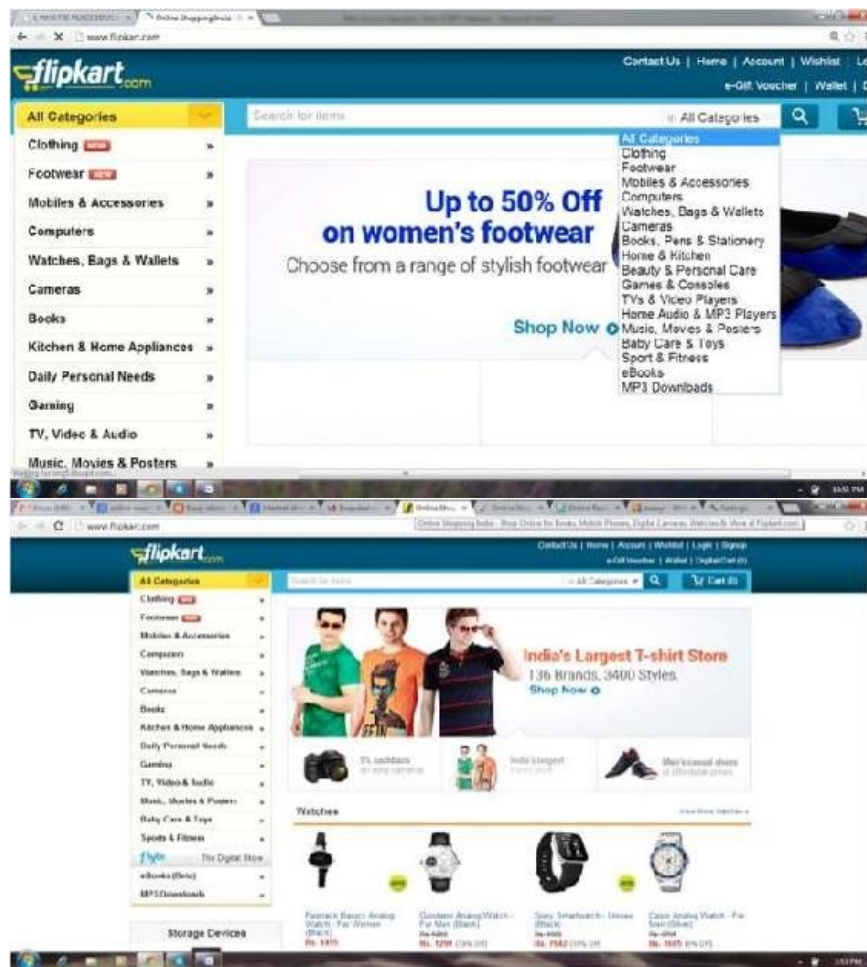
Online shopping made things much easier in terms of time. Go to the internet page, choose the product you want and buy it. Whatever you buy it will be in front of your door after sometime. If you are not able to go out any more for any reason, go for online shopping and you can buy food as well as things you need in the household. You can get everything you need on the internet shop. Another good opportunity in online shopping is that you can compare prices easily.

The weakness of online shopping is that you have to be really careful in choosing the site you want to buy the things you need. Some sites are fake in the sense that they ask you for money and won't give you anything. Another big problem is the quality of the things you get. Online shopping is always quite tricky, you have to look at the prices and compare them to the other sites to be sure you are not paying much for the goods you want.

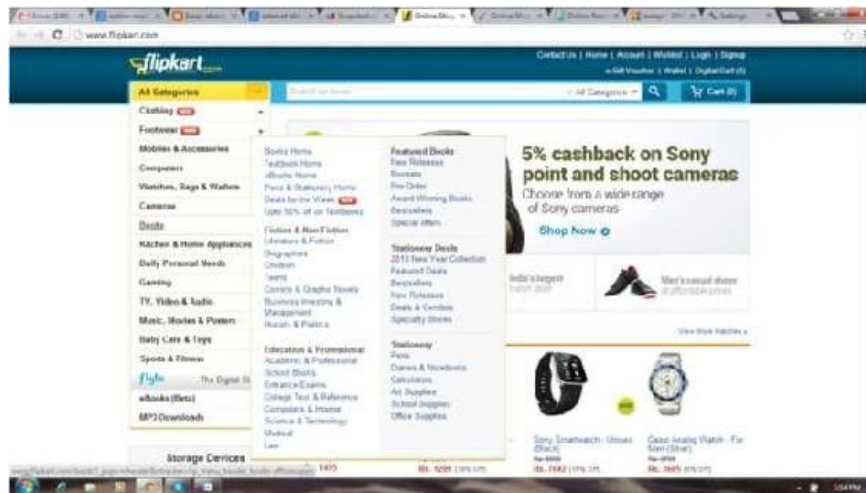
Internet shopping is faster, convenient, and generates better deals. Internet shopping has even helped certain companies in achieving competitive advantages because it enables them to get rid of intermediaries and sell directly to the customers. There is a higher probability of finding better prices on the internet than in shopping malls. Many internet companies operate as online retailers only which means they don't have to pay any intermediaries such as distributors and they don't have to hire sales people. Thus, they can pass some of the savings to the customers by offering reduced prices. Internet also enables the customers to do price comparisons in an instant, thus, they can buy from the online retailer that offers the best prices. Internet companies are aware of this thus, they price their inventory competitively.

Internet also enables shopping on the international websites that stock local products. Foreign products may not be available in most shopping malls because the level of demand doesn't justify the stocking of such products. Internet is not limited by international boundaries and makes it possible to buy products from other countries without actually having to go there.

There are number of websites which provide the facility of online shopping. Some of them are www.snapdeal.com, www.flipcart.com, www.amazon.com, www.ebay.com, etc.

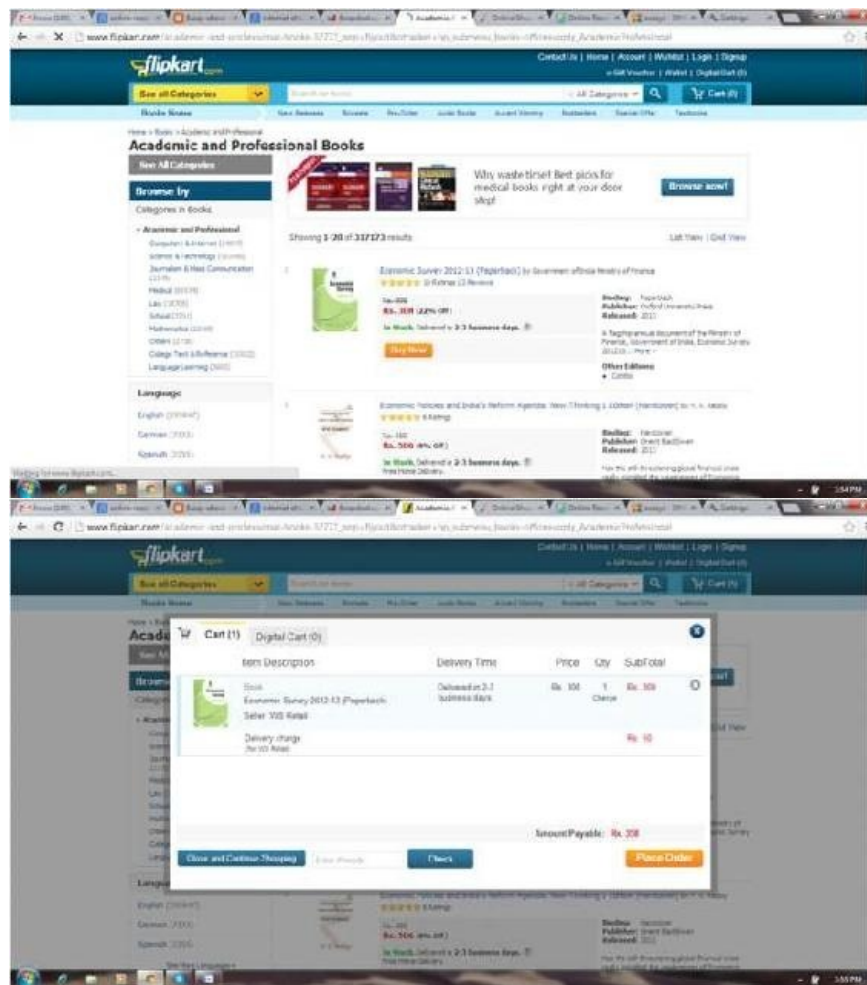


Example: For online shopping, one can logon to www.flipkart.com. The home page of the website is as below:



If you want to purchase some books on flipkart, go to the option All Categories Books
Click on one of the category/subject

For example, if you click on the category “Academic and Professional” under the head of “Education”, you will get a list of books under this category.



To purchase a book, click on option “Buy Now”.

flipkart Secure Payment

1 Email Login 2 Shipping Address 3 Order Summary 4 Payment Options

Email Address:

Your order details will be sent to this email address.

☐ Continue without password
 (You do not need a password)

☐ I have a Flipkart account and password
 Sign in to your account and checkout faster

Continue

Sign in with

OR

Facebook

Google

Safe and Secure Shipping Guarantee

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Home / Contact Us / Shipping & Returns / Privacy / Terms of Use / Help

flipkart Secure Payment

1 Email Login 2 Shipping Address 3 Order Summary 4 Payment Options

Enter a new shipping address

Name:

Pincode:

Address:

Landmark:

City:

State:

Country:

Phone:

Save & Continue

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Secure Payment

1 Email Login 2 Shipping Address 3 Order Summary 4 Payment Options

Review your Order:

Type	Item Description	Delivery Time	Price	Qty.	Subtotal
Item	Economic Berry 200-13 (Peachberg) 100g	2-3 business days	Rs. 100	1	Rs. 100
Chg	Delivery Charge (for 100g)		Rs. 50		Rs. 50

☐ Get WhatsApp order to Rs. 300
Not available with Cash-On-Delivery.

Amount Payable **Rs. 350**

☐ Send Order Confirmation SMS alert to +91 9996262877

Continue

Safe and Secure Shopping Guarantee

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Secure Payment

1 Email Login 2 Shipping Address 3 Order Summary 4 Payment Options

Choose your mode of payment:

Cash on Delivery
Pay using Cash-on-Delivery

Net Banking
Credit Card
Credit Card (EMI)
Debit Card
e-Gift Voucher

Amount Payable on Delivery: **Rs. 350**

You can also pay using Credit Card or Debit Card at the time of delivery.

Verify Order
Type the characters you see in this image.

3442

Place Order

No placeholder, you have read and agree to Flipkart's Terms of Use and Privacy Policy

Order Summary

Items	1
Sub Total	Rs. 300
Grand Total	Rs. 350

Shipping Address

Chennai

Mahesh Kumar A/B
10/10
New Delhi
110028
9996262877

Safe and Secure Shopping Guarantee

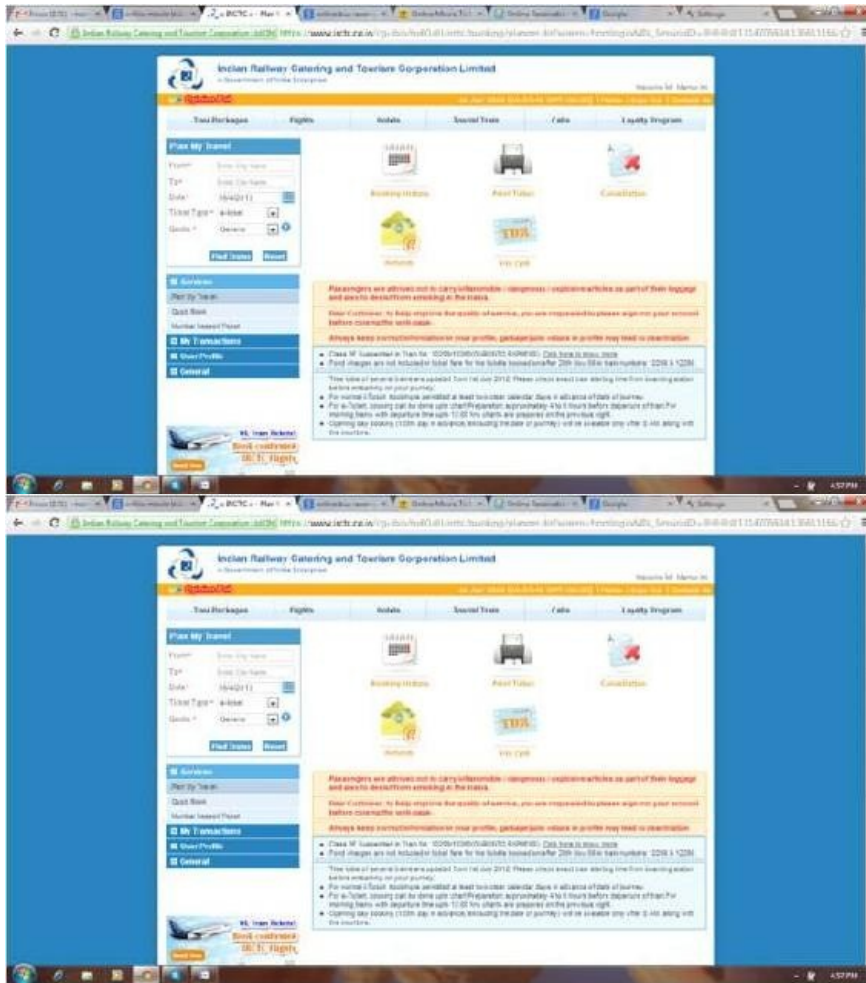
© 2017 Flipkart

ONLINE RESERVATION

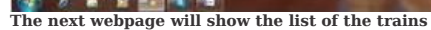
Online reservation system has a number of benefits that makes the use of online reservation preferable for arranging a trip. Online reservation system provides the customer all required information and the customers get reservation wherein it saves time and energy. So customers are able to book or reserve all that they deserve and be able to plan their reservation quickly without leaving their home. The system keeps the best alternative solution to once stagnant method for manual operation. This process mutually enhances the technical capability of the resort in the pursuit of the business world.

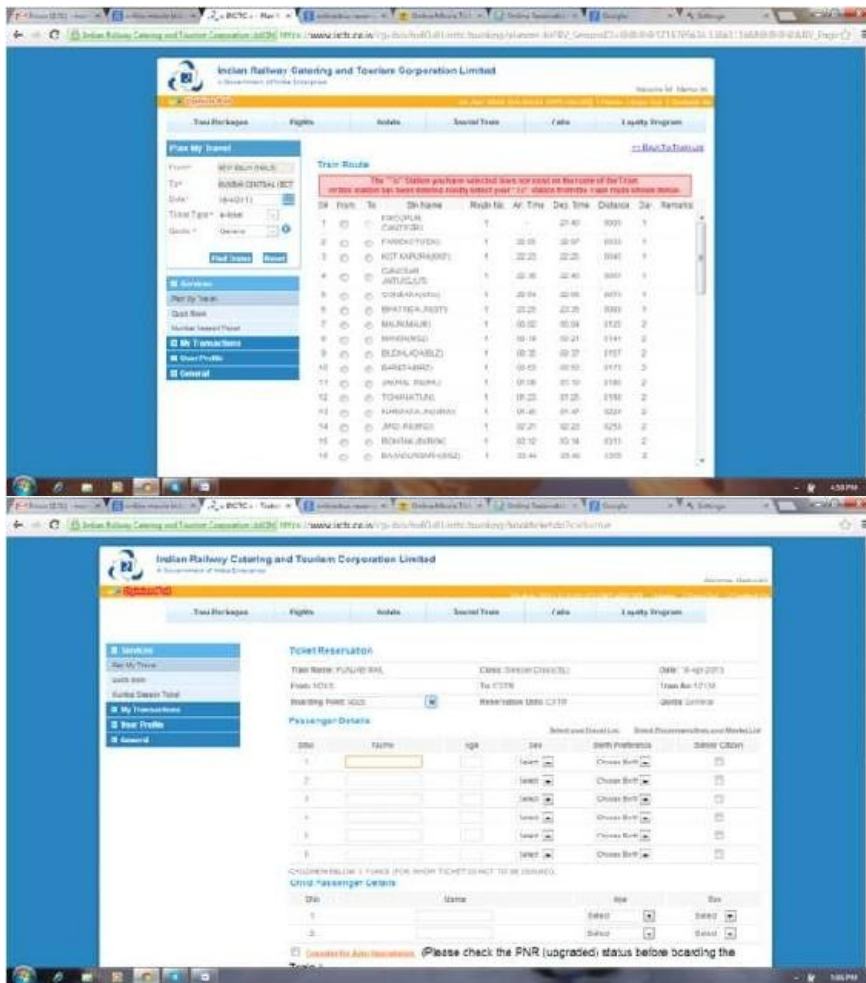
For example one is booking the railway ticket online. The following steps will be-Go to website www.irctc.co.in. The homepage will be displayed such as:

If you have an account, enter your userid in the column “username” and enter password. Click login. The new window will be displayed as below:



Now you can enter the code of both the stations (departure and destination) in the from and To columns respectively.





Indian Railway Catering and Tourism Corporation (IRCTC) www.irctc.co.in

CHILDREN BELOW 1 YEAR DO NOT SHOW TICKET IT IS NOT TO BE ISSUED.

Child Passenger Details

Sl No	Name	Age	Sex
1		Years	Male
2		Years	Male

CONFIRMATION/BOOKING (Please check the PNR (upgraded) status before boarding the Train)

Birth preference: does not guarantee allotment of preferred berth type. If you need assured lower berth or assured Corridor Accommodation (please select) please select one of the options below:

- ☐ None
- ☐ Book my ticket only if atleast one lower berth is available
- ☐ Book my ticket only if atleast two lower berths are available
- ☐ Book my ticket only if all the above passengers are allotted berths in the same coach

Passenger Mobile Number: +91 9876543210 SMS will be sent to this Mobile Number

Enter Verification Code

0357698

Enter the last four digits of **0357698** Click here to new image

CONFIRMATION/BOOKING (Please check the PNR (upgraded) status before boarding the Train)

Birth preference: does not guarantee allotment of preferred berth type. If you need assured lower berth or assured Corridor Accommodation (please select) please select one of the options below:

- ☐ None
- ☐ Book my ticket only if atleast one lower berth is available
- ☐ Book my ticket only if atleast two lower berths are available
- ☐ Book my ticket only if all the above passengers are allotted berths in the same coach

Passenger Mobile Number: +91 9876543210 SMS will be sent to this Mobile Number

Enter Verification Code

0357698

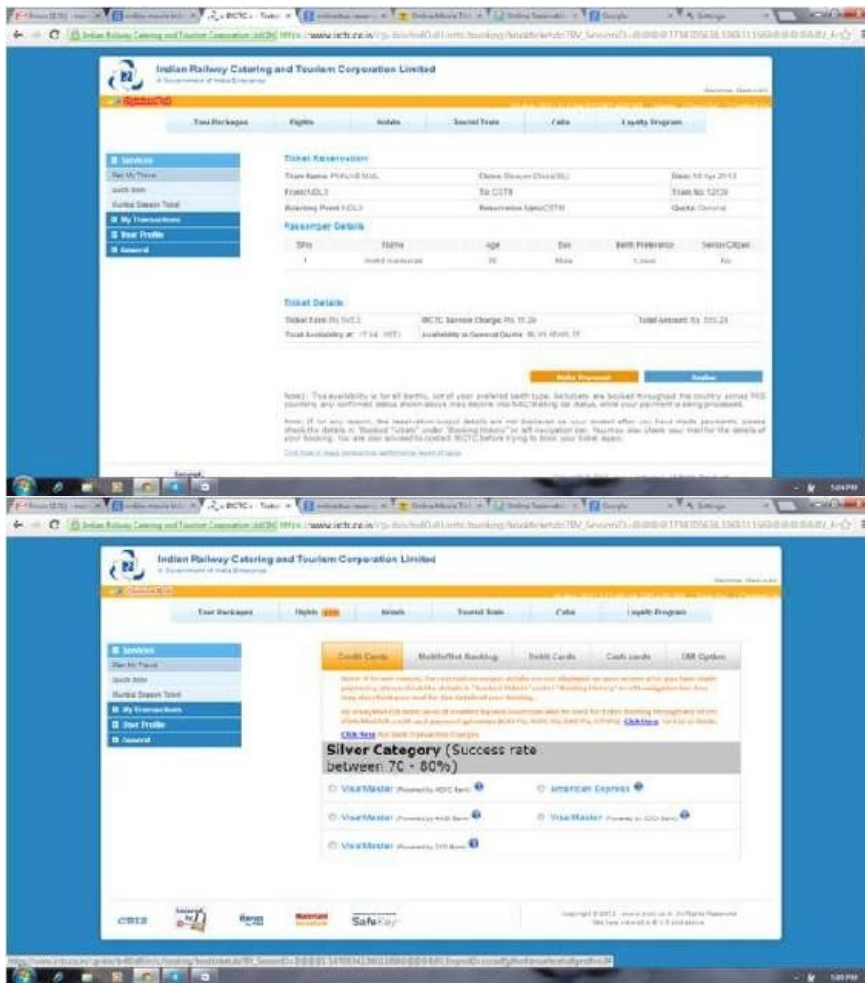
Enter the last four digits of **0357698** Click here to new image

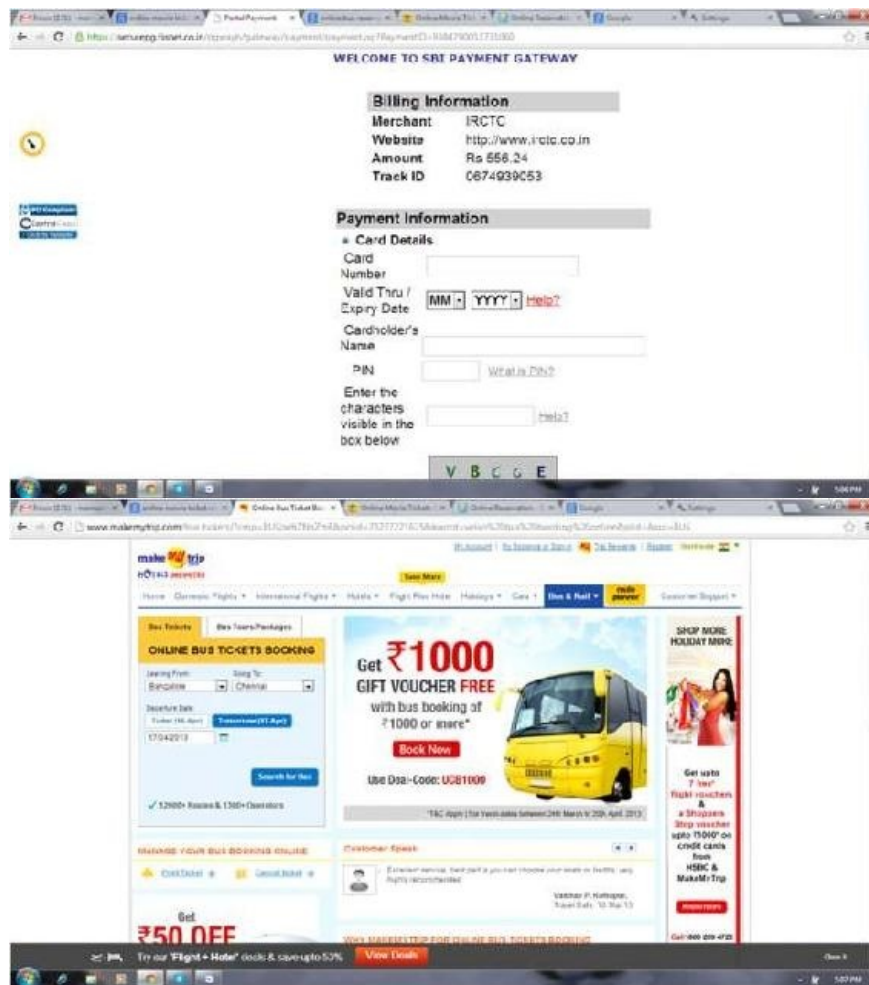
Letting someone verify

1. Select

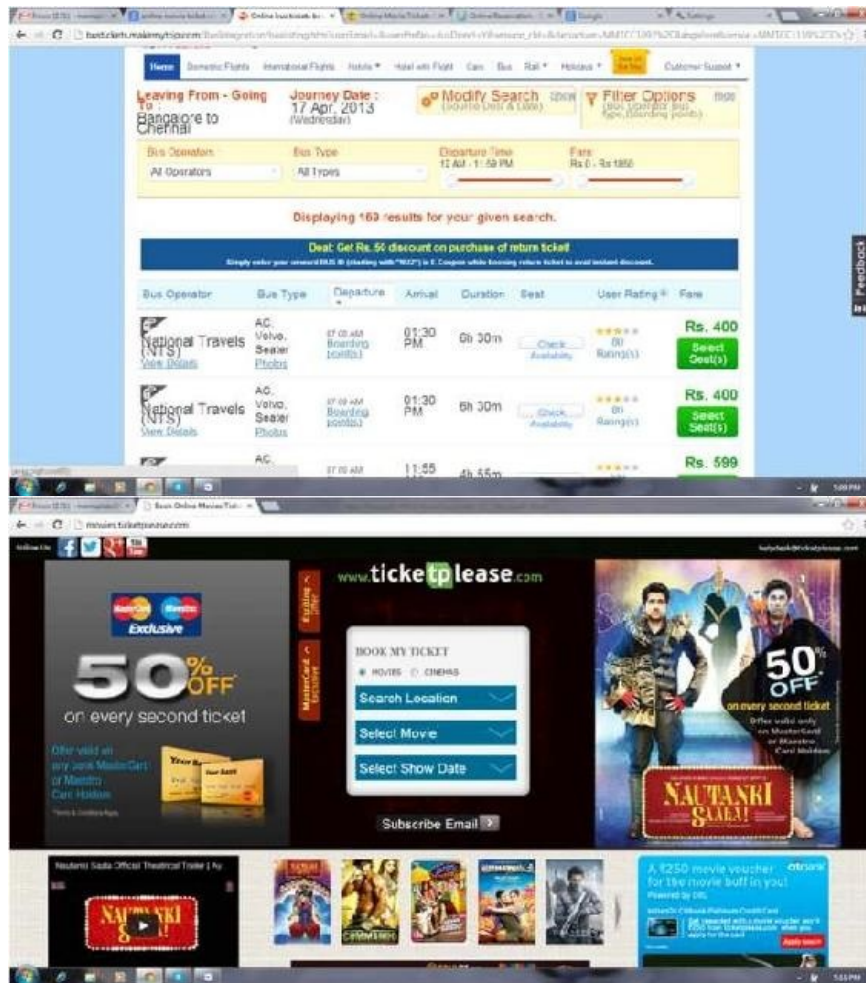
The questionnaire details are required at the time of Rail Card booking. The QR card will also be required during journey. One of the questionnaire based on an e-card should have any of the identity cards (Driver Identity Card / Passport / Photo Card / Driving License / Photo ID card issued by Centre / State Govt / Public Sector Undertaking of State/ Central Government, District Administration, Municipal bodies and Panchayat administrations which are having serial number, Student Identity Card and photograph issued by recognised School or College for their students, International Bank Passbook with photograph, Credit Cards issued by Banks with personal photograph, Indian Identification Card, Aadhaar, Ration Card, etc.) or any other document which can be accepted as proof of identity for undertaking journey under 'Rail scheme' only if the passenger whose photograph is available on the rail card is travelling.

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ONLINE RESERVATION of BUS



ONLINE MOVIE TICKETS



E Governance

The National e-Governance Plan (NeGP) has been formulated by the Department of Electronics and Information Technology (DEITY) and Department of Administrative Reforms and Public Grievances (DARPG). The NeGP approved by the Union Government, comprising of 27 Mission Mode Projects (MMPs) and 10 components on May 18, 2006.

The NeGP aimed at improving delivery of Government services to citizens and businesses. The vision of the NeGP: "Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realise the basic needs of the common man."

About NeGP

Central Government as well as various State Governments has been taken a large number of initiatives for e-Governance. Sustained efforts have been made at multiple levels to improve the delivery of public services and simplify the process of accessing them.

e-Governance in India has steadily evolved from computerization of Government Departments to initiatives that encapsulate the finer points of Governance, such as citizen centricity, service orientation and transparency. The progressive e-Governance strategy is being shaped in the country. It is noticed to speed up e-Governance implementation across the 65

various arms of Government at National, State, and Local levels, a programme approach needs to be adopted, guided by common vision and strategy. This approach has the potential of enabling huge savings in costs through sharing of core and support infrastructure, enabling interoperability through standards, and of presenting a seamless view of Government to citizens.

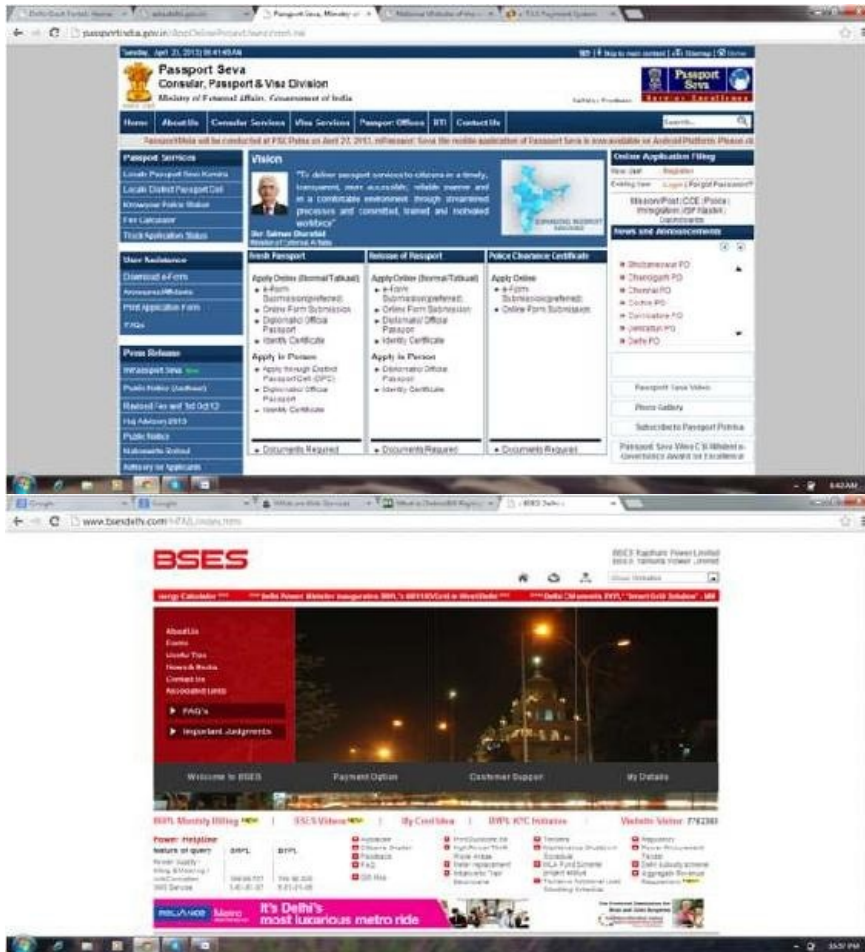
The National e-Governance Plan (NeGP), takes a holistic view of e-Governance initiatives across the country, integrating them into a collective vision, a shared cause. Around this idea, a massive countrywide infrastructure reaching down to the remotest of villages is evolving, and large-scale digitization of records is taking place to enable easy, reliable access over the internet. The ultimate objective is to bring public services closer home to citizens, as articulated in the Vision Statement of NeGP.

“Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man”

The Government approved the National e-Governance Plan (NeGP), comprising of 27 Mission Mode Projects (MMPs) and 8 components, on May 18, 2006. The Government has accorded approval to the vision, approach, strategy, key components, implementation methodology, and management structure for NeGP. The existing or ongoing projects in the MMP category, being implemented by various Central Ministries, States, and State Departments would be suitably augmented and enhanced to align with the objectives of NeGP.

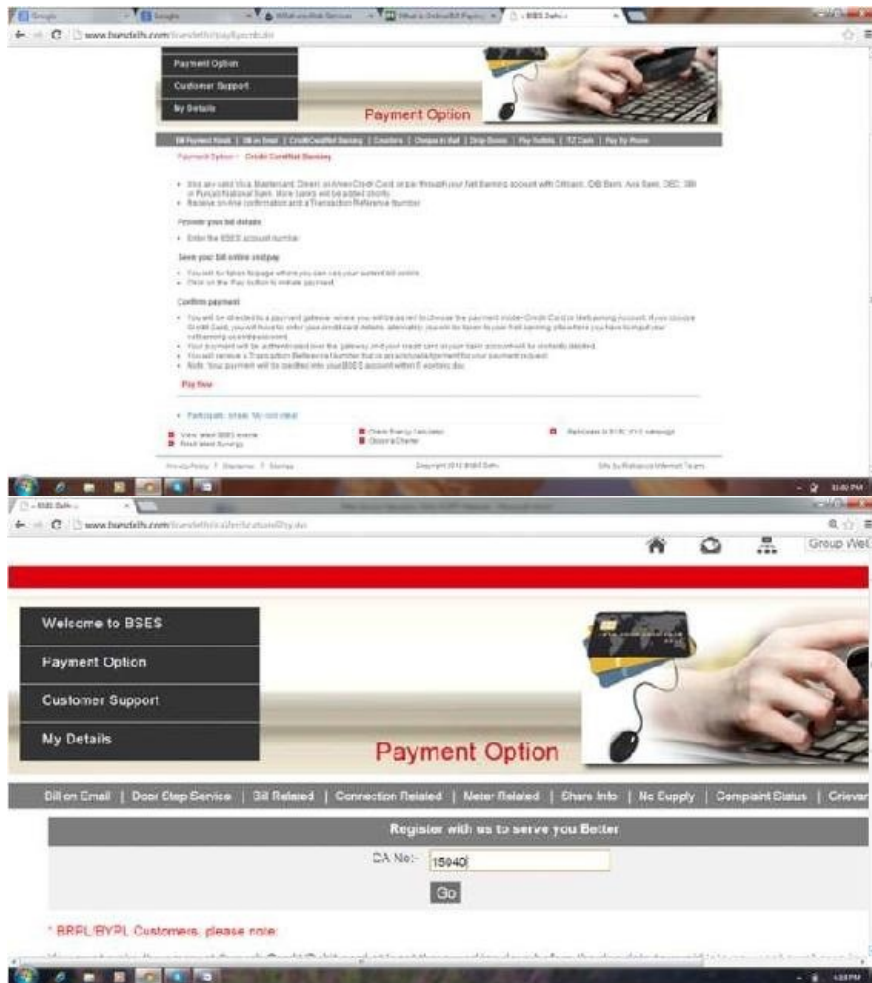
Online Passport

Online Passport is a Mission Mode Project of Government of India. The process of getting passport online is as follows :



ONLINE BILL PAYMENT

Online bill payment is a system of paying bills using the Internet. For example if you want to pay the electricity bill online in New Delhi, you have to go to the website www.bsesdelhi.com. As you will enter this URL in the address bar and enter, you will get the homepage of BSES website.



Click on the option "Payment option". You will get the webpage as below:
Click on Pay Now

Enter CA No.

ONLINE TUTORIALS AND TESTS

Online tutoring is an online, virtual environment or networked environment in which teachers and learners are separated by time and space. Online tutoring, as a reflection of the diversity of the wider Internet, is practiced using many different approaches and is addressed to distinct sets of users. The distinctions are in online content and interface, as well as in tutoring and tutor-training methodologies. Definitions associated with online tutoring vary widely, reflecting the ongoing evolution of the technology, the refinement and variation in online learning methodology, and the interactions of the organizations that deliver online tutoring services with the institutions, individuals, and learners that employ the services. This form of Internet service is a classical micropublishing situation.

Online environments applied in education usually involve the use of learning management systems or Virtual Learning Environments such as Moodle, Sakai, WebCT, Blackboard. Online tutoring may be offered either directly through the virtual learning environment of a tutoring service or via a link in a learning management system.

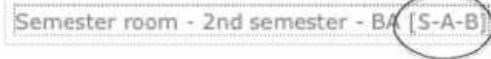
Moodle

Moodle (abbreviation for Modular Object-Oriented Dynamic Learning Environment) is a free source elearning software platform, also known as a Learning Management System, or Virtual Learning Environment (VLE). Moodle was originally developed by Martin Dougiamas to help educators create online courses with a focus on interaction and collaborative construction of content, and is in continual evolution.

You will find access to Moodle from the address: <http://www.moodle.aau.dk/> and then choose the school/study you want to enter. It may also be possible to find a link to Moodle from the homepage of your study.

Login

From the front page of Moodle you have the possibility to log on via your AAU e-mail address, and the password belonging to this.



In order to get access to your page in Moodle (MyMoodle) where you find an outline of your rooms in Moodle, it is important that you log on to Moodle via your AAU mail address and the matching passwords.

Furthermore you must be logged into Moodle to receive information sent from secretaries and teachers, as this is being communicated via fora in Moodle, and to have access to material being available from teachers in the so-called course rooms and project rooms.

Rooms in Moodle

Moodle uses 3 kinds of rooms: Semester room, Course room and Project room. In connection with the different rooms 3 lefers are mentioned in brackets after the study program, as shown below:

Exercise

1. MOODLE stands for
 - a) Multi Object-Oriented Dynamic Learning Environment
 - b) Modular Object-Oriented Dynamic Learning Environment
 - c) Modular Object-Oriented Direct Learning Environment
 - d) Multi Object-Oriented Direct Learning Environment
2. What do you mean by web services? How are these web services helpful for human being in their daily life? Explain with examples.
3. NeGP stands for
 - a) National e-Governance Plan
 - b) New Governance Plan
 - c) National Electronic Governance Plan
 - d) New e-Governance Plan
4. What do you mean by Online Reservation? Explain with suitable examples.
5. What are the advantages of e-Governance? Illustrate with suitable examples.
6. Using the online reservation service, follow the steps to book a train ticket except the bill payment steps.
7. Using the online shopping service, follow the steps to purchase an item except the bill payment steps.

Q8. Discuss how MOODLE can be used for learning mathematics at elementary level?

PROJECT MANAGEMENT

- WEB BASED APPLICATION DEVELOPMENT

What is Project?

1. A Project is a set of things that an organization decides to do to achieve its vision and goals as well as to enhance revenues and profits.
2. Each project has a definite beginning and definite ending time.
3. Each project has to be executed under certain constraints. These constraints may change with time and that is a part of project dynamics. Example of such constraints could be: availability of manpower, capital budget, duration of project, target date of project *etc.*

Software Development life cycle

A typical Software Development life cycle consists of the following stages:

1. Stage 1: *Planning* and Requirement Analysis : Requirement analysis is the most important and fundamental stage in SDLC. It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts in the industry. This information is then used to plan the basic project approach and to conduct product feasibility study in the economical, operational, and technical areas.
2. Stage 2: *Defining* Requirements : Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts. This is done through 'SRS' - Software Requirement Specification document which consists of all the product requirements to be designed and developed during the project life cycle.
3. Stage 3: *Designing* the product architecture : SRS is the reference for product architects to come out with the best architecture for the product to be developed. Based on the requirements specified in SRS, usually more than one design approach for the product architecture is proposed and documented in a DDS- Design Document Specification. This DDS is reviewed by all the important stakeholders and based on various parameters as risk assessment, product robustness, design modularity, budget and time constraints, the best design approach is selected for the product.
4. Stage 4: *Building* or Developing the Product : In this stage of SDLC the actual development starts and the product is built. The programming code is generated as per DDS during this stage. If the design is performed in a detailed and organized manner,

code generation can be accomplished without much hassle. Developers have to follow the coding guidelines defined by their organization and programming tools like compilers, interpreters, debuggers etc are used to generate the code. Different high level programming languages such as C, C++, Pascal, Java, and PHP are used for coding. The programming language is chosen with respect to the type of software being developed.

5. Stage 5: *Testing* the Product : This stage is usually a subset of all the stages as in the modern SDLC models, the testing activities are mostly involved in all the stages of SDLC. However this stage refers to the testing only stage of the product where products defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS.
6. Stage 6: *Deployment* in the Market and Maintenance : Once the product is tested and ready to be deployed it is released formally in the appropriate market. Sometime product deployment happens in stages as per the organizations' business strategy. The product may first be released in a limited segment and tested in the real business environment (UAT- User acceptance testing).
7. Then based on the feedback, the product may be released as it is or with suggested enhancements in the targeting market segment. After the product is released in the market, its maintenance is done for the existing customer base.

Project Essentials & tips:

The essentials of writing high quality JavaScript need habits and best practices. These habits and best practices can help you write better, more understandable, and maintainable code - code to be proud of (and be able to figure out) when revisiting it months and years down the road. They are:

1. Writing Maintainable Code

Maintainable code means code that:

- Is readable
- Is consistent
- Is predictable
- Looks as if it was written by the same person
- Is documented

2. Minimizing Globals

JavaScript uses functions to manage scope. A variable declared inside of a function is local to

that function and not available outside the function. On the other hand, global variables are those declared outside of any function or simply used without being declared.

The problem with global variables is that they are shared among all the code in your JavaScript application or web page. They live in the same global namespace and there is always a chance of naming collisions - when two separate parts of an application define global variables with the same name but with different purposes.

3. Single var Pattern

Using a single var statement at the top of your functions is a useful pattern to adopt. It has the following benefits:

- Provides a single place to look for all
- Prevents logical errors when a
- Helps you remember to declare
- Is less code (to type and the local variables needed by the variable is used before it's variables and therefore minimize to transfer over the function defined globals wire)

JavaScript enables you to have multiple var statements anywhere in a function, and they all act as if the variables were declared at the top of the function. This behavior is known as hoisting. This can lead to logical errors when you use a variable and then you declare it further in the function.

4. for Loops

In for loops you iterate over or array-like objects such as arguments and HTMLCollection objects. The usual for loop pattern looks like the following: // sub-optimal loop

```
for (var i = 0; i < myarray.length; i++) {  
    // do something with myarray[i]  
}
```

A problem with this pattern is that the length of the array is accessed on every loop iteration. This can slow down your code, especially when myarray is not an array but an HTMLCollection object. The trouble with collections is that they are live queries against the underlying document (the HTML page). This means that every time you access any collection's length, you're querying the live DOM, and DOM operations are expensive in general.

That's why a better pattern for for-loops is to cache the length of the array (or collection) you're iterating over, as shown in the following example: for (var i = 0, max = myarray.length; i < max; i++) {

```
// do something with myarray[i]
```

```
}
```

This way you retrieve the value of length only once and use it during the whole loop. Caching the length when iterating over HTMLCollection is faster across all browsers.

5. switch Paflern

You can improve the readability and robustness of your switch statements by following this pattern:

```
var inspect_me = 0, result = "";
switch (inspect_me) { case 0:
    result = "zero"; break;
case 1:
    result = "one"; break;
default:
    result = "unknown";
```

```
}
```

The style conventions followed in this simple example are:

- Aligning each case with switch (an exception to the curly braces indentation rule).
- Indenting the code within each case.
- Ending each case with a clear break statement.
- Avoiding fall-throughs (when you omit the break intentionally). If you're absolutely convinced that a fall-through is the best approach, make sure you document such cases, because they might look like errors to the readers of your code.
- Ending the switch with a default to make sure there's always a sane result even if none of the cases matched.

6. Avoiding Implied Typecasting

JavaScript implicitly typecasts variables when you compare them. That's why comparisons such as `false == 0` or `"" == 0` return true. To avoid confusion caused by the implied typecasting, always use the `===` and `!==` operators that check both the values and the type of the expressions you compare: 76

```

var zero = 0;
if (zero === false) {
    // not executing because zero is 0, not false
}

// antipafern
if (zero == false) {
    // this block is executed...
}

```

7. Number Conversions with parseInt()

Using `parseInt()` you can get a numeric value from a string. The function accepts a second radix parameter, which is often omitted but shouldn't be. The problems occur when the string to parse starts with 0: for example, a part of a date entered into a form field. Strings that start with 0 are treated as octal numbers (base 8) in ECMAScript 3; however, this has changed in ES 5. To avoid inconsistency and unexpected results, always specify the radix parameter: `var month = "06",`

```

    year = "09";
    month = parseInt(month, 10); year = parseInt(year,
10);

```

In this example, if you omit the radix parameter like `parseInt(year)`, the returned value will be 0, because "09" assumes octal number (as if you did `parseInt(year, 8)`) and 09 is not a valid digit in base 8.

8. Indentation

Code without indentation is impossible to read. The only thing worse is code with inconsistent indentation, because it looks like it's following a convention, but it may have confusing surprises along the way. It's important to standardize the use of indentation. Some developers prefer indentation with tabs, because anyone can tweak their editor to display the tabs with the individually preferred number of spaces. Some prefer spaces - usually four. It doesn't matter as long as everyone in the team follows the same convention.

And what should you indent? The rule is simple - anything within curly braces. This means the bodies of functions, loops (`do`, `while`, `for`, `for-in`), `if`s, `switch`es, and objects properties in the object literal notation. The following code shows some examples of using indentation: `function outer(a, b) {`

```

var c = 1,
    d = 2,
    inner; if (a > b) {
    inner = function () { return {
        r: c - d
    };
    } else {
};

inner = function () { return {
    r: c + d
};
};
}

return inner;
}

```

9. Curly Braces

Curly braces should always be used, even in cases when they are optional. Technically, if you have only one statement in an if or a for, curly braces are not required, but you should always use them anyway. It makes the code more consistent and easier to update. Imagine you have a for loop with one statement only. You could omit the braces and there will be no syntax error: // bad practice

```
for (var i = 0; i < 10; i += 1) alert(i);
```

But what if, later on, you add another line in the body of the loop?

```
// bad practice
for (var i = 0; i < 10; i += 1) alert(i);
    alert(i + " is " + (i % 2 ? "odd" : "even"));
```

The second alert is outside the loop although the indentation may trick you. The best thing to do in the long run is to always use the braces, even for one-line blocks: // befer

```
for (var i = 0; i < 10; i += 1) { alert(i);  
}
```

Similarly for if conditions:

```
// bad if (true)  
    alert(1);  
else  
    alert(2);  
// befer if (true) {  
    alert(1);  
} else {  
    alert(2);  
}
```

10. Opening Brace Location

Developers also tend to have preferences about where the opening curly brace should be - on the same line or on the following line?

```
if (true) {  
    alert("It's TRUE!");  
}  
  
if (true)  
{
```

OR:

```
    alert("It's TRUE!");
```

```
}
```

In this specific example, it's a matter of preference, but there are cases in which the program might behave differently depending on where the brace is. This is because of the semicolon insertion mechanism - JavaScript is not picky when you choose not to end your lines properly with a semicolon and adds it for you. This behavior can cause troubles when a function returns an object literal and the opening brace is on the next line: // warning: unexpected return value function func() {
 return


```
// unreachable code follows
```

```
    {  
        name : "Batman"  
    }  
}
```

If you expect this function to return an object with a name property, you'll be surprised. Because of the implied semicolons, the function returns undefined. The preceding code is equivalent to this one: // warning: unexpected return value function func() {
 return undefined;

```
// unreachable code follows
```

```
    {  
        name : "Batman"  
    }  
}
```

In conclusion, always use curly braces and always put the opening one on the same line as the previous statement: function func() {

```
    return {  
        name : "Batman"  
    };  
}
```

11. White Space

The use of white space can also contribute to improved readability and consistency of the code. In written English sentences you use intervals after commas and periods. In JavaScript you follow the same logic and add intervals after list-like expressions (equivalent to commas) and end-of-statements (equivalent to completing a "thought"). Good places to use a white space include: After the semicolons that separate the parts of a for loop: for example, for(var i = 0; i < 10; i += 1) {...}

Initializing multiple variables (i and max) in a for loop: for(var i = 0, max = 10; i < max; i += 1)
 {...}

After the commas that delimit array items: var a = [1, 2, 3]; **80**

After commas in object properties and after colons that divide property names and their values:var o = {a: 1, b: 2}; Delimiting function arguments:myFunc(a, b, c); Before the curly braces in function declarations:function myFunc() {}

After function in anonymous function expressions:var myFunc = function () {}; Another good use for white space is to separate all operators and their operands with spaces, which basically means use a space before and after +, -, *, =, <, >, <=, >=, ==, !=, &&, ||, +=, and so on: // **generous and consistent spacing**

```
// makes the code easier to read
// allowing it to "breathe"var d = 0,
    a = b + 1;
if (a && b && c) { d = a % c;
    a += d;

                                }

// antipafern
// missing or inconsistent spaces
// make the code confusingvar d = 0,
    a = b + 1;
if (a && b && c) { d = a % c;
    a += d;

                                }
```

And a final note about white space - curly braces spacing. It's good to use a space:

- Before opening curly braces ({} in functions, if-else cases, loops, and object literals
- Between the closing curly brace (}) and else or while

A case against liberal use of white space might be that it could increase the file size, but minification takes care of this issue.

12. Coding and Naming Conventions

It's important to establish and follow coding conventions - they make your code consistent, *predictable*, and much easier to read and understand. A new developer joining the team can read through the conventions and be productive much sooner, understanding the code written by any other team member.

Another way to make your code more predictable and maintainable is to adopt naming conventions. That means choosing names for your variables and functions in a consistent manner.

13. Capitalizing Constructors

JavaScript doesn't have classes but has constructor functions invoked with `new`: `var adam = new Person();` Because constructors are still just functions, it helps if you can tell, just by looking at a function name, whether it was supposed to behave as a constructor or as a normal function. Naming constructors with a capital first letter provides that hint. Using lowercase for functions and methods indicates that they are not supposed to be called with `new`: `function MyConstructor() {...}` `function myFunction() {...}`

14. Separating Words

When you have multiple words in a variable or a function name, it's a good idea to follow a convention as to how the words will be separated. A common convention is to use the so-called *camel case*. Following the camel case convention, you type the words in lowercase, only capitalizing the first letter in each word.

For your constructors, you can use *upper camel case*, as in `MyConstructor()`, and for function and method names, you can use *lower camel case*, as in `myFunction()`, `calculateArea()` and `getFirstName()`.

And what about variables that are not functions? Developers commonly use lower camel case for variable names, but another good idea is to use all lowercase words delimited by an underscore: for example, `first_name`, `favorite_bands`, and `old_company_name`. This notation helps you visually distinguish between functions and all other identifiers - primitives and objects.

15. Other Naming Patterns

Sometimes developers use a naming convention to make up or substitute language features.

For example, there is no way to define constants in JavaScript (although there are some built-in such as `Number.MAX_VALUE`), so developers have adopted the convention of using all-caps for naming variables that shouldn't change values during the life of the program, like: `// precious constants, please don't touch var PI = 3.14,`
`MAX_WIDTH = 800;`

There's another convention that competes for the use of all caps: using capital letters for names of global variables. Naming globals with all caps can reinforce the practice of minimizing their number and can make them easily distinguishable.

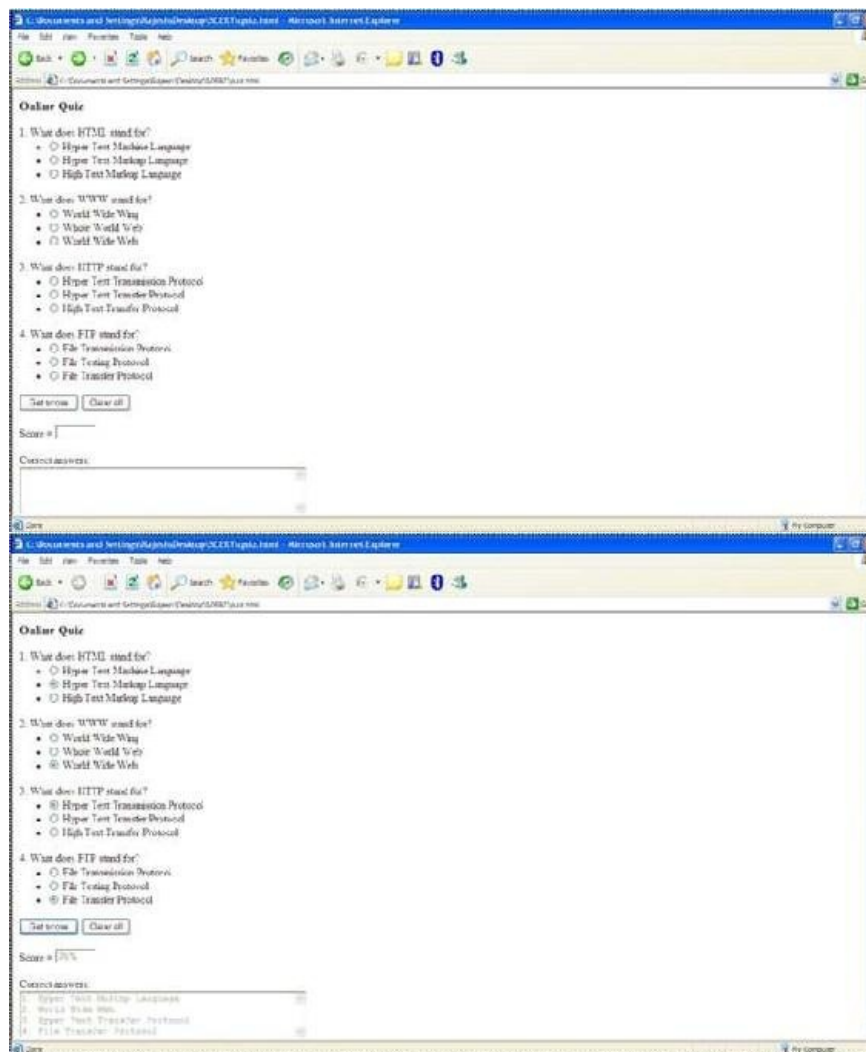
16. Writing Comments

You have to comment your code, even if it's unlikely that someone other than you will ever touch it. Often when you're deep into a problem you think it's obvious what the code does, but when you come back to the code after a week, you have a hard time remembering how it worked exactly.

You shouldn't go overboard commenting the obvious: every single variable or every single line. But you usually need to document all functions, their arguments and return values, and also any interesting or unusual algorithm or technique.

Think of the comments as hints to the future readers of the code; the readers need to understand what your code does without reading much more than just the comments and the function and property names. When you have, for example, five or six lines of code performing a specific task, the reader can skip the code details if you provide a one-line description describing the *purpose* of the code and why it's there.

There's no hard and fast rule or ratio of comments-to-code; some pieces of code (think regular expressions) may actually require more comments than code.



Case Study 1 - Online Quiz

```
quiz.html
<HTML>
<HEAD>
<style type="text/css">
.bgclr
{
    background-color: white; color: black;
    font-weight: bold;
}

</style>
<script type="text/javascript" src="quiz.js" ></script>
</HEAD>
<BODY>
<h3>Online Quiz</h3>
<FORM name="quiz">
    1. What does HTML stand for?
    <ul style="margin-top: 1pt">
        <li><input type="radio" name="q1" value="Hyper Text Machine Language"> Hyper Text Machine Language </li> <li><input
        type="radio" name="q1" value="Hyper Text Markup Language"> Hyper Text Markup Language </li> <li><input type="radio"
        name="q1" value="High Text Markup Language"> High Text Markup Language </li> </ul>
        2. What does WWW stand for?
        <ul style="margin-top: 1pt">
            <li><input type="radio" name="q2" value="World Wide Wing"> World Wide Wing </li> 85
```

```

<li><input type="radio" name="q2" value="Whole World Web"> Whole World Web </li> <li><input type="radio" name="q2"
value="World Wide Web"> World Wide Web </li>
</ul>
3. What does HTTP stand for?
<ul style="margin-top: 1pt">
<li><input type="radio" name="q3" value="Hyper Text Transmission Protocol"> Hyper Text Transmission Protocol </li> <li><input
type="radio" name="q3" value="HyperTextTransfer Protocol"> HyperText Transfer Protocol </li> <li><input type="radio" name="q3"
value="High Text Transfer Protocol"> High Text Transfer Protocol </li> </ul>
4. What does FTP stand for?
<ul style="margin-top: 1pt">
<li><input type="radio" name="q4" value="File Transmission Protocol"> File Transmission Protocol </li> <li><input type="radio"
name="q4" value="File Testing Protocol"> File Testing Protocol </li> <li><input type="radio" name="q4" value="File Transfer
Protocol"> File Transfer Protocol </li> </ul>
<input type="button" value="Get score" onClick="getScore(this.form)">
<input type="reset" value="Clear all">
<p> Score = <strong><input class="bgclr" type="text" size="5" name="percentage"
disabled></strong><br><br> Correct answers:<br>
<TEXTAREA class="bgclr" name="solutions" wrap="virtual" rows="4" cols="50" disabled>
</TEXTAREA>
</FORM>
</BODY>

```

```

</HTML>
quiz.js
// Insert number of questionsvar numQues = 4;
// Insert number of choices in each questionvar numChoi = 3;
// Insert number of questions displayed in answer areavar answers = new Array(4); // Insert
answers to questions
answers[0] = "Hyper Text Markup Language"; answers[1] = "World WideWeb";
answers[2] = "HyperTextTransfer Protocol"; answers[3] = "File Transfer
Protocol"; function getScore(form) { var score = 0;
    var currElt;
    var currSelection;
    for (i=0; i<numQues; i++) { currElt = i*numChoi; for (j=0;
        j<numChoi; j++) {
            currSelection = form.elements[currElt + j]; if (currSelection.checked) {
                if (currSelection.value == answers[i]) { score++;
                    break;
                }
            }
        }
    }

    score = Math.round(score/numQues*100); form.percentage.value = score
    + "%";
    varcorrectAnswers = ""; for (i=1; i<=numQues; i++)
    {
        correctAnswers += i + ". " + answers[i-1] + "\r\n";
    }

    form.solutions.value = correctAnswers;
}

```

Case Study 2 - Online Game

1. This is the two players Tic-Tac-Toe logic game allows one player to play against another.
2. Player 1 is X and the Player 2 is O.
3. Select the square you want to put your marker into by clicking the box.
4. You cannot occupy a square that is already occupied.
5. The first player to get three squares in a row wins. View the source code.


```

tictactoe.html
<!DOCTYPE html>
<html>
<head>
<title>Tic-Tac-Toe</title>
<link rel="stylesheet" type="text/css" href="tictactoe.css" />
<script type="text/javascript" src="tictactoe.js"> </script>
</head>
<body>
<center>
<h1><b><p id="turnlabel">Player 1 </p></b></h1>
<table>
<tr>

</tr>
<tr>

</tr>
<tr>

</tr>
<tr>

</tr>
<tr>
<td><bufon id="cell" name="c00" onclick="move(this,0,0);"> </bufon></td> <td><bufon id="cell" name="c01"
onclick="move(this,0,1);"> </bufon></td>
<td><bufon id="cell" name="c02" onclick="move(this,0,2);"> </bufon></td>

<td><bufon id="cell" name="c10" onclick="move(this,1,0);"> </bufon></td>
<td><bufon id="cell" name="c11" onclick="move(this,1,1);"> </bufon></td>
<td><bufon id="cell" name="c12" onclick="move(this,1,2);"> </bufon></td>

<td><bufon id="cell" name="c20" onclick="move(this,2,0);"> </bufon></td>
<td><bufon id="cell" name="c21" onclick="move(this,2,1);"> </bufon></td>
<td><bufon id="cell" name="c22" onclick="move(this,2,2);"> </bufon></td>

```

```
</table>
<b><p>Player 1 - X </p><p>Player 2 - O </p> </b>
</center>
</body>
</html>
```

```

tictactoe.js
var currLefer = "X"; var moves = 0;
var board = [[' ',' ',' '],[' ',' ',' '],[' ',' ',' ']];
function move(obj,i,j)

{

    if (board[i][j] == ' ')

    {

        var lbl = document.getElementById("turnlabel"); moves = moves + 1;
        obj.innerHTML = currLefer; board[i][j] = currLefer;
        if (currLefer == "X")

        {

        }

        else

        {

        }

    }

    currLefer = "O"; lbl.innerHTML = "Player 2";
    currLefer = "X"; lbl.innerHTML = "Player 1";

    var result = gameOver(); if (result == "tie")

    {

        alert("Nobody wins!"); initBoard();

    }

    else if (result != "")

    {

        alert(result.substring(0,1) + " wins!");

    }

}
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```

```

        initBoard();
    }
}

else
{
    //do nothing
}

}

function initBoard()
{
    var lbl = document.getElementById("turnlabel"); lbl.innerHTML = "Player 1";
    currLefer = "X"; moves = 0;
    for (var i = 0; i < 3; i++)
    {
        for (var j = 0; j < 3; j++)
        {
            board[i][j] = ' ';
            var cells=document.getElementsByName("c"+i+j); cells[0].innerHTML = " ";
        }
    }
}

function gameOver()
{
    //is there is a row or column of all Xs or Osvar str;
    str = board[0][0] + board[0][1] + board[0][2]; if (str == "XXX" || str ==
    "OOO") {
        return str;
    }
}

```

```

str = board[1][0] + board[1][1] + board[1][2]; if (str == "XXX" || str == "OOO") {
    return str;

}

str = board[2][0] + board[2][1] + board[2][2]; if (str == "XXX" || str == "OOO") {
    return str;

}

str = board[0][0] + board[1][0] + board[2][0]; if (str == "XXX" || str == "OOO") {
    return str;

}

str = board[0][1] + board[1][1] + board[2][1]; if (str == "XXX" || str == "OOO") {
    return str;

}

str = board[0][2] + board[1][2] + board[2][2]; if (str == "XXX" || str == "OOO") {
    return str;

}

str = board[0][0] + board[1][1] + board[2][2]; if (str == "XXX" || str == "OOO") {
    return str;

}

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}

str = board[2][0] + board[1][1] + board[0][2]; if (str == "XXX" || str ==
"OOO") {
    return str;

}

//are all the spaces taken if (moves == 9)

{

    return "tie";

}

return "";

}

```

Case Study 3 - Online Bill Calculator

```
calculator.html
<!DOCTYPE html>
<html>
<head>
<title>Simple Calculator</title>
<script type="text/javascript" src="calculator.js"> </script>
<link rel="stylesheet" type="text/css" href="calculator.css" />
</head>
<body>
<center>
<form name="form1">
<table border="5">
<tr>
<td colspan="4"><input type="text" name="display" style="text-align:right" style="font-weight:bold"></td> </tr>
```

```

<tr>

</tr>
<tr>

<td><input type="bufon" class="btn" name="btnClear" value="C" onclick=cleardata()></td> <td><input type="bufon"
class="btn" name="btnClear" value="√" onclick=sqroot()> </td> <td><input type="bufon" class="btn"
name="btn0" value="±/" onclick=negation()></td> <td><input type="bufon" class="btn" name="btnDiv" value="%"
onclick=mod()></td>
<td><input type="bufon" class="btn" name="btn1" value="1" onclick="form1.display.value += '1'"></td>

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</tr>
<tr>

</tr>
<tr>

</tr>
<tr>

<td><input type="bufon" class="btn" name="btn2" value="2" onclick="form1.display.value += '2'"></td> <td><input
type="bufon" class="btn" name="btn3" value="3" onclick="form1.display.value += '3'"></td> <td><input type="bufon"
class="btn" name="btnDiv" value=" " onclick=div()><td>
<td><input type="bufon" class="btn" name="btn4" value="4" onclick="form1.display.value += '4'"></td> <td><input
type="bufon" class="btn" name="btn5" value="5" onclick="form1.display.value += '5'"></td> <td><input type="bufon"
class="btn" name="btn6" value="6" onclick="form1.display.value += '6'"></td> <td><input type="bufon" class="btn"
name="btnMul" value="x" onclick=mul()></td>
<td><input type="bufon" class="btn" name="btn7" value="7" onclick="form1.display.value += '7'"></td> <td><input
type="bufon" class="btn" name="btn8" value="8" onclick="form1.display.value += '8'"></td> <td><input type="bufon"
class="btn" name="btn9" value="9" onclick="form1.display.value += '9'"></td> <td><input type="bufon" class="btn"
name="btnSub" value="-" onclick=sub()></td>
<td><input type="bufon" class="btn" name="btnEqual" value="=" onclick=decpoint()></td> <td><input type="bufon"
class="btn" name="btn0" value="0" onclick="form1.display.value += '0'"></td> <td><input type="bufon" class="btn"
name="btnEqual" value="="


```

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```

</tr>

onclick>equals()></td>
<td><input type="bufon" class="btn" name="btnAdd" value="+" onclick=add() ></td>
</table>
</form>
</center>
</body>
</html>
calculator.css

```

```
input {  
  
    }  
  
td {  
  
    }  
  
font-family:consola,monospace; font-size:20px;  
font-weight:bold;  
  
margin-left: auto; margin-right: auto; text-align: center;
```



```
.btn {  
  
}
```

```
height:40px; width:40px
```

```
calculator.js  
var N1=0;
```

```

var N2=0;var op;var Flag = 0; function
decpoint()
{
    if (Flag == 0)
    {
        form1.display.value = form1.display.value + "."; Flag = 1;
    }
}

function negation()
{
    form1.display.value = form1.display.value * -1;
}

function cleardata()
{
    form1.display.value = ""; N1 = 0;
    N2 = 0;
    Flag = 0;
}

function sqroot()
{
    form1.display.value = Math.sqrt(form1.display.value);
}

function add()
{
    if (N1==0)
        N1 = Number(form1.display.value); else

```

```

        N1 += Number(form1.display.value); op = "+";
        form1.display.value = "";

    }

function sub()

    {

        if (N1==0)
            N1 = Number(form1.display.value); else
            N1 -= Number(form1.display.value);
            op = "-";
            form1.display.value = "";

    }

function mul()

    {

        if (N1==0)
            N1 = Number(form1.display.value); else
            N1 *= Number(form1.display.value);
            op = "*"; form1.display.value = "";

    }

function div()

    {

        if (N1==0)
            N1 = Number(form1.display.value); else
            N1 /= Number(form1.display.value);
            op = "/"; form1.display.value = "";

    }

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}

function mod()

    {

        N1 = Number(form1.display.value); op = "%";
        form1.display.value = "";

    }

function equals()

    {

        N2 = Number(form1.display.value);
        if (op == "+" )
            form1.display.value = N1 + N2; else if ( op == "-" )
            form1.display.value = N1 - N2; else if (op == "**")
            form1.display.value = N1 * N2; else if (op == "/")
            form1.display.value = N1/N2; else if (op=="%")
            form1.display.value = N1%N2;
        N1=0; N2=0;

    }

```

References:

1. [hfp://code.tutsplus.com/tutorials/the-essentials-of-writing-high-quality-javascript-- net-15145](http://code.tutsplus.com/tutorials/the-essentials-of-writing-high-quality-javascript--net-15145)
2. [hfp://www.webestools.com/](http://www.webestools.com/)
3. [hfps://docs.google.com/file/d/0Bzs9tY7KuQUXdzgyLURVZ_3BuS3c/edit?pli=1](https://docs.google.com/file/d/0Bzs9tY7KuQUXdzgyLURVZ_3BuS3c/edit?pli=1)
4. [hfp://sumtotalz.com/TotalAppsWorks/Javascript/JS_BasicCalc.html](http://sumtotalz.com/TotalAppsWorks/Javascript/JS_BasicCalc.html)
5. [hfp://www.javascriptsource.com/miscellaneous/basic-javascript-quiz.html](http://www.javascriptsource.com/miscellaneous/basic-javascript-quiz.html)

ITDC-403

Fundamentals of Java Programming

- Introduction to Java
- Object Oriented Programming
- Java Language Elements
- Operators
- Control Flow
- Array
- Class Design
- Exception Handling
- Assertions
- Threads
- Wrapper Classes
- String Manipulation

FUNDAMENTALS OF JAVA PROGRAMMING

1. Introduction to Java

Java is a high-level programming language originally developed by Sun Microsystems and released in 1995, later acquired by Oracle Corporation. It was conceived by James Gosling and Patrick Naughton. It is a simple programming language. Writing, compiling and debugging a program is easy in java. It helps to create modular programs and reusable code. Java runs on a variety of platforms, such as Windows, Mac OS, and the various versions of UNIX.

1.1 Main Features of JAVA:

- 1) **Java is a platform independent language:** A platform is a pre-existing environment in which a program runs, obeying its constraints, and making use of its facilities. During compilation, the compiler converts java program to its byte code. This byte code can run on any platform such as Windows, Linux, Mac/OS *etc.* Which means a program that is compiled on windows can run on Linux and vice-versa. This is why java is known as platform independent language.
 - 2) **Java is an Object Oriented language:** Object oriented programming is a way of organizing programs as collection of objects, each of which represents an instance of a class.
 - 3) **Simple:** Java is considered as one of simple language because it does not have complex features like Operator overloading, Multiple inheritance, pointers and Explicit memory allocation.
 - 4) **Robust Language:** Two main problems that cause program failures are memory management mistakes and mishandled runtime errors. Java handles both of them efficiently.
 - a) Memory management mistakes can be overcome by garbage collection. Garbage collection is automatic de-allocation of objects which are no longer needed.
 - b) Mishandled runtime errors are resolved by Exception Handling procedures.
 - 5) **Secure:** It provides a virtual firewall between the application and the computer. Java codes are confined within Java Runtime Environment (JRE) thus it does not grant unauthorized access on the system resources.
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- 6) **Java is distributed:** Using java programming language we can create distributed applications. RMI (Remote Method Invocation) and EJB (Enterprise Java Beans) are used for creating distributed applications in java. In simple words: The java programs can be distributed on more than one systems that are connected to each other using internet connection. Objects on one JVM (java virtual machine) can execute procedures on a remote JVM.
 - 7) **Multithreading:** Java supports multithreading. It enables a program to perform several tasks simultaneously.
 - 8) **Portable:** As discussed above, java code that is written on one machine can run on another machine. The platform independent byte code can be carried to any platform for execution that makes java code portable.

1.2 Java Tools:

JDK (Java Development Kit): JDK contains JRE along with various development tools like Java libraries, Java source compilers, Java debuggers, bundling and deployment tools **JRE (Java Runtime Environment):** It is part of JDK but can be used independently to run any byte code (compiled java program). It can be called as JVM implementation.

JVM (Java Virtual Machine): 'JVM' is software that can be ported onto various hardware platforms. JVM will become instance of JRE at run time of java program. Byte codes are the machine language for the JVM. Like a real computing machine, JVM has an instruction set which manipulates various memory areas at run time. Thus for different hardware platforms one has corresponding implementation of JVM available as vendor supplied JREs.

Java API (Application Programming Interface): Set of classes' written using Java programming language which runs on JVM. These classes will help programmers by providing standard methods like reading from console, writing to console, saving objects in data structure *etc.*

1.3 Popular Java Editors:

To write your Java programs, you will need a text editor. There are even more sophisticated IDEs available in the market. But for now, you can consider one of the following:

- **Notepad:** On Windows machine you can use any simple text editor like Notepad
- **Netbeans:** Netbeans is a Java IDE that is open-source and free which can be

downloaded from <http://www.netbeans.org/index.html>.

•Eclipse:Eclipseisalsoa JavaIDEdevelopedbytheeclipse open-sourcecommunity and can be downloaded from <http://www.eclipse.org/>.

14How Java Works:

Step 1:Create a source document using any editor and save file as .java (e.g. abc.java)

Step 2:Compile the abc.java file using “javac” command.

Step 3:Byte Code (abc.class) will be generated on disk.

Step 4:This byte code can run on any platform or device having JVM (java.exe convert byte code in machine language)

15First Java Program:

Let us look at a simple code that would print the words Hello World. public class MyFirstJavaProgram

```
{  
  
    /* This is my first java program.  
     * This will print 'Hello World' as the output  
  
                                     */  
  
    public static void main(String []args) { System.out.println("Hello World"); // prints Hello World  
    }  
  
}
```

Let's look at how to save the file, compile and run the program. Please follow the steps given below:

•Open notepad and add the code as above.

•Save the file as: MyFirstJavaProgram.java.

•Open a command prompt window and go to the directory where you saved the class. Assume it's C:.

•Type ' javac MyFirstJavaProgram.java ' and press enter to compile your code. If there are no errors in your code, the command prompt will take you to the next line

•Now, type 'java
MyFirstJavaProgram' to run your
program.

You will be able to see 'Hello World' printed on the window. C : > javac

MyFirstJavaProgram.java C : > java MyFirstJavaProgram Hello World

16Java Programming Guidelines:

- Case Sensitivity -Java is case sensitive, which means identifier Hello and hello would have different meaning in Java.

- Class Names -For all class names the first letter should be in Upper Case. If several words are used to form a name of the class, each inner word's first letter should be in Upper Case.

Example: class MyFirstJavaClass

- Method Names -All method names should start with a Lower Case letter. If several words are used to form the name of the method, then each inner word's first letter should be in Upper Case.

Example: public void myMethodName()

- Program File Name -Name of the program file should exactly match the class name. When saving the file, you should save it using the class name (Remember Java is case sensitive) and append '.java' to the end of the name (if the file name and the class name do not match your program will not compile).

Example: Assume 'MyFirstJavaProgram' is the class name. Then the file should be saved as 'MyFirstJavaProgram.java'

- public static void main(String args[]) - Java program processing starts from the main() method which is a mandatory part of every Java program.

2. Object Oriented Programming

A type of programming in which programmers define not only the data type of a data structure, but also the types of operations (functions) that can be applied to the data structure. In this way, the data structure becomes an object that includes both data and functions. In addition, programmers can create relationships between one object and another. For example, objects can inherit characteristics from other objects.

One of the principal advantages of object-oriented programming techniques over procedural programming techniques is that they enable programmers to create modules that do not need to be changed when a new type of object is added. A programmer can simply create a new object that inherits many of its features from existing objects. This makes object-oriented programs easier to modify.

1What is Object?

Objects are key to understanding object-oriented technology. Look around right now and you'll find many examples of real-world objects: your dog, your desk, your television set, your bicycle.

Real-world objects share two characteristics: They all have state and behavior. Dogs have state (name, color, breed, hungry) and behavior (barking, fetching, wagging tail). Bicycles also have state (current gear, current pedal cadence, current speed) and behavior (changing gear, changing pedal cadence, applying brakes). Identifying the state and behavior for real-world objects is a great way to begin thinking in terms of object-oriented programming.

Software objects are conceptually similar to real-world objects: they too consist of state and related behavior. An object stores its state in fields (variables in some programming languages) and exposes its behavior through methods (functions in some programming languages). Methods operate on an object's internal state and serve as the primary mechanism for object-to-object communication. Hiding internal state and requiring all interaction to be performed through an object's methods is known as data encapsulation — a fundamental principle of object-oriented programming.

Object is a bundle of related variables and functions (also known methods). Objects share two characteristics:

•State: State is a well defined condition of an item. A state captures the relevant aspects of an object
•Behavior: Behavior is the observable effects of an operation or event,

Examples:

1)Object: House

State: Current Location, Color, Area of House etc Behavior: Close/Open main door.

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2)Object: Car State: Color, Make

Behavior: Climb Uphill, Accelerate, SlowDown etc

Everything a software object knows (State) and can do (Behavior) is represented by variables and methods (functions) in the object respectively.

Bundling code into individual software objects provides a number of benefits, including:

- Modularity: The source code for an object can be written and maintained independently of the source code for other objects. Once created, an object can be easily passed around inside the system.
- Information-hiding:By interacting only with an object's methods, the details of its internal implementation remain hidden from the outside world.
- Code re-use: If an object already exists (perhaps written by another software developer), you can use that object in your program. This allows specialists to implement/test/debug complex, task-specific objects, which you can then trust to run in your own code.
- Pluggability and debugging ease: If a particular object turns out to be problematic, you can simply remove it from your application and plug in a different object as its replacement. This is analogous to fixing mechanical problems in the real world. If a bolt breaks, you replace it, not the entire machine.

2What is Class?

In the real world, you'll often find many individual objects all of the same kind. There may be thousands of other bicycles in existence, all of the same make and model. Each bicyclewasbuilt from the same set of blueprints and therefore contains the same components. In object-oriented terms, we say that your bicycle is an instance of the class of objects known as bicycles. A class is the blueprint from which individual objects are created.

The following Bicycle class is one possible implementation of a bicycle: class Bicycle {
int cadence = 0; int speed = 0; int
gear = 1;

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```

void changeCadence(int newValue) { cadence = newValue;
                                }

void changeGear(int newValue) { gear = newValue;
                                }

void speedUp(int increment) { speed = speed + increment;
                                }

void applyBrakes(int decrement) { speed = speed - decrement;
                                }

void printStates() { System.out.println("cadence:" +
                                cadence + " speed:" + speed + " gear:" + gear);
                                }
}

```

The syntax of the Java programming language will look new to you, but the design of this class is based on the previous discussion of bicycle objects. The fields `cadence`, `speed`, and `gear` represent the object's state, and the methods (`changeCadence`, `changeGear`, `speedUp` etc.) define its interaction with the outside world.

You may have noticed that the `Bicycle` class does not contain a `main` method. That's because it's not a complete application; it's just the blueprint for bicycles that might be used in an application. The responsibility of creating and using new `Bicycle` objects belongs to some other class in your application.

Here's a `BicycleDemo` class that creates two separate `Bicycle` objects and invokes their methods:

```

class BicycleDemo {
    public static void main(String[] args) {

```

```

// Create two different
// Bicycle objects
Bicycle bike1 = new Bicycle(); Bicycle bike2 = new
Bicycle();

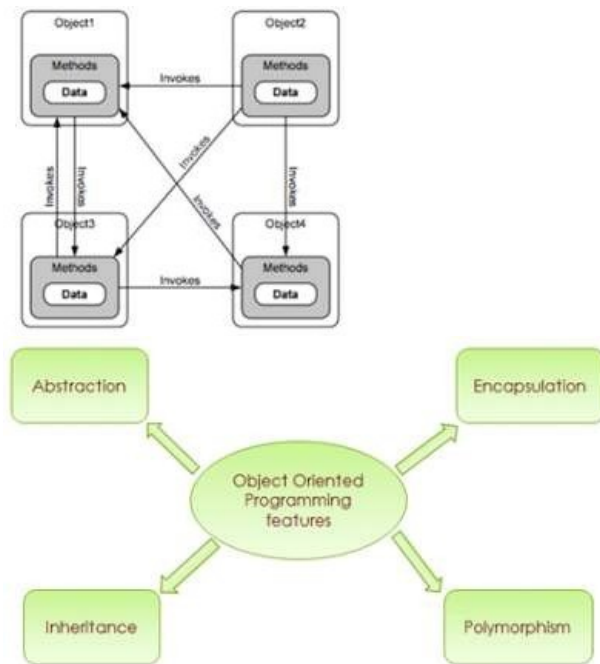
// Invoke methods on
// those objects bike1.changeCadence(50);
bike1.speedUp(10); bike1.changeGear(2);
bike1.printStates(); bike2.changeCadence(50);
bike2.speedUp(10); bike2.changeGear(2);
bike2.changeCadence(40); bike2.speedUp(10);
bike2.changeGear(3); bike2.printStates(); }

```

The output of this test prints the ending pedal cadence, speed, and gear for the two bicycles: cadence:50 speed:10 gear:2

cadence:40 speed:20 gear:3
 3Message passing

A single object by itself may not be very useful. An application contains many objects. One object interacts with another object by invoking methods (or functions) on that object. Through the interaction of objects, programmers achieve a higher order of functionality which has complex behavior. One object invoking methods on another object is known as Message passing. It is also referred to as Method Invocation.



Object Oriented Programming features:

4.1 Abstraction

The purpose of abstraction is to hide information that is not relevant or rather show only relevant information and to simplify it by comparing it to something similar in the real world. Abstraction means "The process of forming of general and relevant concept from more complex scenarios".

4.2 Encapsulation

Encapsulation means the localization of the information or knowledge within an object. Encapsulation is also called as "Information Hiding".

- Objects encapsulate data and implementation details. To the outside world, an object is a black box that exhibits a certain behavior.
- The behavior of this object is what which is useful for the external world or other objects.
- An object exposes its behavior by means of methods or functions.
- The set of functions an object exposes to other objects or external world acts as the

interface of the object.

..3Inheritance

The process by which one class acquires the properties and functionalities of another class. Inheritance provides the idea of reusability of code and each sub class defines only those features that are unique to it.

- Inheritance is a mechanism of defining a new class based on an existing class.

- Inheritance enables reuse of code. Inheritance also provides scope for refinement of the existing class.

- Inheritance helps in specialization

- Inheritance implements the "Is-A" or "Kind Of/ Has-A" relationship.

- The existing (or original) class is called the base class or super class or parent class. The new class which inherits from the base class is called the derived class or sub class or child class.

The biggest advantage of Inheritance is that, code in base class need not be rewritten in the derived class. The member variables and methods of the base class can be used in the derived class as well.

Types of Inheritance:

1)Multilevel Inheritance: Multilevel inheritance refers to a mechanism in OO technology where one can inherit from a derived class, thereby making this derived class the base class for the new class.

2)Multiple Inheritance: "Multiple Inheritance" refers to the concept of one class inheriting from more than one base class. The inheritance we learnt earlier had the concept of one base class or parent. The problem with "multiple inheritance" is that the derived class will have to manage the dependency on two base classes.

Note:Multilevel inheritance is allowed in Java but not multiple inheritance.

..4Polymorphism

Polymorphism is a feature that allows one interface to be used for a general class of actions. It's an operation may exhibit different behavior in different instances. The behavior depends on the types of data used in the operation. It plays an important role in allowing objects having different internal structures to share the same external interface. Polymorphism is extensively used in implementing inheritance.

Types of Polymorphism:

1) Static Polymorphism:

- Function Overloading - within same class more than one method having same name but differing in signature.
- Resolved during compilation time.
- Return type is not part of method signature.

2) Dynamic Polymorphism:

- Function Overriding - keeping the signature and return type same, method in the Base class is redefined in the derived class.
- Resolved during run time.
- Which method to be invoked is decided by the object that the reference points to and not by the type of the reference.

3. Java Language Elements

When we consider a Java program it can be defined as a collection of objects that communicate via invoking each other's methods. Let us now briefly look into what do class, object, methods and instance variables mean.

1) Object - Objects have states and behaviors. Example: A dog has states - color, name, breed as well as behaviors - wagging, barking, eating. An object is an instance of a class.

2) Class - A class can be defined as a template/ blue print that describes the behaviors/states that object of its type support.

3) Methods - A method is basically a behavior. A class can contain many methods. It is in methods where the logics are written, data is manipulated and all the actions are executed.

4) Instance Variables - Each object has its unique set of instance variables. An object's state is created by the values assigned to these instance variables.

3.1 Java Keywords:

The following list shows the reserved words in Java. These reserved words may not be used as constant or variable or any other identifier names.

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abstract	assert	boolean	break
byte	case	catch	char
class	const	continue	default
do	double	else	enum
extends	final	finally	float
for	goto	if	implements
import	instanceof	int	interface
long	native	new	package
private	protected	public	return
short	static	strictfp	super
switch	synchronized	this	throw
throws	transient	try	void
volatile	while		

3.2 Java Identifiers:

All Java components require names. Names used for classes, variables and methods are called identifiers. In Java, there are several points to remember about identifiers. They are as follows:

1) All identifiers should begin with a letter (A to Z or a to z), currency character (\$) or an underscore (_).

2) After the first character identifiers can have any combination of characters.

3) A key word cannot be used as an identifier.

4) Most importantly identifiers are case sensitive.

Examples:

age, \$salary, value, 1_value

(legal identifiers)

123abc, -salary

(illegal identifiers)

3.3 Java Datatypes:

There are two data types available in Java:

1) Primitive Data Types 2) Reference/Object Data Types

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..1 Primitive Data Types:

There are eight primitive data types supported by Java. Primitive data types are predefined by the language and named by a keyword. Let us now look into detail about the eight primitive data types.

Data type	Size	Range	Example
byte	8-bit	-128 to 127 (-2 ⁸ to 2 ⁸ -1)	byte a = 100 byte b = -50
short	16-bit	-32,768 to 32,767 (-2 ¹⁶ to 2 ¹⁶ -1)	short s = 10000 short r = -20000

int	32-bit	-2,147,483,648 to 2,147,483,647 (-2 ³¹ to 2 ³¹ -1)	int a = 100000 int b = -200000
long	64-bit	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 (-2 ⁶⁴ to 2 ⁶⁴ -1)	long a = 100000L int b = -200000L
float	32-bit	3.4e-038 to 3.4e+038	float f1 = 234.5f
double	64-bit	1.7e-308 to 1.7e+308	double d1 = 123.4
char	16-bit	0 to 65,535	Char ch = 'A'
boolean	1-bit	True/False	boolean one = true

..2Reference Data Types:

Reference variables are created using defined constructors of the classes. They are used to access objects. These variables are declared to be of a specific type that cannot be changed. For example, Employee, Puppy *etc.*

- Class objects, and various type of array variables come under reference data type.

- Default value of any reference variable is null.

- A reference variable can be used to refer to any object of the declared type or any compatible type.

- Example: Animal animal = new Animal("giraffe");

..3Java Literals:

A literal is a source code representation of a fixed value. They are represented directly in the code without any computation. Literals can be assigned to any primitive type variable. For example:

```
byte a = 68; char a = 'A'
```

byte, int, long, and short can be expressed in decimal(base 10), hexadecimal(base 16) or octal(base 8) number systems as well.

Prefix 0 is used to indicate octal and prefix 0x indicates hexadecimal when using these number systems for literals. For example: int decimal = 100; int octal = 0144; int hexa = 0x64;

String literals in Java are specified like they are in most other languages by enclosing a sequence of characters between a pair of double quotes. Examples of string literals are: "Hello World" "two\nlines"
""This is in quotes""

String and char types of literals can contain any Unicode characters. For example: char a = '\u0001'; String a =

```
"\u0001";
```

Java language supports few special escape sequences for String and char literals as well. They are:

Notation	Character represented
\n	Newline (0x0a)
\r	Carriage return (0x0d)
\f	Formfeed (0x0c)
\b	Backspace (0x08)
\s	Space (0x20)
\t	tab
"	Double quote
'	Single quote
\	backslash
\ddd	Octal character (ddd)
\uxxxx	Hexadecimal UNICODE character (xxxx)

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.4Java Variables:

Variables are nothing but reserved memory locations to store values. This means that when you create a variable you reserve some space in memory. Based on the data type of a variable, the operating system allocates memory and decides what can be stored in the reserved memory. Therefore, by assigning different data types to variables, you can store integers, decimals, or characters in these variables.

A variable provides us with named storage that our programs can manipulate. Each variable in Java has a specific type, which determines the size and layout of the variable's memory; the range of values that can be stored within that memory; and the set of operations that can be applied to the variable.

You must declare all variables before they can be used. The basic form of a variable declaration is shown here: data type variable [= value][, variable [= value] ...] ;

Here data type is one of Java's datatypes and variable is the name of the variable. To declare more than one variable of the specified type, you can use a comma-separated list.

Following are valid examples of variable declaration and initialization in Java:

```
int a, b, c; // Declares three ints, a, b, and c.int a = 10, b = 10; // Example of
initialization byte B = 22; // initializes a byte type variable B.double pi = 3.14159; //
declares and assigns a value of PI.
```

```
char a = 'a'; // the char variable a is initialized with value 'a'
There are three kinds of variables in Java:
```

1)Local variables2)Instance variables3)Class/static variables

3.5.1 Local variables:

Local variables are declared in methods, constructors, or blocks. Local variables are created when the method, constructor or block is entered and the variable will be destroyed once it exits the method, constructor or block. Access modifiers cannot be used for local variables. Local variables are visible only within the declared method, constructor or block. Local 116

variables are implemented at stack level internally. There is no default value for local variables so local variables should be declared and an initial value should be assigned before the first use.

Example:

Here, age is a local variable. This is defined inside pupAge() method and its scope is limited to this method only.

```
public class Test{
    public void pupAge(){ int age = 0;
        age = age + 7;
        System.out.println("Puppy age is : " + age);

    }

    public static void main(String args[]){ Test test = new Test();
        test.pupAge();

    }
}
```

This would produce the following result: Puppy age is: 7

Example:

Following example uses age without initializing it, so it would give an error at the time of compilation.

```
public class Test{
    public void pupAge(){ int age;
        age = age + 7;
        System.out.println("Puppy age is : " + age);

    }

    public static void main(String args[]){ Test test = new Test();

    }
```



```

        test.pupAge();
    }
}

```

This would produce the following error while compiling it:

```

Test.java:4:variable number might not have been initialized
age = age + 7;
^ 1 error

```

3.5.2 Instance variables:

Instance variables are declared in a class, but outside a method, constructor or any block. When a space is allocated for an object in the heap, a slot for each instance variable value is created. Instance variables are created when an object is created with the use of the keyword 'new' and destroyed when the object is destroyed. Instance variables hold values that must be referenced by more than one method, constructor or block, or essential parts of an object's state that must be present throughout the class. Instance variables can be declared in class level before or after use. Access modifiers can be given for instance variables.

The instance variables are visible for all methods, constructors and block in the class. Normally, it is recommended to make these variables private (access level). However visibility for subclasses can be given for these variables with the use of access modifiers.

Instance variables have default values. For numbers the default value is 0, for Booleans it is false and for object references it is null. Values can be assigned during the declaration or within the constructor.

Instance variables can be accessed directly by calling the variable name inside the class. However within static methods and different class (when instance variables are given accessibility) should be called using the fully qualified name.

ObjectReference.VariableName

Example:

```

import java.io.*;
public class Employee{
    // this instance variable is visible for any child class. public String name;

    // salary variable is visible in Employee class only. private double salary;

    // The name variable is assigned in the constructor. public Employee (String empName){
        name = empName;

    }

    // The salary variable is assigned a value. public void setSalary(double empSal){
        salary = empSal;

    }

    // This method prints the employee details. public void printEmp(){
        System.out.println("name : " + name ); System.out.println("salary : " + salary);

    }

    public static void main(String args[]){
        Employee empOne = new Employee("Ajay"); empOne.setSalary(5000);
        empOne.printEmp();

    }

}

```

This would produce the following result: name : Ajay

salary :5000.0

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.5Comments in Java:

Java supports single-line and multiline comments very similar to c and c++. All characters available inside any comment are ignored by Java compiler.

```

public class MyFirstJavaProgram{
    /* This is my first java program.
    *This will print 'Hello World' as the output*This is an example of multiline comments.

    */

    public static void main(String []args){
        // This is an example of single line comment
        /* This is also an example of single line comment. */ System.out.println("Hello
        World");

    }

}

```

.6Using Blank Lines:

A line containing only whitespace, possibly with a comment, is known as a blank line, and Java totally ignores it.

4. Java Operators

Java provides a rich set of operators to manipulate variables. We can divide all the Java operators into the following groups:
 •Arithmetic Operators•Relational Operators•Bitwise Operators•Logical Operators•Assignment Operators•Conditional Operators

4.1The Arithmetic Operators:

Arithmetic operators are used in mathematical expressions in the same way that they are used in algebra. The following table lists the arithmetic operators:

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Assume integer variable A holds 10 and variable B holds 20, then:

Operator	Description	Example
+	Addition - Adds values on either side of the operator	A + B will give 30
-	Subtraction - Subtracts right hand operand from left hand operand	A - B will give -10
*	Multiplication - Multiplies values on either side of the operator	A * B will give 200
/	Division - Divides left hand operand by right hand operand	B / A will give 2
%	Modulus - Divides left hand operand by right hand operand and returns remainder	B % A will give 0
++	Increment - Increases the value of operand by 1	B++ gives 21
--	Decrement - Decreases the value of operand by 1	B-- gives 19

4.2 The Relational Operators:

There are following relational operators supported by Java language Assume variable A holds 10 and variable B holds 20, then:

Operator	Description	Example
==	Checks if the values of two operands are equal or not, if yes then condition becomes true.	(A == B) is not true.
!=	Checks if the values of two operands are equal or not, if values are not equal then condition becomes true.	(A != B) is true.
>	Checks if the value of left operand is greater than the value of right operand, if yes then condition becomes true.	(A > B) is not true.
<	Checks if the value of left operand is less than the value of right operand, if yes then condition becomes true.	(A < B) is true.
>=	Checks if the value of left operand is greater than or equal to the value of right operand, if yes then condition becomes true	(A >= B) is not true.
<=	Checks if the value of left operand is less than or equal to the value of right operand, if yes then condition becomes true.	(A <= B) is true.

4.3 The Bitwise Operators:

Java defines several bitwise operators, which can be applied to the integer types, long, int, short, char, and byte. Bitwise operator works on bits and performs bit-by-bit operation.

Assume if a = 60; and b = 13; now in binary format they will be as follows: a = 0011 1100

b = 0000 1101

----- a&b = 0000 1100

a|b = 0011 1101

a^b = 0011 0001

~a = 1100 0011

The following table lists the bitwise operators:

Assume integer variable A holds 60 and variable B holds 13 then:

Operator	Description	Example
&	Binary AND Operator copies a bit to the result if it exists in both operands.	(A & B) will give 12 which is 0000 1100
	Binary OR Operator copies a bit if it exists in either operand.	(A B) will give 61 which is 0011 1101
^	Binary XOR Operator copies the bit if it is set in one operand but not both.	(A ^ B) will give 49 which is 0011 0001
~	Binary Ones Complement Operator is unary and has the effect of 'flipping' bits.	(~A) will give -61 which is 1100 0011 in 2's complement form due to a signed binary number.
<<	Binary Left Shift Operator. The left operands value is moved left by the number of bits specified by the right operand.	A << 2 will give 240 which is 1111 0000

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>>	Binary Right Shift Operator. The left operands value is moved right by the number of bits specified by the right operand.	A >> 2 will give 15 which is 1111
>>>	Shift right zero fill operator. The left operands value is moved right by the number of bits specified by the right operand and shifted values are filled up with zeros.	A >> 2 will give 15 which is 0000 1111

.4The Logical Operators:

The following table lists the logical operators:

Assume Boolean variables A holds true and variable B holds false, then

Operator	Description	Example
&&	Called Logical AND operator. If both the operands are non-zero, then the condition becomes true.	(A && B) is false.
	Called Logical OR Operator. If any of the two operands are non-zero, then the condition becomes true.	(A B) is true.
!	Called Logical NOT Operator. Use to reverses the logical state of its operand. If a condition is true then Logical NOT operator will make false.	!(A && B) is true.

.5The Assignment Operators:

There are following assignment operators supported by Java language:

Operator	Description	Example
=	Simple assignment operator, Assigns values from right side operands to left side operand	C = A + B will assign value of A + B into C

+=	Add AND assignment operator, It adds right operand to the left operand and assign the result to left operand	C += A is equivalent to C = C + A
-=	Subtract AND assignment operator, It subtracts right operand from the left operand and assign the result to left operand	C -= A is equivalent to C = C - A
*=	Multiply AND assignment operator, It multiplies right operand with the left operand and assign the result to left operand	C = A is equivalent to C = C A

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/=	Divide AND assignment operator, It divides left operand with the right operand and assign the result to left operand	C /= A is equivalent to C = C / A
%=	Modulus AND assignment operator, It takes modulus using two operands and assign the result to left operand	C %= A is equivalent to C = C % A
<<=	Left shift AND assignment operator	C <<= 2 is same as C = C << 2
>>=	Right shift AND assignment operator	C >>= 2 is same as C = C >> 2
&=	Bitwise AND assignment operator	C &= 2 is same as C = C & 2
^=	bitwise exclusive OR and assignment operator	C ^= 2 is same as C = C ^ 2
=	bitwise inclusive OR and assignment operator	C = 2 is same as C = C 2

Conditional operator is also known as the ternary operator. This operator consists of three operands and is used to evaluate Boolean expressions. The goal of the operator is to decide which value should be assigned to the variable. The operator is written as: variable x = (expression) ? value if true : value if false Following is the example:

```
public class Test {
    public static void main(String args[]){ int a , b;
        a = 10;
        b = (a == 1) ? 20: 30;
        System.out.println( "Value of b is : " + b );
        b = (a == 10) ? 20: 30;
        System.out.println( "Value of b is : " + b );
```

}

}

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This would produce the following result:
 Value of b is : 30 Value of b is : 20

4.7 Precedence of Java Operators:

Operator precedence determines the grouping of terms in an expression. This affects how an expression is evaluated. Certain operators have higher precedence than others; for example, the multiplication operator has higher precedence than the addition operator. For example, `x = 7 + 3 * 2`; here `x` is assigned 13, not 20 because `*` operator has higher precedence than `+`, so it first gets multiplied with `3*2` and then adds into 7.

Here, operators with the highest precedence appear at the top of the table, those with the lowest appear at the bottom. Within an expression, higher precedence operators will be evaluated first.

Category	Operator	Associativity
Postfix	() [] . (dot operator)	Left to right
Unary	++ -- ! ~	Right to left
Multiplicative	* / %	Left to right
Additive	+ -	Left to right
Shift	>> >>> <<	Left to right
Relational	> >= < <=	Left to right
Equality	== !=	Left to right
Bitwise AND	&	Left to right
Bitwise XOR	^	Left to right
Bitwise OR		Left to right
Logical AND	&&	Left to right
Logical OR		Left to right
Conditional	?:	Right to left
Assignment	= += -= *= /= %= >>= <<= &= ^= =	Right to left
Comma	,	Left to right

This would produce the following result:

5. Control Flow

In java, control flow is managed by following two types of statements:

- 1) Decision Making Statements
- 2) Loop Control Statements

5.1 Decision Making Statements

There are two types of decision making statements in Java. They are:

- 1) if statements
- 2) switch statements

5.1.1 The if Statement:

An if statement consists of a Boolean expression followed by one or more statements.

Syntax:

```
if(Boolean_expression)
```

```
{
```

```
    //Statements will execute if the Boolean expression is true
```

```
}
```

If the Boolean expression evaluates to true then the block of code inside the if statement will be executed. If not the first set of code after the end of the if statement (after the closing curly brace) will be executed.

Example:

```
public class Test {  
    public static void main(String args[]){ int x = 10, y=20;
```

```
        if( x < y ){
```

```
            System.out.print("x is less than y");
```

```
        }
```

```
    }
```

```
}
```

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This would produce the following result: x is less than y

..2The if...else Statement:

An if statement can be followed by an optional else statement, which executes when the Boolean expression is false.

Syntax:

```
if(Boolean_expression){  
    //Executes when the Boolean expression is true  
}  
else{  
    //Executes when the Boolean expression is false  
}
```

Example:

```
public class Test {  
    public static void main(String args[]){ int x = 20, y = 10;  
  
        if( x < y ){  
            System.out.print("x is less than y");  
        }  
        else{  
            System.out.print("x is not less than y");  
        }  
    }  
}
```

This would produce the following result: x is not less than y

Example Program:

```
// Java Program to check Even or Odd number import java.util.Scanner;
```



```
class CheckEvenOdd
{
    public static void main(String args[])
    {
        int num;
        System.out.println("Enter an Integer number:");
        //The input provided by user is stored in num Scanner input = new
        Scanner(System.in); num = input.nextInt(); /* If number is divisible by 2
        then it's an even number
        else odd number/ if ( num % 2 == 0 )
            System.out.println("Entered number is even");
```

else

```
}  
}
```

```
System.out.println("Entered number is odd");
```

Output 1:

Enter an Integer number: 78

Entered number is even

Output 2:

Enter an Integer number: 77

Entered number is odd

..3The if...else if...else Statement:

An if statement can be followed by an optional else if...else statement, which is very useful to test various conditions using single if...else if statement. When using if, else if, else statements there are few points to keep in mind. An if can have zero or one else's and it must come after any else if's. An if can have zero to many else if's and they must come before the else. Once an else if succeeds, none of the remaining else if's or else's will be tested.

Syntax:

```

if(Boolean_expression 1){
    //Executes when the Boolean expression 1 is true
}else if(Boolean_expression 2){
    //Executes when the Boolean expression 2 is true
}else if(Boolean_expression 3){
    //Executes when the Boolean expression 3 is true
}else {
    //Executes when the none of the above condition is true.
}

```

Example:

```

public class Test {
    public static void main(String args[]){ int x = 30;
        if( x == 10 ){
            System.out.print("Value of X is 10");
        }else if( x == 20 ){
            System.out.print("Value of X is 20");
        }else if( x == 30 ){
            System.out.print("Value of X is 30");
        }else{
            System.out.print("This is else statement");
        }
    }
}

```

This would produce the following result:Value of X is 30

Example Program:

// Java Program to find largest of three numbers using if ... else if import java.util.Scanner;

```
class LargestOfThreeNumbers

{

    public static void main(String args[])

    {

        int x, y, z;
        System.out.println("Enter three integers "); Scanner in = new
        Scanner(System.in);

        x = in.nextInt(); y = in.nextInt(); z =
        in.nextInt();

        if ( x > y && x > z )
            System.out.println("First number is largest."); else if ( y > x && y > z )
            System.out.println("Second number is largest."); else if ( z > x && z > y )
            System.out.println("Third number is largest.");
```

else

}

}

System.out.println("Entered numbers are not distinct.");

Output:

Enter three integers 10 30 20

Second number is largest.

5.1.4 Nested if...else Statement:

It is always legal to nest if-else statements which means you can use one if or else if statement inside another if or else if statement.

Syntax:

if(Boolean_expression 1){

//Executes when the Boolean expression 1 is true if(Boolean_expression 2){

```
//Executes when the Boolean expression 2 is true
```

```
}  
}
```

You can nest else if...else in the similar way as we have nested if statement.

Example:

```
public class Test {  
    public static void main(String args[]){ int x = 10;  
        int y = 20;  
        if( x == 10 ){  
            if( y == 20 ){  
                System.out.print("X = 10 and Y = 20");  
            }  
        }  
    }  
}
```

This would produce the following result: X = 10 and Y = 20

// Java Program to find largest of three numbers using nested if import java.util.Scanner;

```
class LargestOfThreeNumbers  
  
    {  
  
        public static void main(String args[])  
  
        {  
  
            int x, y, z;  
            System.out.println("Enter three integers "); Scanner in = new  
            Scanner(System.in);  
  
            x = in.nextInt(); y = in.nextInt(); z =  
            in.nextInt();  
        }  
    }
```

```
if ( x > y )  
    {  
        If( x > z )  
            System.out.println("First number is largest.");  
        }  
    }  
else  
    {  
        System.out.println("Third number is largest.");  
    }
```

```
If( y > z )  
    System.out.println("Second number is largest.");
```


else

}

}

}

```
System.out.println("Third number is largest.");
```

Output:

Enter three integers 10 30 20

Second number is largest.

5.1.5 The switch Statement:

A switch statement allows a variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each case.

Syntax:

```
switch(expression){ case value :  
    //Statements break; //optional  
    case value :  
    //Statements break; //optional
```

```
//You can have any number of case statements. default : //Optional
//Statements

}
```

The following rules apply to a switch statement:

- 1)The variable used in a switch statement can only be a byte, short, int, or char.
- 2)You can have any number of case statements within a switch. Each case is followed by the value to be compared to and a colon.
- 3)The value for a case must be the same data type as the variable in the switch and it must be a constant or a literal.
- 4)When the variable being switched on is equal to a case, the statements following that case will execute until a break statement is reached.
- 5)When a break statement is reached, the switch terminates, and the flow of control jumps to the next line following the switch statement.
- 6)Not every case needs to contain a break. If no break appears, the flow of control will fall through to subsequent cases until a break is reached.
- 7)A switch statement can have an optional default case, which must appear at the end of the switch. The default case can be used for performing a task when none of the cases is true. No break is needed in the default case.

Example:

```
public class Test {
    public static void main(String args[]){
        //char grade = args[0].charAt(0); char grade = 'C';

        switch(grade)

        {

            case 'A' :
                System.out.println("Excellent!"); break;
        }
    }
}
```

```

        case 'B' :
case 'C' :
    System.out.println("Well done");break;
case 'D' :
    System.out.println("You passed"); case 'F' :
    System.out.println("Better try again"); break;
default :
    System.out.println("Invalid grade");

    }

System.out.println("Your grade is " + grade);

    }

}

```

Compile and run above program using various command line arguments. This would produce the following result: WelldoneYour grade is a C

Program Example:

// Java Program to print the day import java.util.Scanner;

```

class CheckDay

    {

        public static void main(String args[])

        {

            int n;
            System.out.println("Enter the number:");
            //The input provided by user is stored in n Scanner input = new
            Scanner(System.in); n = input.nextInt();

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```

```
switch(n)

{
    case 1 : System.out.println("MONDAY");break;
    case 2 : System.out.println("TUESDAY");break;
    case 3 : System.out.println("WEDNESDAY");break;
    case 4 : System.out.println("THURSDAY");break;
    case 5 : System.out.println("FRIDAY");break;
    case 6 : System.out.println("SATURDAY");break;
    case 7 : System.out.println("SUNDAY");break;
```

default:

```
}  
}  
}
```

```
System.out.println("WRONG ENTRY");
```

Output 1:

Enter the number: 3

WEDNESDAY

Output 2:

Enter the number: 8

WRONG ENTRY

6. Array

Java provides a data structure, the array, which stores a fixed-size sequential collection of elements of the same type. An array is used to store a collection of data, but it is often more

useful to think of an array as a collection of variables of the same type.

Instead of declaring individual variables, such as `number0`, `number1`, ..., and `number99`, you declare one array variable such as `numbers` and use `numbers[0]`, `numbers[1]`, and ..., `numbers[99]` to represent individual variables.

.1Declaring Array Variables:

To use an array in a program, you must declare a variable to reference the array, and you must specify the type of array the variable can reference. Here is the syntax for declaring an array variable: `dataType[] arrayRefVar`; // preferred way. or `dataType arrayRefVar[]`; // works but not preferred way.

Example:

The following code snippets are examples of this syntax: `double[] myList`; // preferred way.

or

`double myList[]`; // works but not preferred way.

2Creating Arrays:

You can create an array by using the `new` operator with the following syntax: `arrayRefVar = new`

`dataType[arraySize]`; The above statement does two things:

1)It creates an array using `new dataType[arraySize]`;

2)It assigns the reference of the newly created array to the variable `arrayRefVar`.

Declaring an array variable, creating an array, and assigning the reference of the array to the variable can be combined in one statement, as shown below: `dataType[] arrayRefVar = new dataType[arraySize]`;

Alternatively you can create arrays as follows: `dataType[] arrayRefVar = {value0, value1, ..., valuek};` The array elements are accessed through the index. Array indices are 0-based; that is, they start from 0 to `arrayRefVar.length-1`.

Example:

Following statement declares an array variable, `myList`, creates an array of 10 elements of double type and assigns its reference to `myList`: `double[] myList = new double[10];`

Example Program:

This program uses linear search algorithm to find out a number among all other numbers entered by user.

```
/* Program: Linear Search Example
*Written by: Chaitanya from beginnersbook.com
class LinearSearchExample
```

```

    {
        public static void main(String args[])
        {
            int counter, num, item, array[];
            //To capture user input
            Scanner input = new Scanner(System.in); System.out.println("Enter number of
            elements:"); num = input.nextInt(); //Creating array to store the all the numbers
            array = new int[num]; System.out.println("Enter " + num + " integers"); //Loop
            to store each numbers in array for (counter = 0; counter < num; counter++)
            array[counter] = input.nextInt();
        }
    }
}
```

```

System.out.println("Enter the search value:"); item = input.nextInt();

for (counter = 0; counter < num; counter++)

    {

        if (array[counter] == item)

            {

                System.out.println(item+" is present at location " +(counter+1));
                /*Item is found so to stop the search and to come out of the
                loop use break statement./ break;

            }

        }

    if (counter == num)
        System.out.println(item + " doesn't exist in array.");

    }

}

```

Output 1:
Enter number of elements: 6
Enter 6 integers
22
33
45
1
3
99
Enter the search value: 45
45 is present at location 3
Output 2:
Enter number of elements: 4

Enter 4 integers

11

22

4

5

Enter the search value: 99

99 doesn't exist in array.

7. Class Design

Java is an Object-Oriented Language. In object-oriented programming technique, we design a program using objects and classes. In this chapter, we will look into the concepts Classes and Objects.

- Object -Objects have states and behaviors. Example: A dog has states - color, name, breed as well as behaviors -wagging, barking, eating. An object is an instance of a class.

- Class - A class can be defined as a template/blue print that describes the behaviors/states that object of its type support.

7.1 Objects in Java:

Let us now look deep into what are objects. If we consider the real-world we can find many objects around us, Cars, Dogs, Humans, *etc.* All these objects have a state and behavior. If we consider a dog, then its state is - name, breed, color, and the behavior is - barking, wagging, running. If you compare the software object with a real world object, they have very similar characteristics. Software objects also have a state and behavior. A software object's state is stored in fields and behavior is shown via methods. So in software development, methods operate on the internal state of an object and the object-to-object communication is done via methods.

7.2 Classes in Java:

A class is a blue print from which individual objects are created. A sample of a class is given below: `public class Dog{`

```
String breed; int age; String color;

void barking(){

}

void hungry(){

}

void sleeping(){

}

}
```

A class can contain any of the following variable types.

- Local variables: Variables defined inside methods, constructors or blocks are called local variables. The variable will be declared and initialized within the method and the variable will be destroyed when the method has completed.
- Instance variables: Instance variables are variables within a class but outside any method. These variables are instantiated when the class is loaded. Instance variables can be accessed from inside any method, constructor or blocks of that particular class.
- Class variables: Class variables are variables declared with in a class, outside any method, with the static keyword.

A class can have any number of methods to access the value of various kinds of methods. In the above example, barking(), hungry() and sleeping() are methods.

7.3 Constructors:

When discussing about classes, one of the most important sub topic would be constructors. Every class has a constructor. If we do not explicitly write a constructor for a class the Java compiler builds a default constructor for that class. Each time a new object is created, at least one constructor will be invoked. The main rule of constructors is that they should have the same name as the class. A class can have more than one constructor. Example of a constructor is given below: public class Puppy{ public Puppy(){

```
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}

public Puppy(String name){
// This constructor has one parameter, name.

}

}
```

Java also supports Singleton Classes where you would be able to create only one instance of a class.

7.4 Creating an Object:

As mentioned previously, a class provides the blueprints for objects. So basically an object is created from a class. In Java, the new key word is used to create new objects. There are three steps when creating an object from a class:

1)Declaration: A variable declaration with a variable name with an object type.

2)Instantiation: The 'new' key word is used to create the object.

3)Initialization: The 'new' keyword is followed by a call to a constructor. This call initializes the new object.

Example of creating an object is given below: public class Puppy{

```
public Puppy(String name){
// This constructor has one parameter, name. System.out.println("Passed Name is :"+ name );

}

public static void main(String []args){
// Following statement would create an object myPuppy
Puppy myPuppy = new Puppy(
"tommy" );

}

}
```

If we compile and run the above program, then it would produce the following result: Passed Name is :tommy

7.5 Accessing Instance Variables and Methods:

Instance variables and methods are accessed via created objects. To access an instance variable the fully qualified path should be as follows: /* First create an object */ ObjectReference = new Constructor();

/* Now call a variable as follows */ ObjectReference.variableName;

/* Now you can call a class method as follows */
ObjectReference.MethodName();

Example:

This example explains how to access instance variables and methods of a class: public class Puppy{

```
    int puppyAge;
    public Puppy(String name){
        // This constructor has one parameter, name. System.out.println("Passed Name is : " + name );

    }

    public void setAge( int age ){ puppyAge = age;

    }

    public int getAge( ){
        System.out.println("Puppy's age is : " + puppyAge ); return puppyAge;

    }

    public static void main(String []args){
        /* Object creation */
        Puppy myPuppy = new Puppy( "tommy" );
        /* Call class method to set puppy's age */ myPuppy.setAge( 2 );

        /* Call another class method to get puppy's age */
```

```

myPuppy.getAge( );
/* You can access instance variable as follows as well */ System.out.println("Variable Value : " + myPuppy.puppyAge ); }
}

```

If we compile and run the above program, then it would produce the following result:

Passed Name is :tommy Puppy's age is :2 Variable

Value :2

.6Source file declaration rules:

As the last part of this section let's now look into the source file declaration rules. These rules are essential when declaring classes, import statements and package statements in a source file.

There can be only one public class per source file.

1)A source file can have multiple non public classes.

2)The public class name should be the name of the source file as well which should be appended by .java at the end. For example:
The class name is public class Employee{ } Then the source file should be as Employee.java.

3)If the class is defined inside a package, then the package statement should be the first statement in the source file.

4)If import statements are present then they must be written between the package statement and the class declaration. If there are no package statements then the import statement should be the first line in the source file.

5)Import and package statements will imply to all the classes present in the source file. It is not possible to declare different import and/or package statements to different classes in the source file.

.7Java Package:

In simple, it is a way of categorizing the classes and interfaces. When developing applications in Java, hundreds of classes and interfaces will be written, therefore categorizing these classes is a must as well as makes life much easier.

Import statements:

In Java if a fully qualified name, which includes the package and the class name, is given then the compiler can easily locate the source code or classes. Import statement is a way of giving the proper location for the compiler to find that particular class.

For example, the following line would ask compiler to load all the classes available in directory java_installation/java/io : import java.io.*;

8. Exception Handling

An exception is a problem that arises during the execution of a program. An exception can occur for many different reasons, including the following:

1)A user has entered invalid data.

2)A file that needs to be opened cannot be found.

3)A network connection has been lost in the middle of communications or the JVM has run out of memory.

Some of these exceptions are caused by user error, others by programmer error, and others by physical resources that have failed in some manner.

To understand how exception handling works in Java, you need to understand the three categories of exceptions:

- Checked exceptions:** A checked exception is an exception that is typically a user error or a problem that cannot be foreseen by the programmer. For example, if a file is to be opened, but the file cannot be found, an exception occurs. These exceptions cannot simply be ignored at the time of compilation.
- Runtime exceptions:** A runtime exception is an exception that occurs that probably could have been avoided by the programmer. As opposed to checked exceptions, runtime exceptions are ignored at the time of compilation.
- Errors:** These are not exceptions at all, but problems that arise beyond the control of the user or the programmer. Errors are typically ignored in your code because you can rarely do anything about an error. For example, if a stack overflow occurs, an error will arise. They are also ignored at the time of compilation.

8.1 Exception Hierarchy:

All exception classes are subtypes of the `java.lang.Exception` class. The exception class is a subclass of the `Throwable` class. Other than the exception class there is another subclass called `Error` which is derived from the `Throwable` class.

Errors are not normally trapped from the Java programs. These conditions normally happen in case of severe failures, which are not handled by the Java programs. Errors are generated to indicate errors generated by the runtime environment. Example : JVM is out of Memory. Normally programs cannot recover from errors.

The `Exception` class has two main subclasses: `IOException` class and `RuntimeException` Class.



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2.Exceptions Methods:

Following is the list of important methods available in the `Throwable` class.

SN	Methods with Description
1	<code>public String getMessage()</code> Returns a detailed message about the exception that has occurred. This message is initialized in the <code>Throwable</code> constructor.
2	<code>public Throwable getCause()</code> Returns the cause of the exception as represented by a <code>Throwable</code> object.
3	<code>public String toString()</code> Returns the name of the class concatenated with the result of <code>getMessage()</code>
4	<code>public void printStackTrace()</code> Prints the result of <code>toString()</code> along with the stack trace to <code>System.err</code> , the error output stream.
5	<code>public StackTraceElement [] getStackTrace()</code> Returns an array containing each element on the stack trace. The element at index 0 represents the top of the call stack, and the last element in the array represents the method at the bottom of the call stack.
6	<code>public Throwable fillInStackTrace()</code> Fills the stack trace of this <code>Throwable</code> object with the current stack trace, adding to any previous information in the stack trace.

3.Catching Exceptions:

A method catches an exception using a combination of the `try` and `catch` keywords. A `try/catch` block is placed around the code that might generate an exception. Code within a `try/catch` block is referred to as protected code, and the syntax for using `try/catch` looks like the following: `try`

```
//Protected code
}catch(ExceptionName e1)

{

//Catch block

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}
```

A `catch` statement involves declaring the type of exception you are trying to catch. If an exception occurs in protected code, the `catch` block (or blocks) that follows the `try` is checked. If the type of exception that occurred is listed in a `catch` block, the exception is passed to the `catch` block much as an argument is passed into a method parameter.

Example:

The following is an array is declared with 2 elements. Then the code tries to access the 3rd element of the array which throws an exception.

```
// File Name : ExcepTest.java import java.io.*;
public class ExcepTest{
    public static void main(String args[]){ try{
        int a[] = new int[2];
        System.out.println("Access element three : " + a[3]);
    }catch(ArrayIndexOutOfBoundsException e){ System.out.println("Exception
        thrown : " + e); }
}
```

```
System.out.println("Out of the block");
```

```
}
```

```
}
```

This would produce the following result:

Exception thrown :java.lang.ArrayIndexOutOfBoundsException: 3 Out of the block

4Multiple catch Blocks:

A try block can be followed by multiple catch blocks. The syntax for multiple catch blocks looks like the following: try

```
{
```

```
//Protected code
```



```

}catch(ExceptionType1 e1)
{
    //Catch block
}catch(ExceptionType2 e2)
{
    //Catch block
}catch(ExceptionType3 e3)
{
    //Catch block
}

```

The previous statements demonstrate three catch blocks, but you can have any number of them after a single try. If an exception occurs in the protected code, the exception is thrown to the first catch block in the list. If the data type of the exception thrown matches `ExceptionType1`, it gets caught there. If not, the exception passes down to the second catch statement. This continues until the exception either is caught or falls through all catches, in which case the current method stops execution and the exception is thrown down to the previous method on the call stack.

Example:

Here is code segment showing how to use multiple try/catch statements.

```
try
```

```
{
```

```
file = new FileInputStream(fileName); x = (byte) file.read();
```

```

}catch(IOException i)

        i.printStackTrace(); return -1;
}catch(FileNotFoundException f) //Not valid!

```

```

        f.printStackTrace(); return -1;

```

```

{

```

```

{

```

```

}

```

```

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```

5The throws/throw Keywords:

If a method does not handle a checked exception, the method must declare it using the throws keyword. The throws keyword appears at the end of a method's signature. You can throw an exception, either a newly instantiated one or an exception that you just caught, by using the throw keyword. Try to understand the different in throws and throw keywords. The following method declares that it throws a RemoteException: import java.io.*; public class className

```

        public void deposit(double amount) throws RemoteException

```

```

{

```

```

{

```

```

        // Method implementation throw new RemoteException();

```

```

}

```

```

//Remainder of class definition

```

```

}

```

A method can declare that it throws more than one exception, in which case the exceptions are declared in a list separated by commas. For example, the following method declares that it throws a RemoteException and an InsufficientFundsException: import java.io.*; public class className

```

        public void withdraw(double amount) throws RemoteException, InsufficientFundsException

```

```

{

```

```

{

```

```

        // Method implementation

```

```

}

```

```

//Remainder of class definition

```

```

}

```

6The finally Keyword:

The finally keyword is used to create a block of code that follows a try block. A finally block of code always executes, whether or not an exception has occurred. Using a finally block allows

```

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```

you to run any cleanup-type statements that you want to execute, no matter what happens in the protected code. A finally block appears at the end of the catch blocks and has the following syntax: try

```

{
    //Protected code
}catch(ExceptionType1 e1)
{
    //Catch block
}catch(ExceptionType2 e2)
{
    //Catch block
}catch(ExceptionType3 e3)
{
    //Catch block
}finally
{
    //The finally block always executes.
}

```

Example:

```

public class ExcepTest{
    public static void main(String args[]){ int a[] = new int[2];
        try{
            System.out.println("Access element three : " + a[3]);
        }catch(ArrayIndexOutOfBoundsException e){ System.out.println("Exception
            thrown : " + e); }
        finally{
            a[0] = 6;
            System.out.println("First element value: " +a[0]); System.out.println("The finally
            statement is executed"); }
    }
}

```

This would produce the following result:

Exception thrown :java.lang.ArrayIndexOutOfBoundsException: 3 First element value: 6
The finally statement is executed

Note:

- 1)A catch clause cannot exist without a try statement.
- 2)It is not compulsory to have finally clauses whenever a try/catch block is present.
- 3)The try block cannot be present without either catch clause or finally clause.
- 4)Any code cannot be present in between the try, catch, finally blocks.

.7Declaring you own Exception:

You can create your own exceptions in Java. Keep the following points in mind when writing your own exception classes:

- ☞ All exceptions must be a child of Throwable.
- ☞ If you want to write a checked exception that is automatically enforced by the Handle or Declare Rule, you need to extend the Exception class.
- ☞ If you want to write a runtime exception, you need to extend the RuntimeException class.

We can define our own Exception class as below:

```

class MyException extends Exception{
    }

```

You just need to extend the Exception class to create your own Exception class. These are considered to be checked exceptions. The following InsufficientFundsException class is a user-defined exception that extends the Exception class, making it a checked exception. An exception class is like any other class, containing useful fields and methods.

Example:

// File Name InsufficientFundsException.java import java.io.*;

```
public class InsufficientFundsException extends Exception
{
    private double amount;
    public InsufficientFundsException(double amount)
    {
        this.amount = amount;
    }
    public double getAmount()
    {
        return amount;
    }
}
```

To demonstrate using our user-defined exception, the following CheckingAccount class contains a withdraw() method that throws an InsufficientFundsException.

// File Name CheckingAccount.java import java.io.*;

```
public class CheckingAccount
{
    private double balance; private int number;
    public CheckingAccount(int number)
    {
        this.number = number;
    }
    public void deposit(double amount)
    {
        balance += amount;
    }
    public void withdraw(double amount) throws

```

InsufficientFundsException

```

{
    if(amount <= balance)
    {
    }
    else
    {
    }
}

balance -= amount;

double needs = amount - balance;
throw new InsufficientFundsException(needs);
```

```

public double getBalance()
{
    return balance;
}

public int getNumber()
{
    return number;
}
}

```

The following BankDemo program demonstrates invoking the deposit() and withdraw() methods of CheckingAccount.

```

// File Name BankDemo.java public class BankDemo
{
    public static void main(String [] args)
    {
        CheckingAccount c = new CheckingAccount(101); System.out.println("Depositing
        $500..."); c.deposit(500.00); try
        {
            System.out.println("\nWithdrawing $100...");

```

```

c.withdraw(100.00); System.out.println("\nWithdrawing $600...");
c.withdraw(600.00); }catch(InsufficientFundsException e)

{

System.out.println("Sorry, but you are short $"
+ e.getAmount()); e.printStackTrace();

}

}

}

```

Compile all the above three files and run BankDemo, this would produce the following result: Depositing \$500...

Withdrawing \$100...

Withdrawing \$600...

Sorry, but you are short \$200.0

InsufficientFundsException

at CheckingAccount.withdraw(CheckingAccount.java:25) at
BankDemo.main(BankDemo.java:13)

8Common Exceptions:

In Java, it is possible to define two categories of Exceptions and Errors.

1)JVM Exceptions:These are exceptions/errors that are exclusively or logically thrown by the JVM. Examples : NullPointerException, ArrayIndexOutOfBoundsException, ClassCastException, 2)Programmatic exceptions:These exceptions are thrown explicitly by the application or the API programmers Examples: IllegalArgumentException, IllegalStateException.

9. Assertions

Assertion is a statement in java. It can be used to test your assumptions about the program. While executing assertion, it is believed to be true. If it fails, JVM will throw an error named AssertionError. It is mainly used for testing purpose.

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.1Advantage of Assertion:

It provides an effective way to detect and correct programming errors.

Syntax:

There are two ways to use assertion. First way is: assert expression;

and second way is:

assert expression1 : expression2; Simple Example of Assertion in

java: import java.util.Scanner;

class AssertionExample{

public static void main(String args[]){

Scanner scanner = new Scanner(System.in); System.out.print("Enter your
age ");

int value = scanner.nextInt(); assert value>=18:" Not valid";

System.out.println("value is "+value);

}

}

If you use assertion, It will not run simply because assertion is disabled by default. To enable the assertion, -ea or -enableassertions switch of java must be used.

Compile it by: javac AssertionExample.java Run it by: java -ea

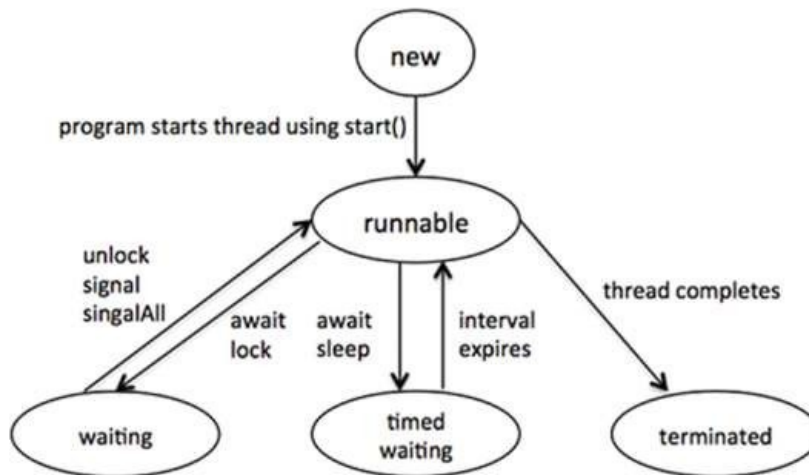
AssertionExample Output:

Enter ur age 11

Exception in thread "main" java.lang.AssertionError: Not valid

.2Where not to use Assertion:

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There are some situations where assertion should be avoid to use. They are:

1) According to Sun Specification, assertion should not be used to check arguments in the public methods because it should result in appropriate runtime exception *e.g.* `IllegalArgumentException`, `NullPointerException` etc.

2) Do not use assertion, if you don't want any error in any situation.

10. Threads

Java is a multithreaded programming language which means we can develop multithreaded program using Java. A multithreaded program contains two or more parts that can run concurrently and each part can handle different task at the same time making optimal use of the available resources specially when your computer has multiple CPUs.

By definition multitasking is when multiple processes share common processing resources such as a CPU. Multithreading extends the idea of multitasking into applications where you can subdivide specific operations within a single application into individual threads. Each of the threads can run in parallel. The OS divides processing time not only among different applications, but also among each thread within an application.

Multithreading enables you to write in a way where multiple activities can proceed concurrently in the same program.

10.1 Life Cycle of a Thread:

A thread starts, and goes through various stages in its life cycle. For example, a thread is born, and then dies. Following diagram shows complete life cycle of a thread.

runs, a

Above-mentioned stages are explained here:

- **New:** A new thread begins its life cycle in the new state. It remains in this state until the program starts the thread. It is also referred to as a born thread.
- **Runnable:** After a newly born thread is started, the thread becomes runnable. A thread in this state is considered to be executing its task.
- **Waiting:** Sometimes, a thread transitions to the waiting state while the thread waits for another thread to perform a task. A thread transitions back to the runnable state only when another thread signals the waiting thread to continue executing.
- **Timed waiting:** A runnable thread can enter the timed waiting state for a specified interval of time. A thread in this state transitions back to the runnable state when that time interval expires or when the event it is waiting for occurs.
- **Terminated:** A runnable thread enters the terminated state when it completes its task or otherwise terminates.

10.2 Thread Priorities:

Every Java thread has a priority that helps the operating system determine the order in which threads are scheduled.

Java thread priorities are in the range between `MIN_PRIORITY` (a constant of 1) and `MAX_PRIORITY` (a constant of 10). By default, every thread is given priority `NORM_PRIORITY` (a constant of 5).

Threads with higher priority are more important to a program and should be allocated processor time before lower-priority threads. However, thread priorities cannot guarantee the order in which threads execute and very much platform dependent.

10.3 Create Thread by Implementing Runnable Interface:

If your class is intended to be executed as a thread then you can achieve this by implementing `Runnable` interface. You will need to follow three basic steps:

Step 1:

As a first step you need to implement a `run()` method provided by `Runnable` interface. This method provides entry point for the thread and you will put your complete business logic inside this method. Following is simple syntax of `run()` method: 157

```
public void run( )
```

Step 2:

At second step you will instantiate a Thread object using the following constructor: Thread(Runnable threadObj, String threadName); Where, threadObj is an instance of a class that implements the Runnable interface and threadName is the name given to the new thread.

Step 3:

Once Thread object is created, you can start it by calling start() method, which executes a call to run() method. Following is simple syntax of start() method: void start();

Example:

Here is an example that creates a new thread and starts it running: class RunnableDemo

```
implements Runnable {
    private Thread t;
    private String threadName;
    RunnableDemo( String name){ threadName = name;
        System.out.println("Creating " + threadName );
    }

    public void run() {
        System.out.println("Running " + threadName ); try {
            for(int i = 4; i > 0; i--) {
                System.out.println("Thread: " + threadName + ", " + i);
                // Let the thread sleep for a while. Thread.sleep(50);
            }

        } catch (InterruptedException e) {
            System.out.println("Thread " + threadName + " interrupted.");
        }

        System.out.println("Thread " + threadName + " exiting.");
    }

    public void start ()
    {
        System.out.println("Starting " + threadName ); if (t == null)
        {
            t = new Thread (this, threadName); t.start ();
        }
    }
}

public class TestThread {
    public static void main(String args[]) {
        RunnableDemo R1 = new RunnableDemo( "Thread1"); R1.start();
        RunnableDemo R2 = new RunnableDemo( "Thread2"); R2.start();
    }
}
```

This would produce the following result:
Creating Thread1 Starting Thread1 Creating
Thread2 Starting Thread2 Running Thread1
Thread: Thread1, 4 Running Thread2 Thread:
Thread2, 4
Thread: Thread1, 3
Thread: Thread2, 3

Thread: Thread1, 2
Thread: Thread2, 2
Thread: Thread1, 1
Thread: Thread2, 1 Thread Thread1 exiting. Thread
Thread2 exiting.

10.4 Create Thread by Extending Thread Class:

The second way to create a thread is to create a new class that extends Thread class using the following two simple steps. This approach provides more flexibility in handling multiple threads created using available methods in Thread class.

Step 1:

You will need to override run() method available in Thread class. This method provides entry point for the thread and you will put your complete business logic inside this method. Following is simple syntax of run() method: public void run()

Step 2:

Once Thread object is created, you can start it by calling start() method, which executes a call to run() method. Following is simple syntax of start() method: void start();

Example:

Here is the preceding program rewritten to extend Thread: class ThreadDemo extends Thread

```
{  
    private Thread t;  
    private String threadName;  
    ThreadDemo( String name){ threadName = name;  
        System.out.println("Creating " + threadName );  
    }  
  
    public void run() {  
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```

```

        System.out.println("Running " + threadName ); try {
            for(int i = 4; i > 0; i--) {
                System.out.println("Thread: " + threadName + " , " + i);
                // Let the thread sleep for a while. Thread.sleep(50);

            }

        } catch (InterruptedException e) {
            System.out.println("Thread " + threadName + " interrupted."); }
        System.out.println("Thread " + threadName + " exiting.");

    }

    public void start ()

    {

        System.out.println("Starting " + threadName ); if (t == null)

        {

            t = new Thread (this, threadName); t.start ();

        }

    }

}

public class TestThread {
    public static void main(String args[]) {
        ThreadDemo T1 = new ThreadDemo( "Thread1"); T1.start();

        ThreadDemo T2 = new ThreadDemo( "Thread2"); T2.start();

    }

}

```

This would produce the following result:
 Creating Thread1 Starting Thread1
 Creating Thread2 Starting Thread2
 Running Thread1 Thread: Thread1, 4
 Running Thread2 Thread: Thread2, 4
 Thread: Thread1, 3
 Thread: Thread2, 3
 Thread: Thread1, 2
 Thread: Thread2, 2
 Thread: Thread1, 1
 Thread: Thread2, 1 Thread Thread1 exiting.
 Thread Thread2 exiting.

10.5 Thread Methods:
 Following is the list of important methods available in the Thread class.

SN	Methods with Description
1	public void start() Starts the thread in a separate path of execution, then invokes the run() method on this Thread object.
2	public void run() If this Thread object was instantiated using a separate Runnable target, the run() method is invoked on that Runnable object.
3	public final void setName(String name) Changes the name of the Thread object. There is also a getName() method for retrieving the name.

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4	public final void setPriority(int priority) Sets the priority of this Thread object. The possible values are between 1 and 10.
5	public final void setDaemon(boolean on) A parameter of true denotes this Thread as a daemon thread.
6	public final void join(long millisec) The current thread invokes this method on a second thread, causing the current thread to block until the second thread terminates or the specified number of milliseconds passes.
7	public void interrupt() Interrupts this thread, causing it to continue execution if it was blocked for any reason.
8	public final boolean isAlive() Returns true if the thread is alive, which is any time after the thread has been started but before it runs to completion.

The previous methods are invoked on a particular Thread object. The following methods in the Thread class are static. Invoking one of the static methods performs the operation on the currently running thread.

SN	Methods with Description
1	public static void yield() Causes the currently running thread to yield to any other threads of the same priority that are waiting to be scheduled.
2	public static void sleep(long millisec) Causes the currently running thread to block for at least the specified number of milliseconds.
3	public static boolean holdsLock(Object x) Returns true if the current thread holds the lock on the given Object.

4	<code>public static Thread currentThread()</code> Returns a reference to the currently running thread, which is the thread that invokes this method.
5	<code>public static void dumpStack()</code> Prints the stack trace for the currently running thread, which is useful when debugging a multithreaded application.

Example:

The following ThreadClassDemo program demonstrates some of these methods of the Thread class. Consider a class DisplayMessage which implements Runnable: // File Name : DisplayMessage.java

// Create a thread to implement Runnable

public class DisplayMessage implements Runnable

```

{
    private String message;
    public DisplayMessage(String message)
    {
        this.message = message;
    }
    public void run()
    {
        while(true)
        {
            System.out.println(message);
        }
    }
}
```

Following is another class which extends Thread class:

// File Name : GuessANumber.java

// Create a thread to extend Thread

public class GuessANumber extends Thread

```

{
    private int number;
    public GuessANumber(int number)
    {
        this.number = number;
    }
    public void run()
    {

```



```

int counter = 0; int guess = 0; do
{
    guess = (int) (Math.random() * 100 + 1);
    System.out.println(this.getName()
        + " guesses " + guess); counter++;
}while(guess != number); System.out.println("** Correct! " + this.getName() + " in "
+ counter + " guesses.**");
}
}

```

Following is the main program which makes use of above defined classes:

```

// File Name : ThreadClassDemo.java public class ThreadClassDemo
{
    public static void main(String [] args)
    {
        Runnable hello = new DisplayMessage("Hello"); Thread thread1 = new Thread(hello);
        thread1.setDaemon(true); thread1.setName("hello"); System.out.println("Starting
        hello thread..."); thread1.start(); Runnable bye = new DisplayMessage("Goodbye");
        Thread thread2 = new Thread(bye); thread2.setPriority(Thread.MIN_PRIORITY);
        thread2.setDaemon(true); System.out.println("Starting goodbye thread...");
        thread2.start(); System.out.println("Starting thread3...");
    }
}

```

```

Thread thread3 = new GuessANumber(27); thread3.start();
try
{
    thread3.join();
}catch(InterruptedExcepcion e)
{
    System.out.println("Thread interrupted.");
}

System.out.println("Starting thread4..."); Thread thread4 = new
GuessANumber(75);
thread4.start(); System.out.println("main() is ending...");
}
}

```

This would produce the following result. You can try this example again and again and you would get different result every time.

```

Starting hello thread... Starting goodbye thread... Hello
Hello Hello Hello Hello Hello Goodbye
Goodbye Goodbye Goodbye Goodbye
.....

```

11. Wrapper Classes

Each of Java's eight primitive data types has a class dedicated to it. These are known as wrapper classes, because they "wrap" the primitive data type into an object of that class. The wrapper classes are part of the java.lang package, which is imported by default into all Java programs.

The wrapper classes in java serves two primary purposes.

- 1) To provide mechanism to 'wrap' primitive values in an object so that primitives can do activities reserved for the objects like being added to ArrayList, HashSet, HashMap etc. collection.
- 2) To provide an assortment of utility functions for primitives like converting primitive types to and from string objects, converting to various bases like binary, octal or hexadecimal, or comparing various objects.

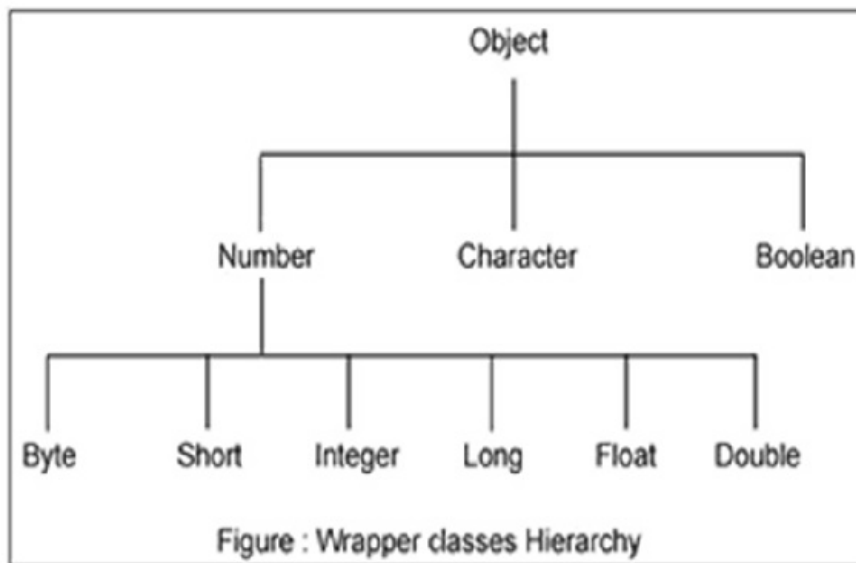
The following two statements illustrate the difference between a primitive data type and an object of a wrapper class: `int x = 25;`
`Integer y = new Integer(33);`

The first statement declares an int variable named x and initializes it with the value 25. The second statement instantiates an Integer object. The object is initialized with the value 33 and a reference to the object is assigned to the object variable y.

Below table lists wrapper classes in Java API with constructor details.

Primitive	Wrapper Class	Constructor Argument
boolean	Boolean	boolean or String
byte	Byte	byte or String
char	Character	char
int	Integer	int or String
float	Float	float, double or String
double	Double	double or String
long	Long	long or String
short	Short	short or String

Below is wrapper class hierarchy as per Java API



As explain in above table all wrapper classes (except Character) take String as argument constructor. Please notewemight get NumberFormatException ifwetry to assign invalid argument in constructor. For example to create Integer object we can have following syntax.

```
Integer intObj = new Integer (25); Integer intObj2 = new
Integer ("25");
```

Here in we can provide any number as string argument but not the words *etc.* Below statement will throw run time exception (NumberFormatException) Integer intObj3 = new Integer ("Two");

The following discussion focuses on the Integer wrapperclass, but applies in a general sense to all eight wrapper classes. The most common methods of the Integer wrapper class are summarized in below table. Similar methods for the other wrapper classes are found in the Java API documentation.

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Method	Purpose
parseInt(s)	returns a signed decimal integer value equivalent to string s
toString(i)	returns a new String object representing the integer i
byteValue()	returns the value of this Integer as a byte
doubleValue()	returns the value of this Integer as an double
floatValue()	returns the value of this Integer as a float
intValue()	returns the value of this Integer as an int
shortValue()	returns the value of this Integer as a short
longValue()	returns the value of this Integer as a long
int compareTo(int i)	Compares the numerical value of the invoking object with that of i. Returns 0 if the values are equal. Returns a negative value if the invoking object has a lower value. Returns a positive value if the invoking object has a greater value.
static int compare (intnum1, int num2)	Compares the values of num1 and num2. Returns 0 if the values are equal. Returns a negative value if num1 is less than num2. Returns a positive value if num1 is greater than num2.
boolean equals (Object intObj)	Returns true if the invoking Integer object is eq

Let's see java program which explain few wrapper classes methods. package WrapperIntro;

```
public class WrapperDemo {
    public static void main (String args[]){ Integer intObj1 = new Integer
(25); Integer intObj2 = new Integer ("25"); Integer intObj3=
new Integer (35); //compareTo demo
System.out.println("Comparing using compareTo Obj1 and Obj2: " + intObj1.compareTo(intObj2));
System.out.println("Comparing using compareTo Obj1 and Obj3: " + intObj1.compareTo(intObj3));
```



```
//Equals demo
System.out.println("Comparing using equals Obj1 and Obj2: " + intObj1.equals(intObj2));
System.out.println("Comparing using equals Obj1 and Obj3: " + intObj1.equals(intObj3));

Float f1 = new Float("2.25f"); Float f2 = new
Float("20.43f"); Float f3 = new Float(2.25f);

System.out.println("Comparing using compare f1 and f2: "
+Float.compare(f1,f2));
System.out.println("Comparing using compare f1 and f3: "
+Float.compare(f1,f3));
//Addition of Integer with Float Float f = intObj1.floatValue() +
f1;
System.out.println("Addition of intObj1 and f1: "+ intObj1 +"+" +f1+"=" +f );

    }

    }
}
```

Output:
Comparing using compareTo Obj1 and Obj2: 0 Comparing using compareTo
Obj1 and Obj3: -1 Comparing using equals Obj1 and Obj2: true Comparing
using equals Obj1 and Obj3: false Comparing using compare f1 and f2: -1
Comparing using compare f1 and f3: 0 Addition of intObj1 and f1:
25+2.25=27.25

12. String Manipulation

Strings, which are widely used in Java programming, are a sequence of characters. In the Java programming language, strings are objects. The Java platform provides the String class to create and manipulate strings.

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1.Creating Strings:

The most direct way to create a string is to write: String greeting = "Hello world!"; Whenever it encounters a string literal in your code, the compiler creates a String object with its value in this case, "Hello world!".

As with any other object, you can create String objects by using the new keyword and a constructor. The String class has eleven constructors that allow you to provide the initial value of the string using different sources, such as an array of characters.

```
public class StringDemo{
    public static void main(String args[]){ char[] helloArray = { 'h', 'e', 'l',
    'l', 'o', ' ' }; String helloString = new String(helloArray);
    System.out.println( helloString );

    }

    }
}
```

This would produce the following result: hello.

Note: The String class is immutable, so that once it is created a String object cannot be changed. If there is a necessity to make a lot of modifications to Strings of characters, then you should use String Buffer & String Builder Classes.

2.String Length:

Methods used to obtain information about an object are known as accessor methods. One accessor method that you can use with strings is the length() method, which returns the number of characters contained in the string object.

After the following two lines of code have been executed, len equals 17: public class StringDemo {

```
    public static void main(String args[]) {
        String palindrome = "Dot saw I was Tod";
```

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```

        int len = palindrome.length(); System.out.println( "String Length is : " + len
    ); }
}

```

This would produce the following result: String Length is : 17

3Concatenating Strings:

The String class includes a method for concatenating two strings: `string1.concat(string2)`;

This returns a new string that is `string1` with `string2` added to it at the end. You can also use the `concat()` method with string literals, as in: "My name is ".concat("Zara");

Strings are more commonly concatenated with the `+` operator, as in: "Hello," + " world" + "!"

which results in: "Hello, world!"

Let us look at the following example:

```

public class StringDemo {
    public static void main(String args[]) { String string1 = "saw I was
        ";
        System.out.println("Dot " + string1 + "Tod");
    }
}

```

This would produce the following result: Dot saw I was Tod

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4Creating Format Strings:

You have `printf()` and `format()` methods to print output with formatted numbers. The String class has an equivalent class method, `format()`, that returns a String object rather than a `PrintStream` object.

Using String's static `format()` method allows you to create a formatted string that you can reuse, as opposed to a one-time print statement. For example, instead of: `System.out.printf("The value of the float variable is " + "%f, while the value of the integer " + "variable is %d, and the string " +`

`"is %s", floatVar, intVar, stringVar);`

you can write:

```

String fs;
fs = String.format("The value of the float variable is " + "%f, while the value of the integer "
    + "variable is %d, and the string " +
    "is %s", floatVar, intVar, stringVar); System.out.println(fs);

```

5String Methods:

Here is the list of methods supported by String class:

SN Methods with Description

1char charAt(int index)

Returns the character at the specified index.

2int compareTo(Object o)

Compares this String to another Object.

3int compareTo(String anotherString) Compares two strings lexicographically.

4int compareToIgnoreCase(String str)

Compares two strings lexicographically, ignoring case differences.

5String concat(String str)

Concatenates the specified string to the end of this string.

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6boolean contentEquals(StringBuffer sb)

Returns true if and only if this String represents the same sequence of characters as the specified `StringBuffer`.

7static String copyValueOf(char[] data)

Returns a String that represents the character sequence in the array specified.

8static String copyValueOf(char[] data, int offset, int count)

Returns a String that represents the character sequence in the array specified.

9boolean endsWith(String suffix)

Tests if this string ends with the specified suffix.

10boolean equals(Object anObject) Compares this string to the specified object.

11boolean equalsIgnoreCase(String anotherString)

Compares this String to another String, ignoring case considerations.

12byte getBytes()

Encodes this String into a sequence of bytes using the platform's default charset, storing the result into a new byte array.

13byte[] getBytes(String charsetName)

Encodes this String into a sequence of bytes using the named charset, storing the result into a new byte array.

14void getChars(int srcBegin, int srcEnd, char[] dst, int dstBegin) Copies characters from this string into the destination character array.

15int hashCode()

Returns a hash code for this string.

16int indexOf(int ch)

Returns the index within this string of the first occurrence of the specified character.

17int indexOf(int ch, int fromIndex)

Returns the index within this string of the first occurrence of the specified character, starting the search at the specified index.

18int indexOf(String str)

Returns the index within this string of the first occurrence of the specified substring.

19int indexOf(String str, int fromIndex)

Returns the index within this string of the first occurrence of the specified substring, starting at the specified index

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20String intern()

Returns a canonical representation for the string object.

21int lastIndexOf(int ch)

Returns the index within this string of the last occurrence of the specified character.

22int lastIndexOf(int ch, int fromIndex)

Returns the index within this string of the last occurrence of the specified character, searching backward starting at the specified index.

23int lastIndexOf(String str)

Returns the index within this string of the rightmost occurrence of the specified substring.

24int lastIndexOf(String str, int fromIndex)

Returns the index within this string of the last occurrence of the specified substring, searching backward starting at the specified index.

25int length()
Returns the length of this string.

26boolean matches(String regex)
Tells whether or not this string matches the given regular expression.

27boolean regionMatches(boolean ignoreCase, int toffset, String other, int ooffset, int len)
Tests if two string regions are equal.

28boolean regionMatches(int toffset, String other, int ooffset, int len) Tests if two string regions are equal

29String replace(char oldChar, char newChar)
Returns a new string resulting from replacing all occurrences of oldChar in this string with newChar.

30String replaceAll(String regex, String replacement)
Replaces each substring of this string that matches the given regular expression with the given replacement.

31String replaceFirst(String regex, String replacement)
Replaces the first substring of this string that matches the given regular expression with the given replacement.

32String[] split(String regex)
Splits this string around matches of the given regular expression.

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33String[] split(String regex, int limit)
Splits this string around matches of the given regular expression.

34boolean startsWith(String prefix)
Tests if this string starts with the specified prefix.

35boolean startsWith(String prefix, int toffset)
Tests if this string starts with the specified prefix beginning at a specified index.

36CharSequence subSequence(int beginIndex, int endIndex)
Returns a new character sequence that is a subsequence of this sequence.

37String substring(int beginIndex)
Returns a new string that is a substring of this string.

38String substring(int beginIndex, int endIndex) Returns a new string that is a substring of this string.

39char[] toCharArray()
Converts this string to a new character array.

40String toLowerCase()
Converts all of the characters in this String to lower case using the rules of the default locale.

41String toLowerCase(Locale locale)
Converts all of the characters in this String to lower case using the rules of the given Locale.

42String toString()
This object (which is already a string!) is itself returned.

43String toUpperCase()
Converts all of the characters in this String to upper case using the rules of the default locale.

44String toUpperCase(Locale locale)
Converts all of the characters in this String to upper case using the rules of the given Locale.

45String trim()
Returns a copy of the string, with leading and trailing whitespace omitted.

46static String.valueOf(primitive data type x)
Returns the string representation of the passed data type argument.

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References:

- 1)http://www.tutorialspoint.com/java/java_overview.htm
- 2)<http://beginnersbook.com/2013/05/java-introduction/>
- 3)<http://www.javatpoint.com/object-and-class-in-java>
- 4)<http://www.explain-java.com/java-wrapper-class-tutorial-explain-java-wrapper-classes-examples/>
- 5)<http://www.w3resource.com/java-tutorial/the-string-class.php>
- 6)<https://docs.oracle.com/javase/tutorial/java/concepts/object.html>

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- Identification of Work Areas
- Work Experience

Scope of Programming in Java, web-based applications and database management

Scope of Java programming is huge in the world today as a number of web based applications are developed in Java. Java is a platform independent language and is used world over for development of majority of web sites and web based applications. It offers a number of job opportunities such as those of Java developer, entry level Java programmer, programmer, software engineer, analyst. Salary offered is also very good. There is huge scope for data base managers too.

Skills required by Developer, Programmer, database manager

Some of the most important skills required to become a software developer, web based application developer, Java programmer, data base manager are as follows :-

- i) Problem Solving Skill :Programming is done and software is developed to solve well defined problems. Prospective candidates are asked to solve problems in interviews. Exams for jobs and interviews test a developer's and data base manager's ability to solve problems. Hence, problem solving skill is needed by developers, programmers, *etc.*
- ii) Professional Development : With a lot of changes taking place so rapidly in the field of software development and database management, a person is constantly required to update himself with newer technologies and develop himself professionally. One should have the ability to acquire the knowledge and skills quickly.
- iii) Dealing with people / Interpersonal Skills :Here the person is required to deal with people - clients, users, fellow programmers and developers, organisations, *etc.* to identify the needs, conditions, to explain to others the process, to integrate various modules and components, hence interpersonal skills are required to succeed as a developer, database manager.
- iv) Practical Skills :One should have competence in using different technologies and should have the ability to apply them.
- v) Communication Skill :As the developer, programmer is required to interact with clients, users, staff at different levels, *etc.* he/she should be an effective communicator.

There are job opportunities in the private sector as well as the public sector. There are number of multinational corporations as well as software companies in India such as INFOSYS, IBM, HCL, HP, SATYAM, DELL, DOCOMO, LG, FACEBOOK, BHEL,ONGC, POWER GRID,

GOOGLE, TCS, MICROSOFT, ACCENTURE, COGNIZANT in which there are abundant opportunities for persons skilled in java programming, web based application development and data base managers Besides, there are many PSUs (Public Sector Undertakings) in India such as BHEL, BEL, ECIL, EIL, NTPC, HPCL, GAIL, SAIL, AAIL, HAL, GENCO, TRANSCO, BSNL, MTNL, etc. many of which conduct exams for recruitment in these areas. Selection in these companies is through:

1. Written test
2. Technical interview
3. Presentation

4. HR interview, etc.

Candidates are selected from campuses of colleges and universities as well as directly from the market through the above selection process. Information about the recruitment can be obtained over the Internet. Candidates can also get the information about the recruitment in their email account by registering with the sites.

Procedure for application for jobs online

Steps to apply for Jobs online are given below :-

- Step-I : We have to go to Job websites (List of some of the websites is mentioned below).
- Step-II : We should register with the website and submit resume .
- Step-III : We are required to mention area in which we want to work and also our qualification.
- Step-IV : We are required to give our E-Mail Id where we can get information about jobs.
- Step-V : It is suggested that we check our e-mail every day. There will be a lot of information about jobs commensurate with our qualification and our Interests.
- Step-VI : We are required to apply for job and attend written exams, group discussion and interviews etc.

List of Web sites / portals for jobs:<http://www.naukri.com/>
<http://www.shine.com/> <http://www.timesjobs.com/>
<http://www.fresherworld.com/> <http://www.monsterindia.com>
<http://governmentjobsalerts.com/etc> Students should acquire competency in these areas and get some work experience.

Movie Editing Tools

(with Windows Movie Maker)

- Familiarisation of interface components
- Importing pictures
- Importing Audio andVideo Files
- Splifling and Joining Movie Clips
- AddingTitlesand publishing



Windows Movie Maker

Verdict: Windows Movie Maker is an easy-to-use application for making quick, professional-looking edits to your video clips. Get it now and start making the most of your videos and photos.

- **Windows Movie Maker**
- **License:** Freeware
- **Language:** English
- **Author:** Microsoft
- **System:** Win XP
- **File size:** 1.2MB



Windows Movie Maker is a free video creating/editing software application, designed for Windows Me, XP and Vista. Also works with latest Windows 7 & Windows 8. Windows Movie Maker contains features such as effects, transitions, titles/credits, audio track, timeline narration, and Auto Movie. New effects and transitions can be made and existing ones can be modified using XML code. Windows Movie Maker is also a basic audio track editing program. Windows Movie Maker can apply basic effects to audio tracks such as fade in or fade out. The audio tracks can then be exported in the form of a sound file instead of a video file.

How to Make a Video in Windows Movie Maker

How can you turn your video folder into a movie that everyone wants to watch? The key to any good movie is the editing process. Windows Movie Maker can transform your collection of clips into a single masterpiece, complete with credits, a soundtrack, and snazzy transitions. Follow this tutorial steps to make a video as it's meant to be seen.

Getting Started

Download Windows Essentials: This is a free software package from Microsoft that contains Windows Movie Maker as well as a few other Windows utilities. You can find the installation program from the Microsoft website.

- Windows Movie Maker is included in Windows Vista and XP, but needs to be downloaded for Windows 7 and 8.

Windows Movie Maker Free Download

With Windows Movie Maker, you can quickly turn your photos and videos into polished movies. Add special effects, transitions, sound, and captions to help tell your story. Share the movie with friends and family.

Compatible with Windows XP, Windows 7, Windows 8, Windows Vista.

Link1: <http://www.windows-movie-maker.org/>

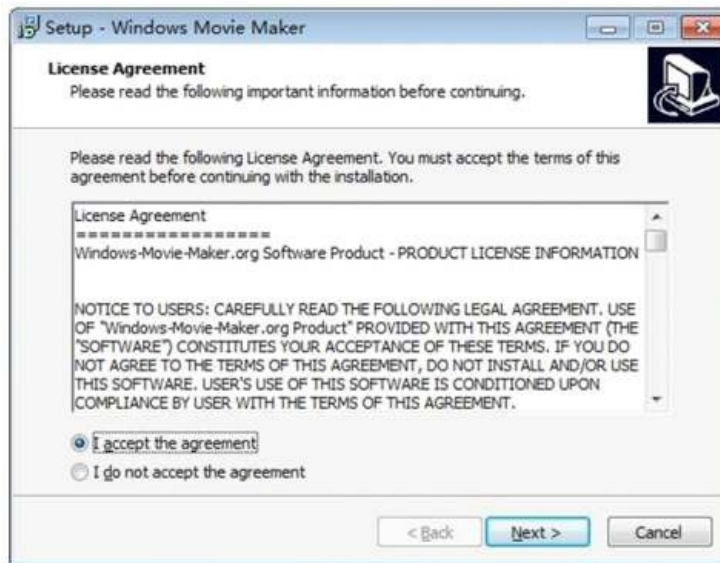


Windows-Movie-Maker.org is a website to download Windows Movie Maker for XP, Vista, Windows 7, Windows 8. Test Compatible for Windows XP, Vista, 7, 8. Software has been scanned by popular anti-virus software avast! and AVG. Note: We are not affiliated with Microsoft. The windows movie maker software is also available on microsoft official site.

How to download and install Windows Movie Maker?

Steps :

1. Open your browser, navigate to "<http://www.windows-movie-maker.org/>" and click the download button to download setup file.
2. Double click the downloaded setup file: windows-movie-maker.exe . Then click "Yes" to allow the setup package to run.



3. Click "Next" button to continue with Windows Movie Maker install progress. Select "I accept the agreement" to continue. Of course, please read Windows Movie Maker License Agreement carefully before "Accept" it.
4. In the next steps, you can select the destination folder where Windows Movie Maker will be installed, rename the Quickstart group name if you like, etc. It is recommended to leave all these settings as default, just click "Next" button to get the software installed.



5. This is the last step. The option “Launch Windows Movie Maker” is checked as default. This means Windows Movie Maker will be launched automatically after the install process is finished. You can uncheck this option if you want run the software later.
6. Finish the download and install process. Then you can make videos with Windows Movie Maker as you wish. Enjoy the software now!

What’s the difference between “Windows Movie Maker” and “Windows Live Movie Maker”?

When you search “windows movie maker” on popular search engines such as google/yahoo/bing, you may get “windows live movie maker” or even the “windows live” setup package. What’s wrong? Where is my familiar windows movie maker? I still need this software to make videos from my images and videos collection.

As you may already know, “Windows Live Movie Maker” is the later version of “Windows Movie Maker”. But the thing is not so simple. Firstly, the later version does not support previous Windows Edition including the popularly used Windows XP. Secondly, later version may not as easy & powerful as the previous versions.

Here is a table of Windows Movie Maker versions and a brief description.

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Version	Supported OS	Brief
Windows Movie Maker 2.1, 2.6	Windows XP and later	The only version that works on Windows XP.
Windows Movie Maker 6.0	Windows Vista and later	Latest version of Windows Movie Maker. Later version changes name.
Windows Live Movie Maker 2009, 2011	Windows Vista and later	Here Windows Movie Maker is part of the Windows Live Software package.
Windows Live Movie Maker 2012	Windows 7, 8	Latest Version of Windows Movie Maker. Only supports Windows 7 and later.

OK, the table above is clear enough. However, it may be a little complicated for many users. So there is a simple solution. Just click and download the below mentioned Windows Movie Maker installer. The installer will select the best edition based on your Windows version and hardware configurations.

Link2: <http://www.windows-movie-maker.org/download/windows-movie-maker-free.exe>

Introduction

Familiarization of interface components

Windows Movie Maker is an embedded program in Windows (Start > All Programs > Windows Movie Maker). You can use Windows Movie Maker to create movies by importing pictures, videos and audios. You can also add video transitions or effects to your movie to make it nicer.

Open Windows Movie Maker. You can find it in your Start Menu under all programs, or you can search for “movie maker” and select it from the results.

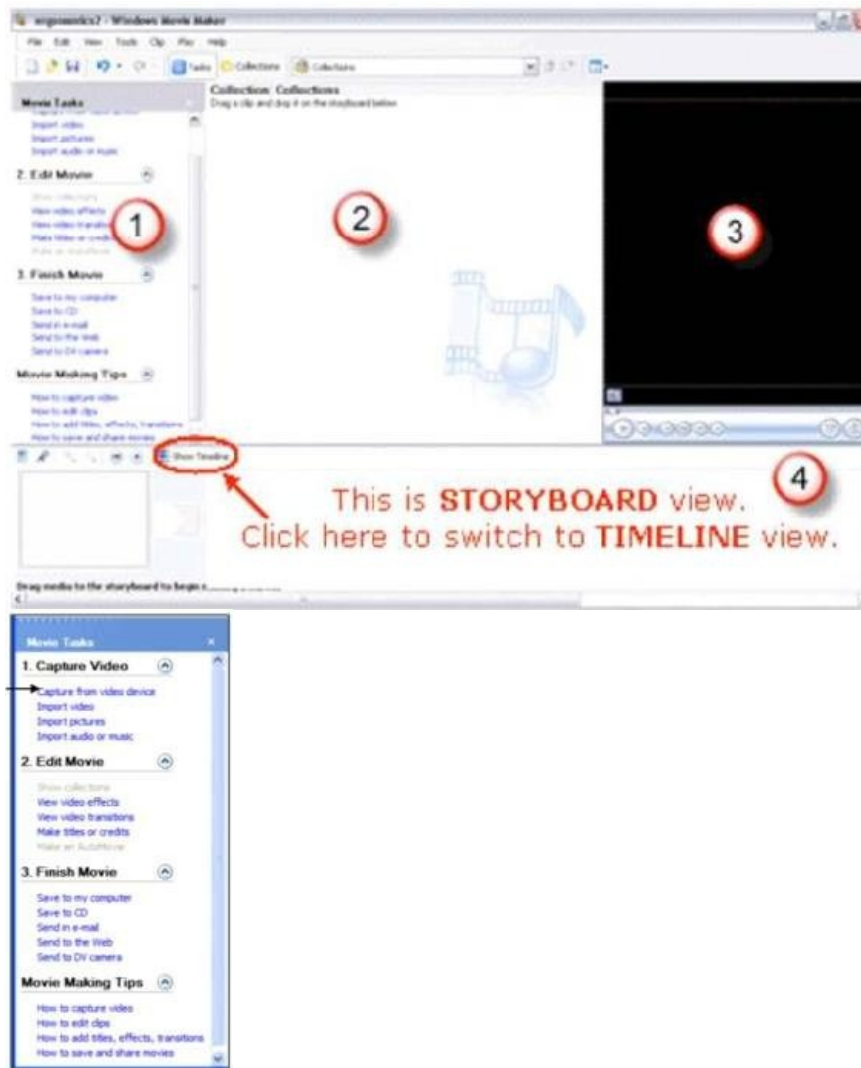
After completing this, you will see menu as follows:

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Basic	Intermediate	Advanced
•Tools •Import media	•Effect •Transition •Credit/title •Add music	•Adjust volume •Timeline •Storyboard •Publish project

Familiarize yourself with the interface. Windows Movie Maker is organized in a similar way to Microsoft Office. You can navigate through the various options by selecting the tabs at the top of the window.

- Home - This is the main tab for Movie Maker. You can use this tab to add videos, images, and audio to your project. You can also select premade themes for the movie, rotate the image, and upload the project to websites such as Facebook, YouTube, and Vimeo.
- Animations - This tab allows you to add transitions between clips.
- Visual Effects - This tab will allow you to change the color and tone of the image. You can turn it black and white or turn the color saturation way up.
- Project - You can make overall changes to your entire project by adjusting the audio mix and change the aspect ratio of the video.
- View - This tab lets you zoom in and out on the timeline, change the thumbnail sizes, and view the waveforms for your film's audio.
- Edit - This menu appears after you add your first video clip. You can use this tab to trim the clip, set a new start point or end point, fade in and out, and stabilize the video.
- Options - This tab shows up after you add a music file to your project. You can set start and end times for the music, fade it in and out, and split the file.



Overview of the Windows Movie Maker Screen

Before we can start making a movie, let's look at the parts of the Windows Movie Maker window.

1. MovieTask View

: Links to the various tasks to create your movie.

This MOVIE TASKS

PANE has all of the important tasks at a glance. There are even help topics!



2. Collections View: A list of all imported components for your movie - photos, videos or sounds.

3. The Preview Screen.

4. The Timeline or Storyboard

: All parts of your movie, whether photos, videos or sounds are dragged to this area.

Timeline View of Windows Movie Maker

Note -Clicking the Show Storyboard link returns you to the Storyboard view. This link will then read Show Timeline. Clicking on the link Show Timeline returns this area to the Timeline view. You will use both views during the creation of your movie.

Step : Open Movie Maker and name your project

File> Save project as (F12)

Importing pictures

Step : Import pictures, sounds, videos into Movie Maker

A)Tools> New Collection Folder

B)File> Import into Collections (ctrl+I)



Steps to Import Pictures

1. Click on the Capture Video link to open the list of options. In this example we will be using still pictures and music to create our movie.
2. Click on Import pictures and locate the folder containing your pictures.
3. Select the picture files you wish to import.

Tip - To select several picture files which are listed consecutively, click the first filename in the list, and then while holding the Shift key, click on the last filename in the list. This will select all the files at once to import.

Similarly, to select several files that are not in consecutive order, hold the Ctrl key rather than the Shift key and then click on the different filenames you wish to import.

• Find the MOVIE MAKER icon on the desktop and doubleclick it to open the program.

• Find each of the following areas or items on the MOVIE MAKER screen. 1 - Open Project button

2 - Import Pictures tool 3 - Edit Movie options

4 - Show Timeline/Show Storyboard button 5 - Save Project button

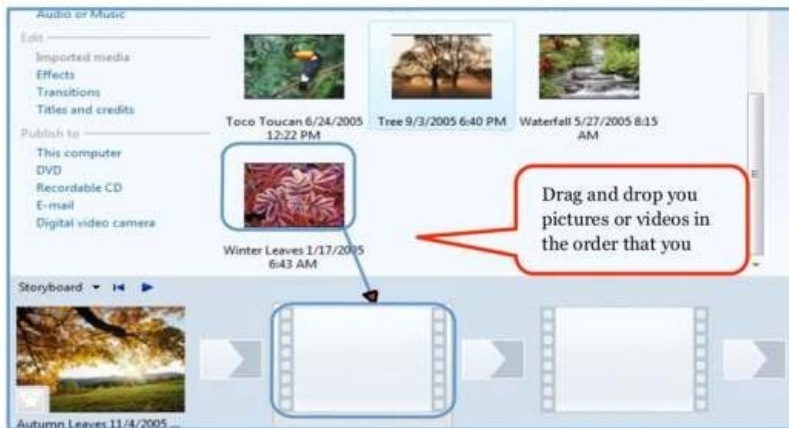
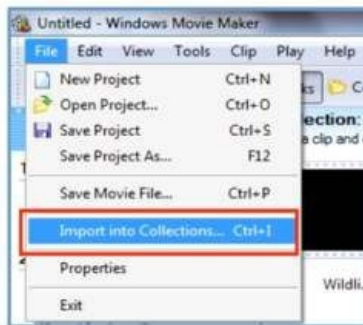
• Click the IMPORT PICTURES link.

• Use the menu to locate your

MY MOVIE folder and doubleclick the pictures you want to import.

• **Quick Tip:** Hold down the SHIFT key and click on several pictures in a row. Click IMPORT to put them in your movie.

• **TIME TO SAVE :** Click the disk icon or go to File—>Save and find your My Movie folder to save your movie project.

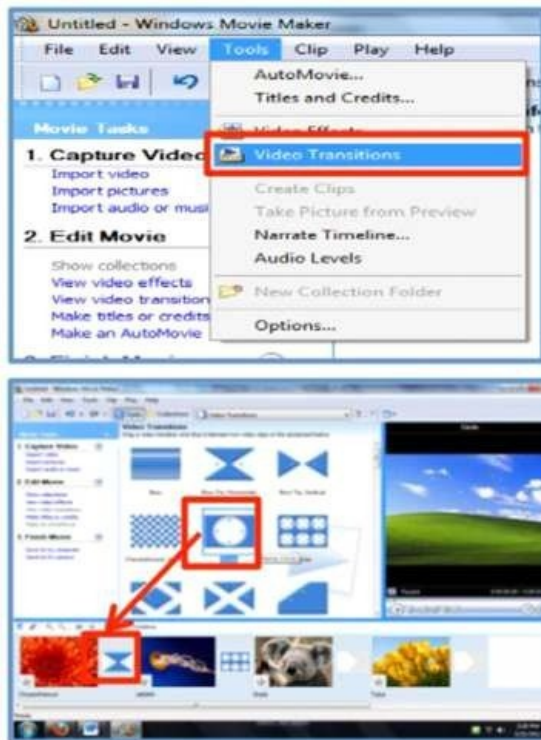


There are several ways to import files into Windows Movie Maker.

1. You can just drag and drop the files into Contents Panel
2. Click File > Import into Collection (Indicated in the red frame in the image below)
3. Click on the "Import into Collection" (indicated in the red frame in the image below)
4. Go to Task Panel> Import video, pictures, audio or music (indicated in the red frame in the image below)

Drag and drop the files that you imported from Contents Panel to Storyboard/Timeline. Step : Place pictures, video, and sound into your project

Drag each element from the collection folder to the timeline. You can change the duration of each element (how long it appears on the screen) by pulling on the ends of it's frame on the timeline, stretching it longer to make it stay on the screen longer or pushing it back to compact it into a shorter timeframe.



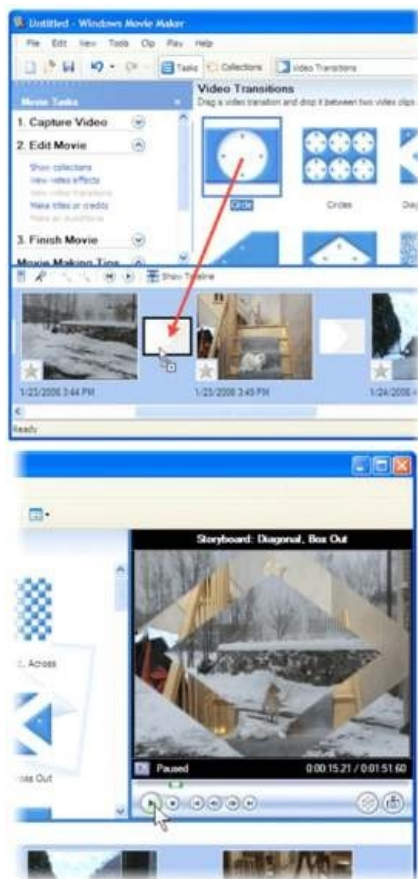
Add transitions

Transitions do cool things as your movie switches from one scene to the next.

Note: In most movies and TV shows, there are no transitions; scenes simply advance from one to the next. Therefore, for the most professional appearance, don't use any transitions. Home movies are supposed to be fun, though, so use all the crazy transitions you want. However, remember your audience: you might want to use just a few so you don't overwhelm your viewers.

Steps to add transitions in movies

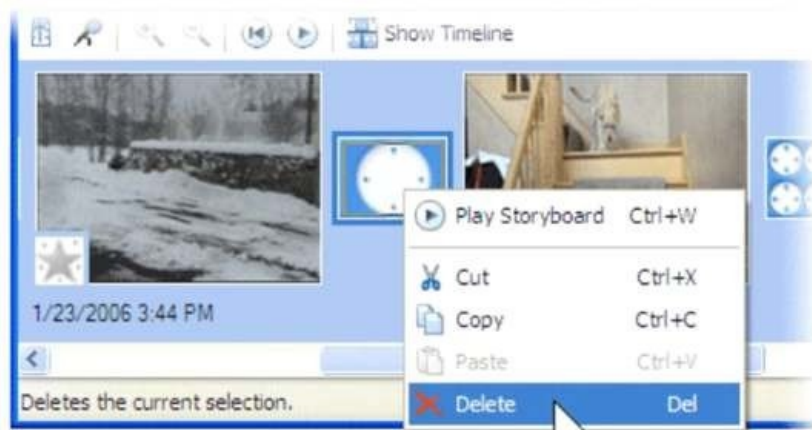
1. Tools > Video Transitions > Select the transition that you want to add.
2. In the Movie Taskpane, under Edit Movie, click View video transitions. Click transitions that you want to add and drag and drop it between two clips on the storyboard.



Preview transitions by doubleclicking them and watching the Preview Monitor. Once you've found a transition you like, drag it from the Video Transitions pane, under Edit Movie pane to the box between two of your clips.

In the Preview Monitor, click the Video Transitions pane, under Play button to watch your transition in action. If you don't like it, just return to the previous step to replace it with a different transition.

To remove a transition: On the storyboard, right click the transition cell that contains the transition and click "delete". If you decide not to use any transition, right-click it on the storyboard, and click Delete.



Transitions cause your video clips to overlap by about one second, which means you won't see all of the first or last second of your clip. So, when you're filming, it's good to start the camera a few seconds before the action starts, and to keep filming for a couple of seconds afterward so that you have time to transition between scenes.

This also helps you get a steadier shot. If you don't need the extra time in a clip, you can trim it from your clip in Movie Maker.
Movie Tips:

-
-

Don't add both types of effects! Choose the one that best fits your picture and/or movie.

Use only two or three effects. Too many effects will distract from your movie and viewers will focus on them rather than the information you are presenting.

Add effects : There are 26 effects and 20 transitions that come with Movie Maker. You can add more-some are free, others you can buy. You can preview what each effect or transition does simply by clicking on it and looking at the preview window. A lot of learning Movie Maker is simply figuring out which of these effects and transitions to use most effectively.

Tip : You cannot combine transitions, but you can combine an effect WITH a transition, and you can add more than one effect (such as "fade in from black" AND "Ease in.") Warning-the more of these you use, the more likely you are to have difficulty with the program (they use a lot of processing power and memory).

How to add a special effect

You can use special effects to change how your clips play in several different ways:

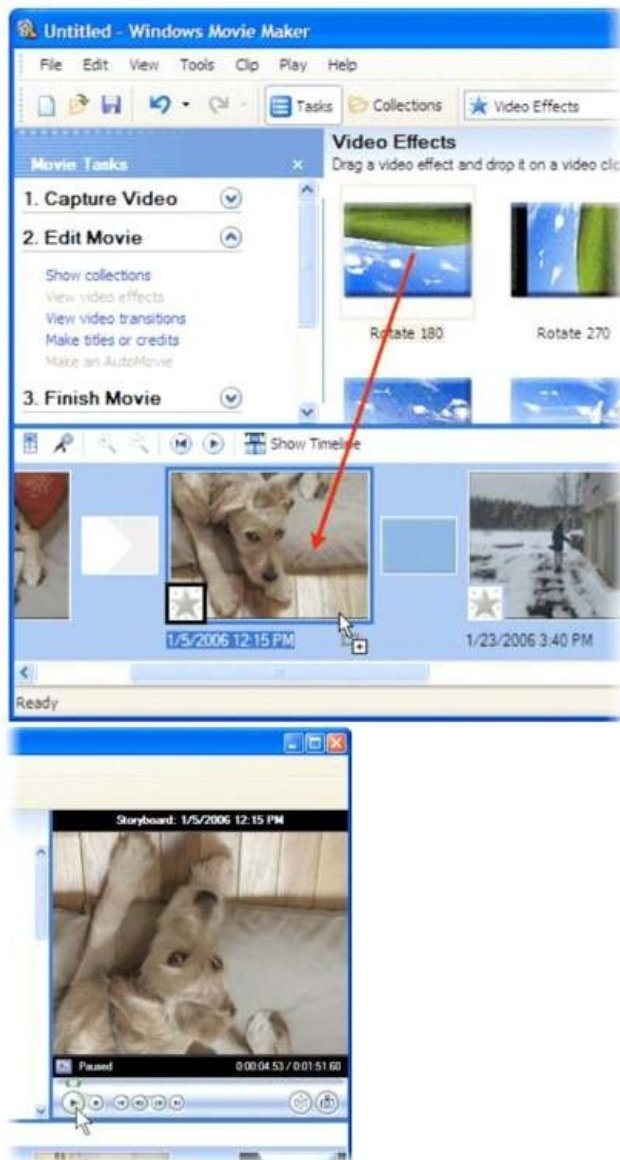


- Speed up a clip using Speed Up, Double, or slow down a clip using Slow Down, Half.
- Zoom in using Ease In, or zoom out using Ease Out.
- Make a clip appear older by using Sepia Tone, Film Age, or Grayscale.
- Rotate a clip using one of the Rotate effects (perfect if someone accidentally holds the camera sideways).

- Fade in using one of the Fade In effects, or fade out using one of the Fade Out effects.
- Fix exposure problems using Brightness, Decrease or Brightness, Increase.

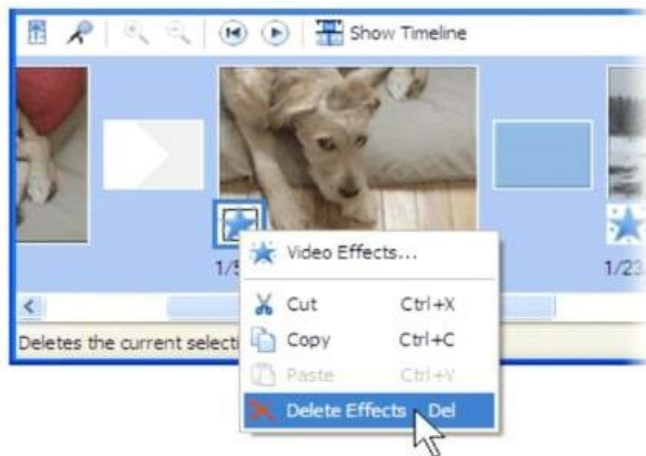
In order to add video effects to your movie,

1. Tools > Video Effects > Select the transition that you want to add.
2. Click video effects that you want to add and drag and drop it on the image.
To remove an effect: On the storyboard, right click the effect cell that contains the effect, and click "delete".



Preview effects by doubleclicking them and watching the Preview Monitor. Once you've found an effect you like, drag it from the Video Effects pane to one of your clips. This adds the effect to the clip, which you can see by looking at the star in the lower-left corner of the clip.

In the Preview Monitor, click the Play button to watch your effect in action.



You can add more than one effect to a clip. For example, if you want to both brighten a clip and add a zoom effect, you can add **Ease In and Brightness, Increase**. You can also add a single effect multiple times to increase the effect.

For example, add multiple **Brightness, Increase** effects to brighten a scene even more, or add two **Speed Up Double** effects to quadruple the speed of a clip.

If you don't like the effect, right-click the star icon in the lower-left corner of the clip, and click **Delete Effects**.

Adding Titles and publishing Add titles and credits

- 1) Add titles and credits
 - Add a title: Tools > Titles and Credits.

Where do you want to add a title?

Add [title at the beginning](#) of the movie.

Add [title before the selected clip](#) on the storyboard.

Add [title on the selected clip](#) on the storyboard.

Add [title after the selected clip](#) on the storyboard.

Add [credits at the end](#) of the movie.

[Cancel](#)

Enter Text for Title
Click 'Done' to add the title to the movie.

[Done, add title to movie](#) [Cancel](#)

More options:

[Change the title animation](#)

[Change the text font and color](#)

Select the link that corresponds to where you want to add the title and credit.

Type the text for your title and then click "Done, add title to Movie" button.

- 2) To edit an existing title
 - On the storyboard/timeline, right click on the title that you want to edit, and click "Edit Title". Make the changes you want to make, and then click "Done".
- 3) To remove a title
 - On the storyboard/timeline, right click on the title that you want to remove from your movie and click on "delete".

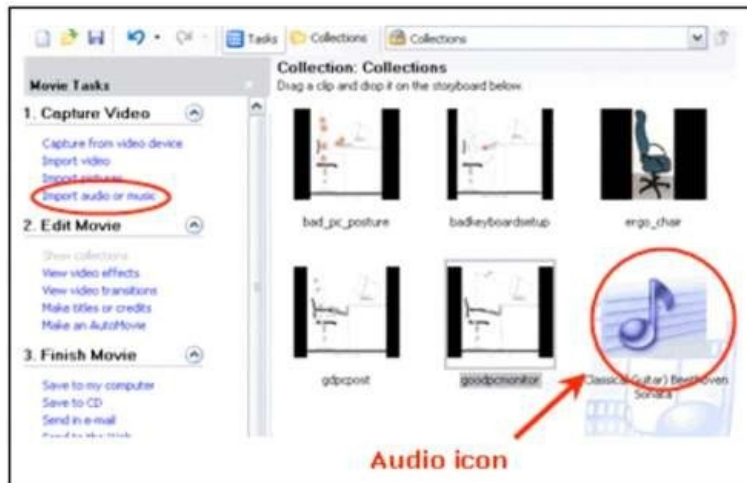
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Let's create a title slide. Click in the first box at the bottom of the window.

- Click the link for MAKE TITLES OR CREDITS.
- Click the link for ADD TITLE AT THE BEGINNING OF THE MOVIE.



- Enter the text you want for your movie title in the top box.
- Enter any other text you want on the first page in the second box.
- Click **CHANGE THE TITLE ANIMATION** to change how it appears on the slide.
- Click **CHANGETHETEXT FONTANDCOLOR** to change the text style and background color.
- Click **DONE, ADDTITLETOMOVIE** when you are finished.

NOTE: You can also use a picture on the first slide instead of a plain background.

Movie Tip: Choose colors for your text and background so that the text is easy to see.

*** Now It is TIME TO SAVE!**

Importing Audio and Video Files

Importing an Audio File into Your Movie

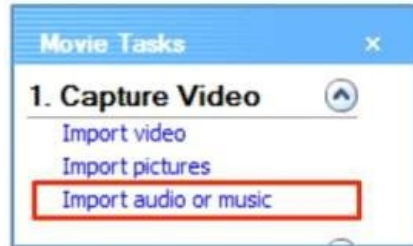
What is an Audio File?

Any music, sound or narration file is known as an audio file.

Steps to Import an Audio File

1. Under the Capture Video link, choose Import audio or music.
2. Locate the folder containing your audio file.
3. Select the audio file you wish to import.

Once the audio file is imported, you will notice the different type of icon in the Collections window.



Audio Clips Can Only Be Added in the Timeline
Drag the audio icon to the Storyboard.

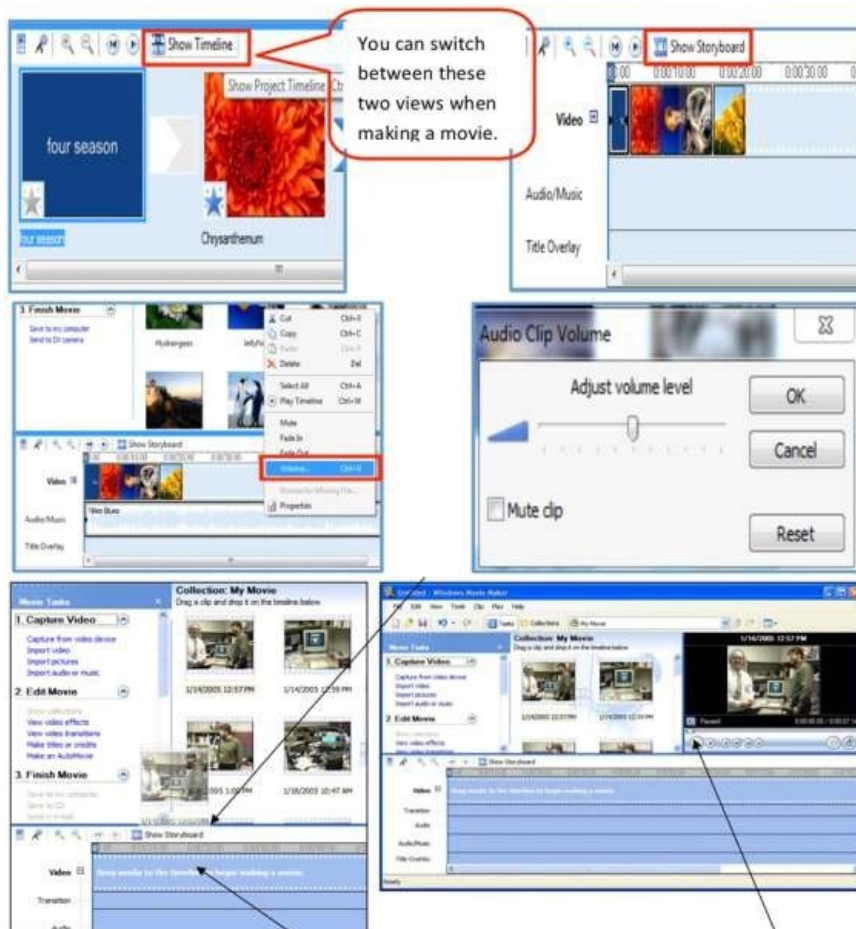
*Note the message box indicating that audio clips can only be added in the Timeline view.

Click OK in this message box.

Add an audio file

Go to Task Panel> Audio or Music.

- Navigate to the location that contains the digital media files you want to import, and then click "Import".



- The area where you create and edit your project is displayed in two views, the storyboard and the timeline.

Adjust volume of the audio

- A quick way to adjust the volume of an audio clip is to right-click the clip, and then click "Volume". Adjust the volume with the slider.

Splitting and Joining Movie Clips Editing

To edit clips:

If you are in **STORYBOARD** view click [here](#) to change to **TIMELINE** view

Trimming a clip -

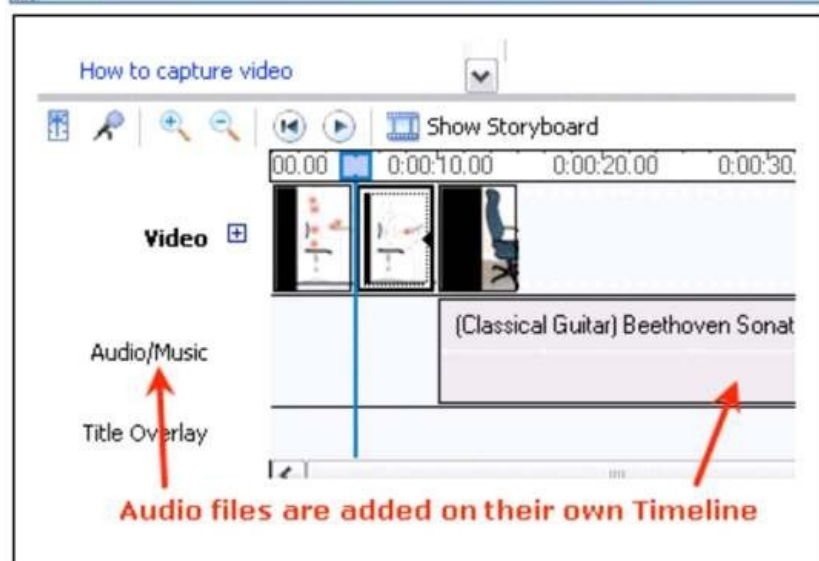
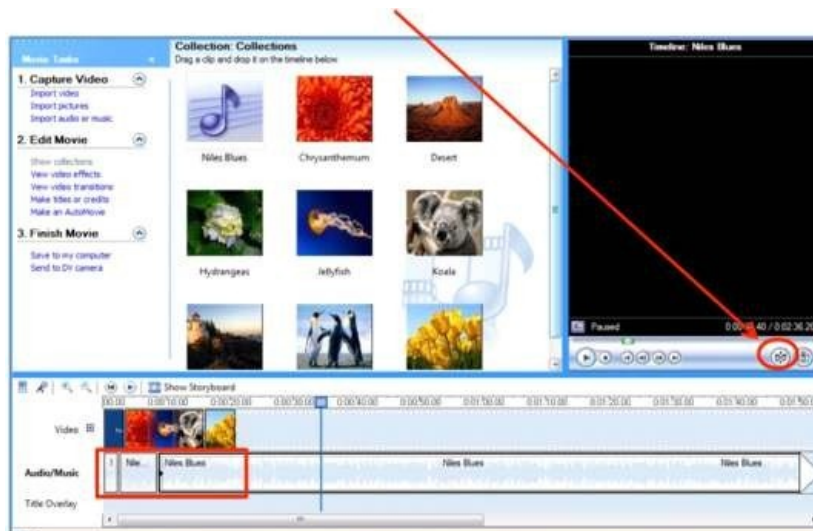
1. Drag the media clips to the timeline to begin making a movie
2. Once you're clips are on the timeline, click on the clip you'd like to trim
3. In the PREVIEW window, drag the scroll bar to the point where you want to trim the clip
4. On the CLIP menu click SET START TRIM POINT
5. Now continue to drag the scroll bar until you reach the desired end point of your clip
6. On the CLIP menu click SET END TRIM POINT - you will now have your trimmed clip

Splitting a clip—You can split a video clip into two clips. This is useful if you want to insert either a picture or a video transition in the middle of a clip.

1. Click on the clip you would like to split
2. In the PREVIEW window, drag the scroll bar to the point where you want to trim the clip
3. On the CLIP menu click SPLIT - your original clip is now two separate clips

You can enhance your movies by adding different elements to your movie, such as the following:

- **Video transitions** - A video transition controls how your movie plays from one video clip or picture to the next. You can add a transition between two pictures, video clips, or titles, in any combination, on the storyboard/timeline. The transition plays before the one clip ends and while the other clip starts to play.
- **Video effects** - A video effect determines how a video clip, picture, or title displays in your project and final movie. Video effects let you add special effects to your movie. A video effect is applied for the entire duration that the video clip, picture, or title displays in your movie.
- **Titles and credits** - Titles and credits let you enhance your movie by adding text-based information to your movie. You can change the appearance of the title or credit, in addition to changing the title animation, which determines how your title or credit displays in your movie.

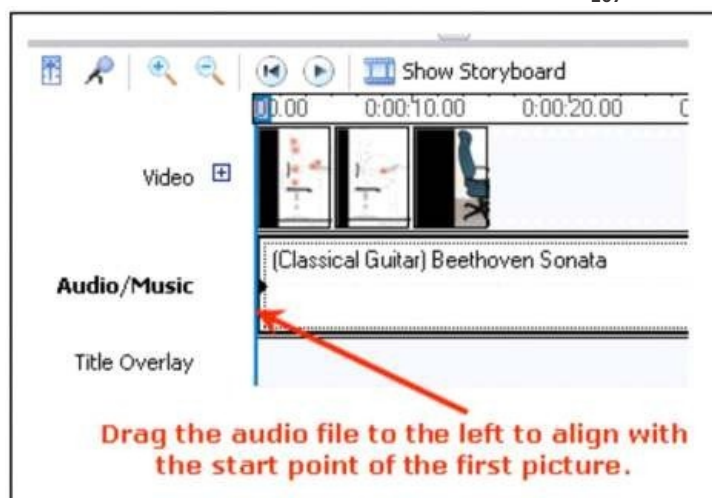


Delete the audio file

Right click on the audio file on the Timeline view, and click on "delete".
Audio Files Have Their Own Timeline in Windows Movie Maker Audio Files on the Timeline

Audio files have their own location in the Timeline to keep them separate from pictures or video clips. This makes it easier to manipulate either type of file.

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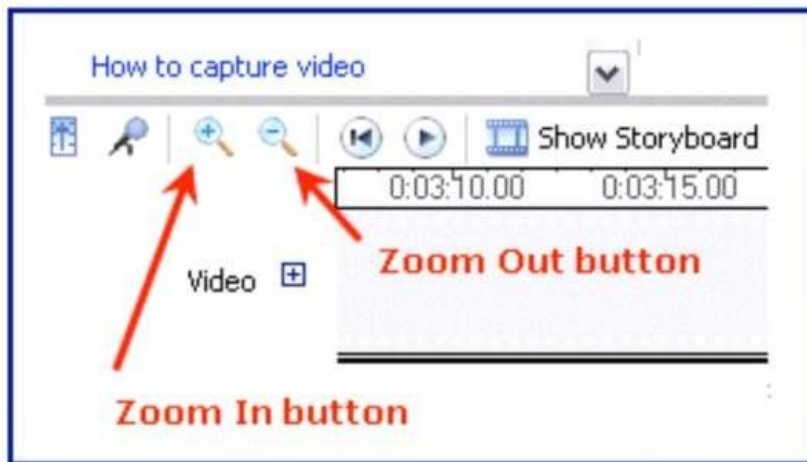
Align the Audio With the First Picture

Drag the audio file to the left to align with the start point of the first picture. This will start the music when the first picture appears.

Timeline View of Audio Clip

The Timeline indicates how much time each item takes up over the course of the whole movie. Notice that this audio file takes up a much bigger space on the Timeline than the pictures. Scroll across the Timeline window to see the end of the audio clip. In this example, the music ends at approximately 4:23 minutes, which is much longer than we need.

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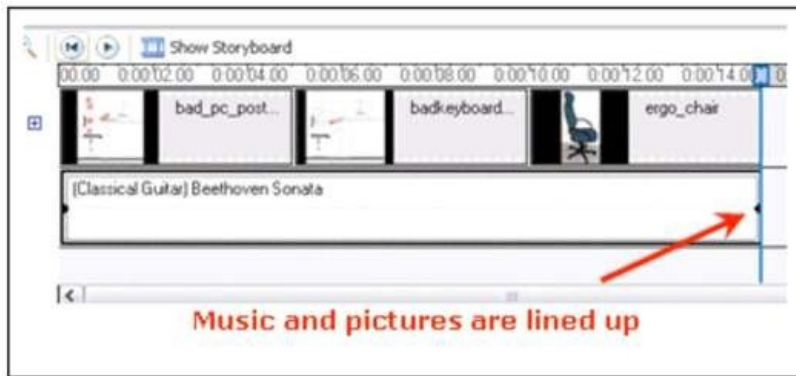


Shorten an Audio Clip

Hover the mouse over the end of the music clip until it becomes a two-headed arrow. Drag the end of the music clip to the left to line up with the last picture.

Note - In this instance, I will have to drag the end of the music clip several times to reach the beginning of the movie due to its size. It is easier to do this if you zoom in on the timeline so that there is not so much dragging. The Zoom tools are located at the bottom left side of the screen, to the left of the Storyboard / Timeline.

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Music and Pictures Are Lined Up

Now the music clip is lined up with the pictures from start to finish.

Save the movie project.

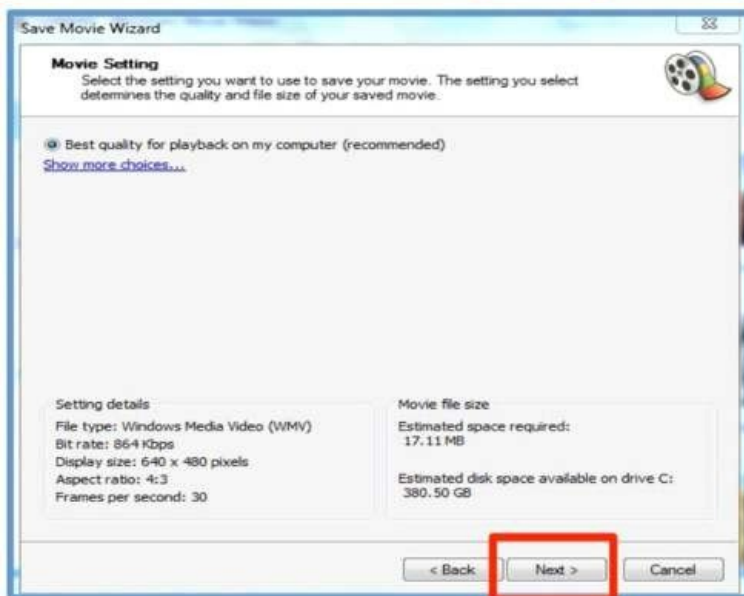
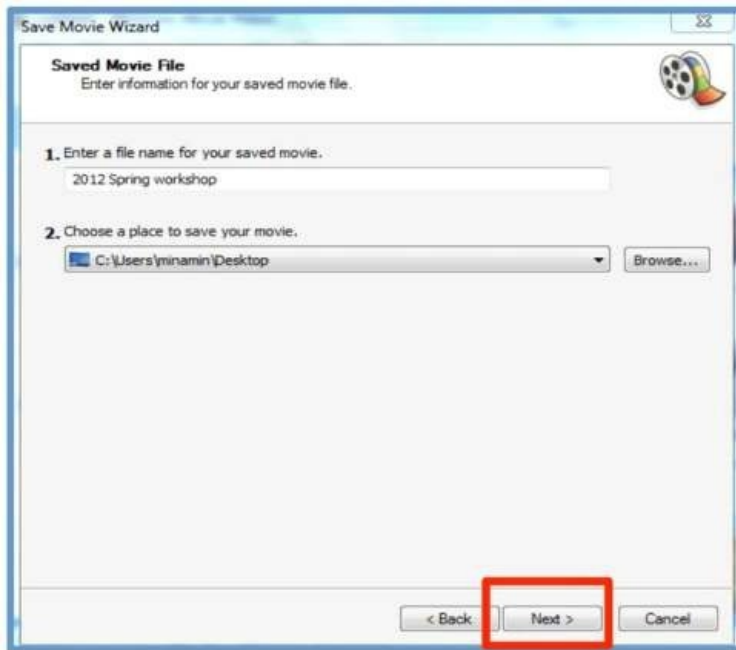
Note -You may choose to start the music at any time in your movie. The music clip does not have to be placed at the beginning.

Publish a movie to your computer

1. Click on "Save to my computer" under "3. Finish Movie" on Task Panel.

2. In the File name box, type a name for your movie.

In the Publish to box, choose where you want to save your movie once it's published, and then click on "Next".



3. Click on "Next" when you see this image.

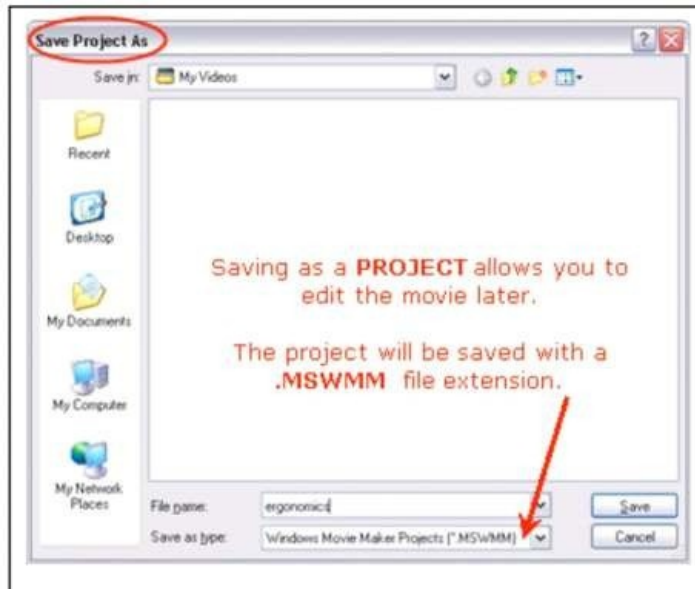
4. Click on "Finish" when you see this image.

Click FINISH to complete the process. It may take a long time! Be patient!

Step : Export your finished movie.

"Ctrl + P" will open up a wizard that will guide you through a process that will allow you to save your movie to one of 5 formats: for playback on your computer (big file, high quality can be burned to a DVD), for email (lowest quality, highly compressed), for posting on the web (as for YouTube), to be burned on a videoCD, or to a digital camcorder (highest quality). The process is pretty much self explanatory, but if you want to eventually burn your movie to a DVD, choose the movie setting "DV-AVI (NTSC)" when you save your film. To export your film to powerpoint, save it as a windows media file (.avi extension) using the "playback on your computer" option."

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Save Your Windows Movie Maker Project

Before you proceed any further, you should save your project. It is a good idea to do this frequently throughout the movie making process.

From the main menu, choose File > Save Project.

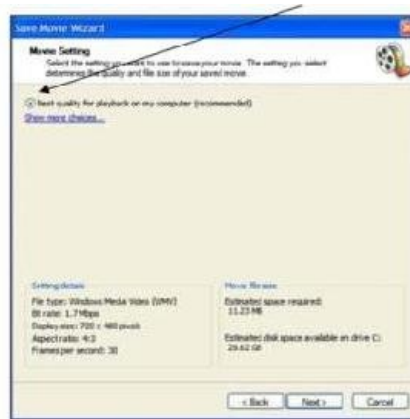
Windows Movie Maker saves the project in the file format.MSWMMwhich allows for editing at a later time. When your movie is complete, you have additional options for saving the file, so that it may be played in a webpage or emailed, for example. These other options do not allow editing, so it is important to save your working file in the Movie Maker project format.

There are a few options for sharing your completed movie. My Computer - Suggested Selection

This option is best for movies you will use in other applications such as PowerPoint.

1. Click onSAVE TO MYCOMPUTERfrom the TASKPANE
2. Enter a name for your saved movie
3. SelectBESTQUALITYFORPLAYBACKON MY COMPUTER

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Here are the definitions for each in a nutshell:

- Titles are standalone clips meant to precede your movie.
- Credits are standalone clips meant to follow your movie.
- Captions are text areas that are superimposed on top of clips or photos.

That's it. Really! :-)

Knowledge Check Points

Window Moviemaker

- .1)What type of file should you save your audio as to be able to import it correctly into movie maker?
 - A. .jpg
 - B. .mov
 - C. .wav (Answer)
 - D. .aud
 - .2)You can add narration to your timeline by speaking into a microphone attached to the computer.
 - A. True (Answer)
 - B. False
 - .3)To delete any part of the timeline, select the item and press "delete"
 - A. True (Answer)
 - B. False
 - .4)Single still images from a video clip are called:
 - A. trim points
 - B. frames (Answer)
 - C. source file
 - .5)A file on your computer that contains an image, a clip, a soundtrack, or all the footage from your digital camera or phone:
 - A. storyboard
 - B. source file (Answer)
 - C. project
 - .6)The purpose of the "collections" section is:
 - A. to display any pictures or music clips that have already been imported (Answer)
 - B. to help you import pictures into MovieMaker
 - C. to assist you in adding effects and transitions to your movie
 - .7)How do titles and credits let you enhance your movie?
 - A. by adding text-based information to your movie (Answer)
 - B. smaller segments of large audio and video files
 - C. collections pane of Windows Movie Maker
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- .8)A collection acts as a for .
 - A. container, clips (Answer)
 - B. organizer, captured
 - C. split, two clips
 - .9)How can we test the movie?
 - A. Select the first slide and then start the movie from Video Preview (Answer)
 - B. we cannot
 - C. save it
 - .10)Windows Movie Maker will allow you to use, pictures, OR pictures and video clips, OR just video clips on the video timeline.
 - A. True (Answer)
 - B. False
 - .11)In Windows Movie Maker, if I delete a video clip, picture or audio file from a collection folder, it is also deleted from the hard drive.
 - A. True
 - B. False (Answer)
 - .12)Movements as one picture or video clip changes to another.
 - A. effects
 - B. transitions (Answer)
 - C. sequences
 - D. collections
 - .13)To add pictures to your movie, click on...
 - A. capture images
 - B. capture video
 - C. import pictures (Answer)
 - D. import video

Some more Knowledge Check Points:-

1. Moving Pictures Expert Group, a company of programmers and designers, designed a series of widely used multimedia file formats known as:
 - A. Flash
 - B. MPEG
 - C. AVI
 - D. Macromedia
2. Windows Media Audio (WMA) stands for:
 - A. Lossless compression to significantly reduce file size.
 - B. Microsoft Windows Media native audio file format
 - C. The uncompressed Wave audio file format used with Microsoft Windows.
3. Tweening is the process of:-
 - A. Joining pieces of animation with a fade or slide.
 - B. Duplicating frames between key frames to animate an object.
 - C. Generating frames between key frames to animate an object.
 - D. Animating an object to make it spin.
4. An animation has 30 frames per second(fps). If the animation plays for 30 seconds how many frames in total would the animation contain?
 - A. 1800 frames
 - B. 900 frames C. 1200
 - D. 1500
5. You are working on the draft of a logo. You are trying to decide whether to flatten the image or leave the document as a layered file until your client has approved the logo. Which format should you use if you anticipate making future changes to the logo in Photoshop?
 - A. Merge the layers that you like and leave the remainder in layers
 - B. Leave the document as a layered file for any future edits or changes
 - C. Flatten the image to save file space
 - D. Merge only the text layers

6. What video editing technique allows one to make a gradual change from one video clip to another by using special effects?
 - A. Transitions
 - B. Alpha channel
 - C. Time stamping
 - D. Scenes
7. Which of the following file formats delivers vector-based animation on the web?
 - A. AVI
 - B. SWF
 - C. Animated GIF
 - D. EPS
8. The quality of a vector image is :-
 - A. Wholly resolution dependant
 - B. Reduced if the image is resized
 - C. Totally dependent on the number of colours used
 - D. Unaffected if the image is rescaled to a different size.
9. What is the most effective method for preserving bitmap image quality?
 - A. Use the original image at exactly 100% size
 - B. Select Allow smoothing from Bitmap Properties
 - C. Break apart image and resize to fit exactly
 - D. Resize proportionately by holding shift key
10. Which of the following is true of a bitmap image?
 - A. It is made up of pixels on a grid
 - B. it cannot be edited
 - C. Scaling does not reduce the quality
 - D. It is mathematically defined
11. MP 3 is a file extension and file format that is used for:
 - A. Audio files.
 - B. Digital files
 - C. High-definition widescreen film.
 - D. Web-based multimedia.

12. Seema edits a photo in Photoshop and saves it as a Jpeg file to use on a birthday card. When he resizes the image to make it larger, it looks blurred. This is most likely a result of:-
 - A. Dithering
 - B. Pixilation
 - C. Anti aliasing
 - D. Distortion
13. You are required to create a music mash up of 5 different top songs for 2013. What type of file should you save your audio track, in order to import it correctly into a program like Windows Movie Maker?
 - A. .aid
 - B. .wav
 - C. MP 3
 - D. Both B & C
14. You are creating a graphic for a web page. You need to maintain a transparent background using a mafe color. You have turned off the visibility of the background layer.
 - A. Choose File > Save As, and then select GIF
 - B. Choose File > Save As, and then select JPEG
 - C. Choose File > Save for Web, and then select PNG
 - D. Choose File > Save for Web, and then select GIF
15. To generate a video production in its final form, including transitions, effects, and superimposed tracks is called:
 - A. Compress.
 - B. Render
 - C. Store
 - D. Finalize.
16. The process of playing audio and video in real time over the internet is called:-
 - A. File Sharing
 - B. Transferring
 - C. Streaming
 - D. Downloading

17. A junior animator has been asked to quickly develop a short 30 second animation using FLASH and save it in the most easily viewed web format. Which file format do you recommend is the most appropriate for uploading to an internet site?
 - A. FLV
 - B. SWF
 - C. WMV
 - D. MPEG
18. What should you take into consideration when preparing images for an educational audience of students, ages five through to 11?
 - A. Entertaining and colorful images
 - B. Whether the images are age appropriate
 - C. Parental concerns and requests
 - D. All of the above
19. This Flash file is smaller because it is used to view and use only. It cannot be modified.
 - A. FLV
 - B. SWF
 - C. HTML
 - D. PPT
20. A design in Adobe Photoshop consists of multipleof graphics and text.
 - A. Layers
 - B. Text
 - C. Images
 - D. Graphics
21. You have an image with four layers. What will happen if you select all the four layers and apply a style from the Styles palette?
 - A. The style will apply on all the four selected layers simultaneously.
 - B. The style will apply only on the bottom most layer.
 - C. The style will not affect any layer.
 - D. The style will apply only on the topmost layer
22. What are two file types that are associated with Flash?
 - A. FLV and SWF
 - B. PSD and FLV

- C. PSD and SWF
 - D. SWF and DOC
23. The process of building a movie from source files so that it can be viewed on another system such as a PC or a DVD player.
- A. Capture
 - B. Frames
 - C. Storyboard
 - D. Rendering(Ans)
24. To record audio, video, or a still image as a digital file on your computer.
- A. Capture(Ans)
 - B. Clips
 - C. Trim posts
 - D. Text clip
25. Uses a time scale that measures the length of clips within a scene and works in real time while the scene plays back.
- A. Project
 - B. Frames
 - C. Timeline(Ans)
 - D. Import
26. Single still images from a video clip.
- A. Trim points
 - B. Text clip
 - C. Source file
 - D. Firewire
 - E. Frames(Ans)
27. A file on your computer that contains an image, a clip, a soundtrack, or all the footage from your digital video camera.
- A. Storyboard
 - B. Project
 - C. Source file(Ans)
 - D. import

Window Movie Maker Keyboard shortcuts

Shortcut keys are available for many of the commands in Windows Movie Maker. By using shortcut keys, we can quickly accomplish common tasks.

The following table provides an overview of the tasks we can complete by using shortcut keys.

Task	Shortcut key
------	--------------

Create a new project	CTRL+N
----------------------	--------

Open an existing project	CTRL+O
--------------------------	--------

Save a project	CTRL+S
----------------	--------

Save a project with a new name	F12
--------------------------------	-----

Save a movie	CTRL+P
--------------	--------

Capture video	CTRL+R
---------------	--------

Import an existing digital media file	CTRL+I
---------------------------------------	--------

Undo the last action	CTRL+Z
----------------------	--------

Redo the last undone action	CTRL+Y
-----------------------------	--------

Cut	CTRL+X
-----	--------

Copy	CTRL+C
------	--------

Paste	CTRL+V
-------	--------

Delete	DELETE
--------	--------

Select all clips	CTRL+A
------------------	--------

Rename a collection or clip	F2
-----------------------------	----

Clear the storyboard/timeline	CTRL+DELETE
-------------------------------	-------------

Show or hide the storyboard/timeline	CTRL+T
--------------------------------------	--------

Zoom in on the timeline	PAGE DOWN
-------------------------	-----------

Zoom out on the timeline	PAGE UP
--------------------------	---------

Add selected clips to the storyboard/timeline	CTRL+D
---	--------

Play video in full screen	ALT+ENTER
---------------------------	-----------

Set start trim point	CTRL+SHIFT+I
----------------------	--------------

Set end trim point	CTRL+SHIFT+O
--------------------	--------------

Clear trim points	CTRL+SHIFT+DELETE
-------------------	-------------------

Split a clip	CTRL+L
--------------	--------

Combine contiguous clips	CTRL+M
--------------------------	--------

Nudges clip to the left	CTRL+SHIFT+B
-------------------------	--------------

Nudges clip to the right	CTRL+SHIFT+N
--------------------------	--------------

Play or pause clip SPACEBAR
 Stop playback on the storyboard/timeline CTRL+K
 Play content on the storyboard/timeline CTRL+W
 Rewind content on the storyboard/timeline CTRL+Q
 Back CTRL+ALT+LEFT ARROW
 Forward CTRL+ALT+RIGHT ARROW
 Previous frame ALT+LEFT ARROW
 Next frame ALT+RIGHT ARROW
 Display Help topics F1
 Select previous item (on a timeline track, on the storyboard, or in the Contents pane) LEFTARROW
 Select next item (on a timeline track, on the storyboard, or in the Contents pane) RIGHT ARROW
 Select item above (on a timeline track or in the Contents pane) UP ARROW
 Select item below (on a timeline track or in the Contents pane) DOWN ARROW
 Go to the first item (on a timeline track, on the storyboard, or in the Contents pane) HOME
 Go to the last item (on a timeline track, on the storyboard, or in the Contents pane) END

Glossary

- **bandwidth** : A network's capacity for transferring an amount of data in a given time.
- **bit rate** : The number of bits transferred per second.
- **Capture** : To record audio, video, or still images as digital data in a file.
- **capture device** : Hardware that transfers audio and video from an external source, such as a VCR or camcorder, to a computer.
- **Clip** : Small segment of a larger video file.
- **Codec** : An abbreviation for compressor/decompressor. Software or hardware used to compress and decompress digital media.
- **Collection** : A container for organizing clips.
- **Compression** : A process for removing redundant data from a digital media file or stream to reduce its size or the bandwidth used.
- **Content** : Audio, video, images, text, or any other information that is contained in a digital media file or stream.
- **Cross-fade** : A method of smoothly moving from one video clip or photo to another. With a cross-fade transition, the frames in the playing clip fade out as the frames in the new clip fade in. In the film industry, the same process is called a dissolve.
- **depth of field** : The measurement of the area in front of and behind the subject that is in focus.
- **digital video (DV)** : Video images and sound stored in a digital format.
- **direct memory access (DMA)** : Memory access that does not involve the microprocessor and is frequently used for data transfer directly between memory and a peripheral device, such as a disk drive.
- **Download** : To transfer a file over a network in response to a request from the device that receives the data. Downloaded content is kept on the receiving device for playback on demand. In contrast, streamed content is played as it is delivered.
- **Frame** : One of many sequential images that make up video.

- **frame rate** :The number of video frames displayed per second. Higher frame rates generally produce smoother movement in the picture.
- **Header** :A part of the file structure that contains information required by an application to decompress and render the content. The header in a protected file also contains information required to get a license.
- **Institute of Electrical and Electronics Engineers (IEEE) 1394** :A high-speed serial bus standard that provides enhanced computer connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other computers, and portable devices.
- **microphone noise** :Unwanted sound that is captured when objects touch a microphone inadvertently.
- **moiré pattern** :Video artifacts that occur when recording an object that has many thin, parallel lines.
- **project file** :The file that contains information about the files that have been imported into or captured in the current project, and how files or clips have been arranged.
- **Record** : *See definition for:* capture
- **Source** :Audio and video content that can be captured and encoded from devices installed on your computer or from a file.
- **Split** : To divide an audio or video clip into two clips.
- **Storyboard** : A view of the workspace that displays the sequence of your clips.
- **Timeline** :The area of the user interface that shows the timing and arrangement of files or clips that make up a project.
- **Trim** :To hide parts of a file or clip without deleting them from the original source. Files and clips can be trimmed by adjusting the start or end trim points.
- **trim points** :The points where playback of a file or clip begins and ends. There are two trim points: start trim point and end trim point.
- **Windows Media file** :A file containing audio, video, or script data that is stored in Windows Media Format. Depending on their content and purpose, Windows Media files use a variety of file name extensions, such as: .wma, .wme, .wms, .wmv, .wmx, .wmz, or .wvx.

- **Windows Media Technologies** :A family of digital media software developed by Microsoft, such as Windows Media Services, Windows Media Encoder, and Windows Media Player.
- **Windows Movie Maker** :Software for capturing, editing, and arranging audio and video source material to create movies.
- **Workspace** :The area of Windows Movie Maker in which you create your movies. It consists of two views: storyboard and timeline, which act as a container for work in progress.

Customizing and Embedding Multimedia Components in Web Pages

- Compatible Multimedia File Formats for Web Pages
- Embedding Audio File
- Embedding Video File
- Embedding Flash File

Introduction

Multimedia means that computer information can be represented through audio, video, and animation in addition to traditional media (i.e., text, graphics drawings, images).

Multimedia is the field concerned with the computer-controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally.

A Multimedia Application is an Application which uses a collection of multiple sources *e.g.* text, graphics, images, sound/audio, animation and/or video.

Introduction of Dreamweaver

Dreamweaver has become one of the industry's leading Website Design editing and management tool. This course is designed for students who wish to evaluate the Dreamweaver Web design tool or who would like to learn to use it. The emphasis is on learning to use Dreamweaver as a tool to create a Website, rather than on learning the basic concepts of Web design and we move very quickly. However, all questions about basic Web design concepts will be answered.

Dreamweaver is a web development application. It is a web editor and allows users to create web pages with different features without the need to write the HTML code by hand. The application enables you to preview websites in a preview panel and also provides transfer and synchronization features. Dreamweaver is a software application whose main function is to design, manage and publish websites. This software was originally created by Macromedia but rights to produce it were later sold to Adobe Systems.

Starting Dreamweaver

1. Start Dreamweaver. You should see a start up Screen.



Define a local site

When you Define a local site, you tell Dreamweaver where you plan to store all the files for a particular site. To work effectively in Dreamweaver, always define a local site for each Web site you create.

For this tutorial, you'll specify the Compass Site folder as the local site folder.

1. If it isn't already open, launch Dreamweaver. A blank document opens.
2. Choose Site > New Site.
3. In the Site Definition dialog box, make sure Local Info is selected in the Category list.
4. In the Site Name field, type my tutorial. The site name lets you easily identify and select a site from a list of sites you've defined.
5. Click the folder icon to the right of the Local Root Folder field.



6. In Windows, click Open, then click Select when Compass Site appears in the Select field.
 7. On the Macintosh, click Choose to select the Compass_Site folder. The Local Root Folder field updates to display the path to the local site.
- Note:** The complete path to the Compass_Site folder may vary, depending on where you installed Dreamweaver.
8. Click OK to close the dialog box.

Local Info

Local Info is where we put in the information about the files that are on your local computer (which is where all your files are or will be for now).

1. In the Advanced Tab, under Category, choose Local Info.
2. Next to Site Name, type: My First Dreamweaver Web site. You will use this name when you go into Dreamweaver to retrieve the files associated with this site. This name has to be unique within Dreamweaver.
3. Next to Local root folder, click on the yellow folder icon to browse for where you want to store your web site on your local computer. You may wish to create a new folder to store your files in. I stored my Web site on F: (my flash drive) in a folder I called My WebSite. This is now your Root Folder
4. Click DONE. You should see a Files panel on the right side of your screen. The Local View in the Files Panel will display all the files for your Web site that are in the Root Folder on your computer.

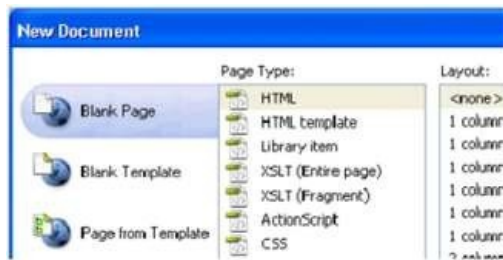


Later we will add information about connecting to the server. The Remote View shows which files have been uploaded to the server.

5. Once we've entered all this information about local and remote servers, it will be set up for us next time we use Dreamweaver on this computer. Unfortunately, it doesn't work that way on lab computers. If you move to another computer, you will have to set up your Web site on the new computer as well.

To create a Web page, follow these guidelines:

1. Choose a page to be the homepage of your Web site. This will be the first page that users encounter when they visit your site. Save this file to your local root folder as home.html. Naming the homepage home.html tells the Web browser that this is the first page it should open when someone visits your site.
2. To add a new page go to File > New and choose a basic HTML page. Save this page by clicking File > Save As. Name the first page index.html (that is home page)



3. After your homepage is created, you can use this page as a template layout for all the other pages in your site. Simply hit Save As and name the file whatever you wish, But Remember not to use capital letters or spaces when naming files; this will make it easier for web browsers to find your files.
4. To save the pages of your site simply click File > Save for each page. Make sure your homepage is named index.html, and save all of your files in the folder you chose when you defined your site, *i.e.* in your local root folder.
5. After your homepage is created, you can use this page as a template layout for all the other pages in your site. Simply hit Save As and name the file whatever you wish, but be sure to keep the name simple, for example CV.html, resume.html, pictures, *etc.* Remember not to use capital letters or spaces when naming files; this will make it easier for web browsers to find your files.
6. To save the pages of your site simply click File > Save for each page. Make sure your homepage is named home.html, and save all of your files in the folder you chose when you defined your site, *i.e.* in your local root folder.

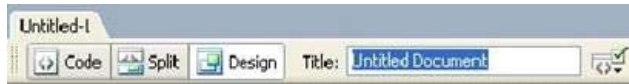
NOTE: After that all file transfer to the entire site once you have finished working on it.

WHAT'S A ROOT FOLDER?

The local root folder is where you will keep ALL the files for your web site. You can create subfolders under it, but consider it to be the parent of all parent folders. You'll keep all of the files and subfolders for your Website (including html pages, images, multimedia files, *etc.*) either in the root folder or a subfolder under the root folder.

Making your first Web Page:

10. Under the File menu at the top, choose New.
11. In the New Document dialog box, make sure you have Blank Page selected, the Page Type is HTML, and the Layout is <none>.



12. Click Create. You should now see a blank Web page in the Document Window.

13. Under the File Menu, choose Save.

14. In the Save As box, find your Web site folder and save your file as index.html

15. Click Save. In the Files panel, you should now see index.html. Congratulations! You've created your first Web page using Dreamweaver. Unfortunately, it's pretty boring at the moment.

RULES OF THUMB for naming web files:

- Do not use spaces or special characters, such as those found about the number keys on the keyboard, in your filenames. You can use dashes and underscores. (e.g., my_page.html)
- Always use a 3-or 4-character file extension for every file you use on the Web. In the case of a regular Web page, always use .htm or .html.
- Be very specific about capitalizing because most Web servers are case-sensitive.

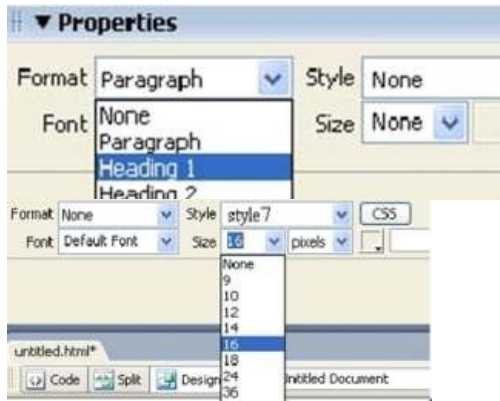
Give your Web Page a Title

In the document toolbar, find the Title box.

1. On the document toolbar, locate the Title field.
2. Type in a title for your page. Feel free to be creative (but not indecent). Hit Enter
3. The title doesn't show up on the page, but will appear in tabs and across the top of browsers.

Adding Some Content

1. In the Document window, type in a good title. This one will be the head of your Web page. If you can't think of anything, you can always use, "Aardvark Adoption Society of Delaware".
2. Add a subtitle. Again, it can be anything you want. If you'd prefer, it could be, "We speak for Aardvarks who can't speak for themselves."
3. Now that you've got a good title, add some content. Logically, it should go with the title. Type one or two lines now for now. We'll add more later. (If you can't think of anything, feel free to throw in some of the Aardvark content).



Now let's format the content:

Ø On the Web page, highlight the title.

Ø In the Property Inspector, click on the Format drop down arrow, and choose Heading 1.

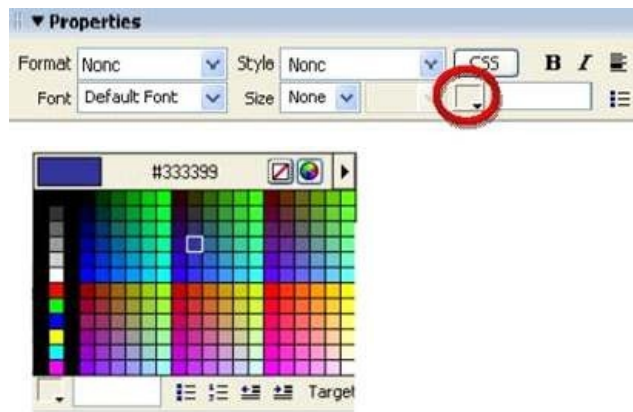
Note: If you do not see the Property Inspector, choose Window >> Properties.

4. On the web page, highlight the second line of text.
5. From the Format menu on the Property Inspector, choose Heading 2.

Note: When formatting your text, keep in mind that text sizes in HTML are relative sizes. This means that, when your page is viewed in a browser, the text size will depend on the default text size settings on each user's computer. Relative sizes give users the ability to adjust the text size to suit their individual needs. This option is especially important for people with visual impairments, but it means that the appearance of your pages may vary from computer to computer.

Playing with Font Properties

1. Highlight the Subtitle. Change the font size to 24.
2. Highlight any word on the page and click the Bold icon (**B**) on the Property Inspector. The selected word appears bold.
3. Highlight the title click the gray square to the right of the Size popup menu in the Property Inspector. A grid of colored squares appears, and the cursor changes to an eye dropper.
4. Click the eyedropper on the desired color. The field to the right of the color swatch reflects the code Web browsers need to correctly display the color you've chosen.



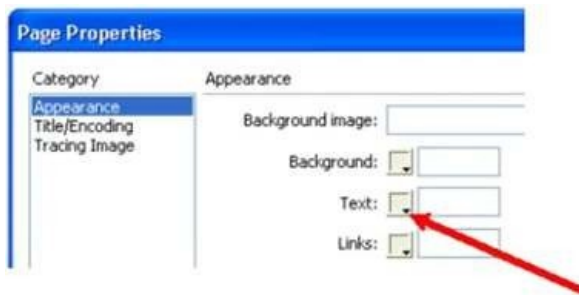
Alignment

1. Highlight the title and subtitle on the page.

2. Click the Align Center button () on the Property Inspector. The titles should now be centered on your page.

Creating Lists

1. First we need to add a list.
2. Type in a title for your list and then type in a list of items. Make sure there are at least 3 items in your list. Make sure you hit return after each item. (Feel free to use a list from the aardvark homework if you can't think of your own.)
3. Highlight the list title and choose Heading 3 from the Format menu on the Property Inspector.
4. Highlight the list items and click the Unordered List button on the Property Inspector.
5. The items appear as a bulleted list.
6. Now type in another List title and another list of items.
7. Highlight the title and select Heading 3.
8. Highlight the rest of the items and click the Ordered List button on the Property inspector (next to the ordered list button). The items should now appear in a numbered list.
9. Save your work. Get into the habit of saving your work regularly.



Page Properties

In this section you will learn how to set your page's background color, as well as the default text and link colors. These settings differ from what you've done so far on the Property Inspector because they'll apply to all the text and links on the page—not just a selected piece of text.

1. From the Modify menu at the top of the workspace, choose Page Properties.
2. To change the text color, click the bottom right corner of the text color box.
3. Using the eyedropper, choose a color by clicking on any of the color swatches.
4. Similarly, you can change the background color for the page using the Background color setting.
5. You can also change the color of links, active links, and visited links. An active link is a link just when the user clicks it. A color change lets the user know that s/he clicked on a link. A visited link is one that the user has already clicked on and visited. A color change lets the user know s/he's already visited that link.
6. Select "Links" from the Category menu at left, then make your selections for link, visited link, and active link colors as you did in Step 3.
7. Click the Apply button to see how your color choices look on the index page. The Page Properties dialog box will remain on the screen.
8. When you're satisfied with the colors you've picked, click OK.

Note: You can add a background image if you want. Browse to find an image by the background image. See what it looks like. Now you know that's an option. We'll talk about this option more later. For now, go back to a solid color background.

Note: If you changed the color for any text using the Property Inspector, those changes will override general page color choices.
Web Page Preview

As you create a page in Dreamweaver, the page may not look exactly like it would in a browser. To preview the page in a browser:

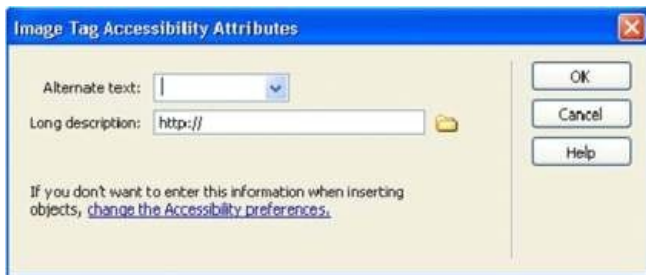
1. Choose File >> Preview in Browser >> i-explorer or Netscape or press the F12 key. A web browser, such as Netscape or Internet Explorer, opens and loads the web page.
2. Take a look at your page to see how it will appear on the Web.
3. When finished, close the browser and switch back to Dreamweaver.

NOTE: Colored or underlined text can be mistaken for links. Choose your color scheme so that the links stand out from rest of the text. The text and links also should stand out from the background for readability. When selecting colors, keep it simple. Too many colors can be distracting or confusing.

Adding Images

Note: Any editing or resizing of an image should be completed before it is added to a web page.

1. First you need an image. Feel free to find one on your own that suits the theme of your web page. If you don't feel like it, I've included an image on myWebsite that you can download.
2. Next, add it to your Web page.
3. Place your cursor below the sub header in your document and press Enter twice.
4. Choose Insert >> Image. The Select Image Source dialog box will appear.
5. Using the dialog box, locate and select an image, then click OK.



You will first encounter a prompt to add accessibility attributes:

- Type a brief description of the image in the Alternate text box, then click OK.
- Because you're trying to use a file that lies outside your root folder (mywebsite), you'll receive the following message: • Click Yes. The Copy File As dialog box will appear.
- Click the Save button to place a copy of the image file inside your my website folder.
- The image will appear on your web page.
- Click the Refresh button on the Files panel () and the image file will appear in the list of local files.

Delete an Image

1. In the Document window, click on the image to select the image.
2. Press the Delete key. The image disappears.
3. To reverse the deletion, use the Undo command. From the Edit menu, choose Undo. The image should reappear on the page.

Create a Second Page

Next, you will create a second page for your Web site.

1. From the File menu, choose New...The New page dialog box appears.
2. Click the Create button. The new file will appear in the document window.
3. Save your new page in the mywebsite folder as Page2.html
4. In the Title field, type an appropriate title for this page. We'll eventually make it into a Calendar of Events Page, if that helps you decide on a title.
5. Save your work.

Insert Table

To insert a table, follow these steps:

1. In the main menu, click Insert > Table (alt+ctrl+T)
2. Insert the amount of Table Rows and Columns
3. Set Table width to between 600 and 800 pixels, or our page ratio.
4. Set Border thickness. To have a visible border type in 1 or higher, to have no border type in 0.
5. Cell padding adds room inside of a cell. Enter 0 for no space or a number to Increase the space.
6. Cell spacing adds space between cells. Enter 0 for no space or a number to Increase the space.
7. Click OK.

The image shows two windows related to table editing. The top window is titled 'Table' and contains the following sections:

- Table size:** Rows: 4, Columns: 6. Table width: 600 pixels. Border thickness: 0 pixels. Cell padding: 0. Cell spacing: 0.
- Header:** Four icons for header placement: None (selected), Left, Top, and Both.
- Accessibility:** Caption: (empty text box). Align caption: default. Summary: (empty text box).
- Buttons: Help, Cancel, OK.

The bottom window is a toolbar for table properties. It includes fields for Table Id, Rows (1), Cols (1), W (100%), H (pixels), CellPad, CellSpace, Align (Default), and Border (0). It also has color pickers for Bg Color and Brdr Color, and a Bg Image button.

>> Properties of a Table Itself

If you click on one of the table borders, you can view your table properties in the Table

By the above Table you can modify

- name your table;
- change the number of rows and columns in the table;
- change the width and height of the table,
- Change the Cell Pad: this is the number of pixels that come between the border of cells and the content of cells.

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The image shows a 'Format' toolbar with various options for text and table formatting, including Font, Size, Color, and alignment options.

- Change the Cell Space: this is the number of pixels that come between the borders of each cell.
- Change the alignment: this is the position of the table on the left or right edge, or in the center of the page.
- Change the border: this is the number of pixels that make up the thickness of cell borders.
- You can clear and convert table widths and heights.
- Change the background color of the whole table.
- Insert a background image for the whole table.
- Change the border color.

Properties of Cells Inside Table

Once the properties of the table have been set, you can also adjust the properties of individual cells within the table by clicking inside the cell

In the top section of this window you can format the text inside the table cell. In the bottom section of this window you can:

- Change the alignment of the content horizontally and vertically.
- Change the width and the height of the cell
- Insert Header
- Change the background color for the single cell.
- Change the border color for the single cell.
- Use Wrap.
- Insert a background image for the single cell.

Inserting Image

To insert an image, follow these steps:

1. Click in the cell where you want the image to appear.
2. Click Insert > Image.
3. Locate the image you want to insert.

NOTE: All of your images should be saved in the "images" folder that you established

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when you started.

4. Click Choose to insert the image.

Internal Links

Internal links are used to connect users to other pages within the same website. Before linking to other pages, you must make sure that the other pages are saved in your local root folder and contain the file extension .html.

To create an internal link, follow these steps:

- Select the text or image you would like to make a hyperlink.
- Click on the small folder next to the Link field in the Properties Inspector.
- Click OK.

Embedding Flash File Insert a Flash movie

Now you'll add a different type of asset. You'll drag a Flash movie into the cell below the navigation buttons.

1 Click the Flash icon in the Assets panel to view all the Flash files in the Compass site.

2 In the Names list, click welcome.swf to select the Flash movie you're inserting in the document.

In the Assets panel's preview area you see a placeholder for the Flash movie.

Play button

4 In the Names list, drag the Welcome.swf to the cell below the Trip Planner navigation button. A Flash movie placeholder appears in the selected cell.

Insert Flash objects

Flash objects are small graphic SWF (Shockwave) files you can create while working in Dreamweaver. You can create Flash Text and Flash Button objects. Using Flash Text allows you to design Web pages that use nonstandard fonts without worrying about which fonts visitors to your site have available on their computers. Flash buttons are created from Flash templates that ship with Dreamweaver. You can easily customize a template button and add it to your



Web pages.

The Flash Text object appears in the document. You must play the Flash object to see the text with its rollover effect. 1 If it isn't already expanded, in the Property inspector click the expander arrow to see all. 2 In the Flash Text Property inspector, click Play. 3 In the Document window, roll the pointer over the FlashTextobject. 4 To stop playing the object, click Stop in the Property inspector.

Create a Flash button object

Now you'll see how easy it is to add a Flash button to a document. You'll create a Flash button, and add it below the climber image.

- In the Document window, place the insertion point where you want the object to appear, below the image of the rock climber, then in the Objects panel, click the Insert Flash Button icon.

The Insert Flash Button dialog box appears.

- In the Style list, select Beveled Rect-Bronze.
- For Button Text, type More Details.
- For Font, select Verdana, or choose one of your favorite fonts.
- For Size, type 11.
- Click Apply to see the Flash button in the document.
- In Save As, type myButton.swf

Click OK to close the dialog box. The Flash Bufon object appears in the document.

View the Flash bufon in the document

The Flash bufon you inserted has a rollover effect, now you'll play the bufon to see how it looks.

1In the Flash bufon Property inspector, click Play to play the bufon in the document.

2In the Document window, roll the pointer over the object to see the Flash bufon's rollover effect.

3To stop playing the object, click Stop in the Property inspector. You can add music or video into your web page.

Embedding Audio File

How to Embed MP3 Audio Files In Web Pages

<audio controls>

<source src="horse.mp3" type="audio/mpeg">

<source src="horse.ogg" type="audio/ogg">

<embed height="50" width="100" src="horse.mp3">

</audio>

Embedding Video File Windows Media

Here is an example of embedding a Windows Media file. On your page you would replace both instances of filename.wmv with your actual file path and name.

<object id="MediaPlayer" width="192" height="190" classid="CLSID:22D6F312-B0F6-11D0-94AB-0080C74C7E95"

standby="Loading Windows Media Player..." TYPE="application/x-oleobject">

<param name="FileName" VALUE="filename.wmv">

<param name="ShowControls" VALUE="true">

<param name="ShowStatusBar" value="false">

<param name="ShowDisplay" VALUE="false">

<param name="autostart" VALUE="false">

<embed type="application/x-mplayer2" src="filename.wmv" name="MediaPlayer" width="192" height="190"

ShowControls="1" ShowStatusBar="0" ShowDisplay="0"

```
autostart="0"> </embed>
</object>
```

Real Media

The following example presents a real media file on a web page. Again, you would replace both instances of filename.rm with your actual file path and name.

```
<object id=rvocx classid="clsid:cfcdaa03-8be4-11cf-b84b-0020abbccfa" width="180" height="159"> <param name="src"
value="filename.rm">
  <param name="autostart" value="false">
  <param name="controls" value="imagewindow">
  <param name="console" value="video">
  <embed type="audio/x-pn-realaudio-plugin" src="filename.rm" width="180" height="159" autostart="false"
controls="all" console="video"> </embed>
</object>
```

Note on Linking

If you create a link directly to a Real Media file it will download in its entirety before the user can start playing it. You would do that like this: Download Video

If you wish to stream the file such that the user can start watching it as soon as enough of the file is buffered, you must create a metafile. This metafile is a simple text file containing the URL of the video file, but with a .ram extension: hfp://it.rit.edu/~rpv/local/tutorials/embedding_video/filename.ram You would then link to this metafile: Watch Video

Quicktime

Embedding QuickTime is similar to the above two, again using both the <object></object> and <embed></embed> tags for maximum browser compatibility:

```
<object classid="clsid:02bf25d5-8c17-4b23-bc80-d3488abddc6b"
width="320"height="180"codebase="hfp://www.apple.com/qtactivex/qtplugin.cab"> 245
```

```

    <param name="src" value="filename.mov">
    <param name="autoplay" value="true">
    <param name="controller" value="false">
    <embed src="filename.mov" width="320" height="180" autoplay="true"
    controller="false" pluginspage="http://www.apple.com/quicktime/download/">
    </embed>
  </object>

```

MPEG-4

You can present MPEG-4 video to your users via the QuickTime plug-in as well:

```

<object classid="clsid:02bf25d5-8c17-4b23-bc80-d3488abddc6b" codebase="http://www.apple.com/qtactivex/qtplugin.cab"
  width="320" height="256" >
  <param name="src" value="filename.mp4" >
  <param name="autoplay" value="true" >
  <embed src="qtmime.type.png" type="image/x-
  macpaint" pluginspage="http://www.apple.com/quicktime/download" qtsrc="filename.mp4"
  width="320" height="256" autoplay="true">
  </embed>
</object>

```

Flash

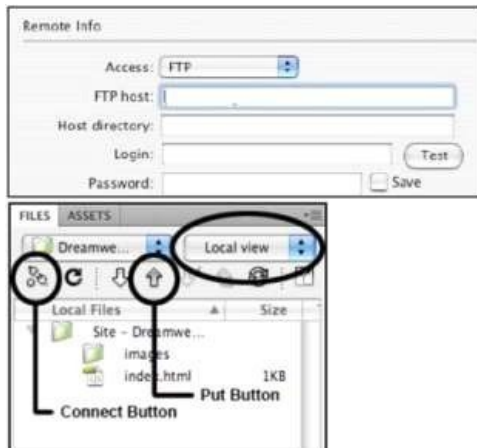
To place a Flash progressive download video on your web page you will need two files: An FLV video file and an SWF Flash application with which to play the video.

Embedding the video on the page is accomplished thusly:

```

<object classid="clsid:D27CDB6E-AE6D-11cf-96B8-444553540000"
  codebase="http://download.macromedia.com/pub/shockwave/cabs/flash/swflash.cab# version=6,0,29,0" width="400"
  height="400" > <param name="movie" value="flashplayer.swf">
  <param name="quality" value="high" >
  <param name="LOOP" value="false">
  <embed
    src="flashplayer.swf"
    width="400"
    height="400"
    loop="false"
    quality="high" pluginspage="http://www.macromedia.com/go/getflashplayer" type="application/x-shockwave-flash"> </embed
  > </object >

```

Uploading Files to Web Dreamweaver allows you to connect to your main server space and retrieve stored folders located on your site. This feature will only be necessary if you need to update a currently uploaded website and you no longer have the local root folder for the site.

To download a file from the server, you will need to know the Remote Info (Figure 1). The Remote Info you entered when you uploaded your site tells Dreamweaver where to find your currently uploaded files.

NOTE: If you are using a personal BGSU web account, you can find the remote information on the Gefling Started page of this tutorial.

DOWNLOADING YOUR FILES

To download files, complete the following process:

- 1Click theConnect button.
- 2Change the toolbar so it displaysRemoteViewand the files associated with your site appear on the screen.
- 3Select the folder where all of the files are located, and click on the Get button.
- 4You will see a dialog box asking "Are you sure you want to get the entire site?" Click OK.
- 5You should see the files being downloaded, and when it is completed your uploadedWeb site should appear under Local View in the toolbar.
- 6Goto File > Save to save your project before you make changes to it.

NOTE:If this process does not work, go back and check yourRemote Info under Sites > Manage Site > your site name.

Hand on Activities

Important : Add a Navigation Menu Bar to Your Website

1. Start up Dreamweaver.
2. Load your index.html page as before. That is, double click the file in the Files pane in the right column.
3. Locate your existing navigation menu, which at this time merely consists of a series of links to your home page, About Us page, Contact Us page and the Site Map. Select them and delete them. We will be completely replacing them in this chapter.

In case you're wondering why we bothered to create those links if we were going to destroy them again anyway, hyperlinks are one of the most important features of a web page. As a webmaster, you will be continually creating hyperlinks to other pages on your site as well as links to other sites on the Internet. Not all these links will be placed in your navigation menu. It was thus important to cover that aspect of web design in the tutorial.

4. Make sure that the blinking text cursor is currently in the side bar. If it is not, click somewhere in the side bar. Now click "Insert | Spry | Spry Menu Bar" from the menu. That is, click the "Insert" menu, then the "Spry" item on the menu that appears, and finally on "Spry Menu Bar" on the submenu that appears.
5. A dialog box will appear asking you whether you want a horizontal menu bar or a vertical one. Since we are placing the menu bar in the left column, we want a vertical menu bar. Select the "Vertical" option and click OK.
6. A default menu bar will be inserted into your side bar. If you look at the Properties pane at the bottom of your Dreamweaver window, you will see that the text and links for menu items are displayed there.
7. Select "Item 1" by clicking on it, if it is not already selected. In the "Text" box, replace the words "Item 1" with "Home" (without the quotes). Replace the default "Link" text of "#" with "index.html" (without the quotes).
8. By default Dreamweaver created a submenu for your menu. We don't need one, so we will need to delete it. Select "Item 1.1". Directly above "Item 1.1" are two buttons "+" and "-". Click the "-" item to delete Item 1.1. Do the same for "Item 1.2" and "Item 1.3".
9. Now do the same with the other items, replacing the text with the appropriate words for your site, and the links with the actual page names. If there are submenus, delete them as you did for Item 1. For your convenience, the replacement text and links are reproduced below from chapter 3. Note that Item 3 has a three-level menu system. Delete all submenus (item 3.1.1, 3.1.2, 3.1, 3.2, 3.3) - we won't need them.

- Text: About Us, Link: aboutus.html
 - Text: Contact Us, Link: feedback.html
 - Text: Site Map, Link: sitemap.html
10. Click "File | Save". A dialog box will pop up telling you that certain files have been added to your site, and that these files will need to be uploaded. Click "OK".
 11. Now upload the page to your website using "Site | Put" and check the results in your browser. Hover your mouse over your menu buttons, and you will see that they change colour.

Customising the Spry Framework's Menu Bar Widget

While adding the Spry Framework's navigation menu bar to your web page is a simple procedure under Dreamweaver, customising ("customizing" in US English) it is, however, another cup of tea. There is no built-in method to do so under Dreamweaver's user interface. You will have to do it manually.

The fastest way to do this is to do it via Dreamweaver's "Code" view.

Dreamweaver has two basic ways you can work on your website. So far, you have been creating your site using the "Design" view. The "Design" view allows you to work on your web page using the What-You-See-Is-What-You-Get (WYSIWYG) editor - that is, as you create your web page, you basically see the page as a visitor would when they visit your website.

The "Design" view hides the real code, the HTML and CSS code, that Dreamweaver generates for your website. This code, the "raw" code, if you will, is the actual content that is uploaded (published) to your website. When your visitor loads your web page, the browser takes the "raw" code and displays it according to the instructions given in the "raw" code.

To customise the Spry Framework's menu bar widget, you will be using Dreamweaver's facility for viewing this "raw" code for your website. Even if you find the menu bar widget satisfactory at the moment, you should still take the following steps to familiarize yourself with Dreamweaver's "Code" view. You will be using the Code view in a future chapter to insert your feedback form code.

To switch to the "Code" view, click "View | Code" from the menu. Instead of the web page that you are accustomed to viewing, you will now see the "raw" HTML code for that page. If you scroll up and down the page, you should be able to see your content amidst other characters. These other characters, things like "<p>" and the like, are the formatting code that tells the browser how it should render your page.

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•Centering the Menu Bar

Scroll to the top of the index.html file in "Code" view. Locate the text "</head>" (without the quotes) somewhere near the top of the file. Place your cursor just before "</head>" on the same line. Hit ENTER (or RETURN) to insert a blank line. When you do this, the entire line with "</head>" should move downwards, creating a new blank line. Move the cursor to the blank line.

Now copy the text from the box below and paste it into the blank line you just created in Dreamweaver. To copy the text, click somewhere in the box to highlight all the text in the box. (If nothing is selected when you do that, drag your mouse cursor over the text to highlight it.) Then click the right mouse button (or if you use Mac OS X, hold down the Control key on the keyboard and click the mouse), and select Copy from the menu that appears. To paste it into Dreamweaver, switch to the Dreamweaver window. Make sure that your text cursor is in the correct location (in the blank line above the word "</head>"). Select "Edit | Paste" from the menu.

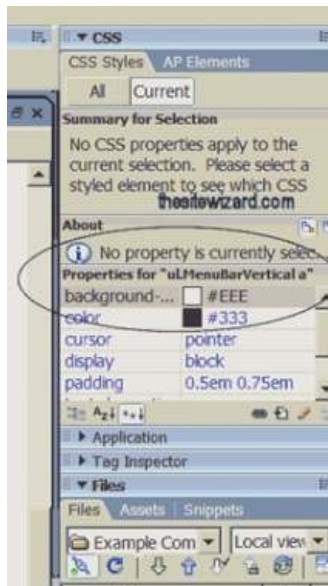
To check that your insertion works, click "View | Design" from the menu. You should see that the menu is now centred in the Design view. You can again click "View | Code" again from the menu if you want to return to the "Code" view.

•Changing the Colours of the Menu Bar

On the right side of the Dreamweaver window, in the Files pane, double-click the folder "SpryAssets". It should expand, showing you other files. Double-click the file "SpryMenuBarVertical.css". If the Files pane is too narrow for you to see what file you're clicking, hover your mouse over each file in turn until Dreamweaver displays a tooltip telling you the full name of the file.

Another file, full of unfamiliar code, will appear in the Dreamweaver's centre pane. This is the CSS code for your menu. The CSS code contains the formatting code for your menu.

Click "Edit | Find and Replace" from the menu. Type "ul.MenuBarVertical a" (without the quotes) into the big "Find" box. Click the "Find Next" button. Dismiss the dialog box by clicking 250



the “Close” button. In the main window, you should see the highlighted words “ul.MenuBarVertical a”. Under these words is a block of text enclosed between “{” and “}” (without the quotes). You should be able to find “background-color” followed by a value “#EEE” in this block. This line determines the color of the menu when the mouse is not hovering over it. “#EEE” is the code for the grayish color you see in the menu.

In the right hand column of the Dreamweaver window, in the CSS pane, you should be able to see “Properties for ul. Menu Bar Vertical a”. If not, move your mouse over the line separating the blue “Applications” and the section above and drag it downwards to make more space. Under “Properties for ul.MenuBarVertical a”, look for the line that says “background-color” (or parts of “background-color” if your window is too narrow to display the full text). To the right, you should see a square box followed by “#EEE”. Click the square box to display the colour picker window and choose a colour of your choice.

To modify the colour of the menu button when a mouse moves over it, click “Edit | Find and Replace” again and search for “ul.MenuBarVertical a:hover”. Dismiss the dialog box when you’ve located the text. Once again, you should be able to change the “background-color” property from the CSS pane in the right hand column.

When you’re through making your changes, check the output by switching back to the index.html window. To do this, select “Window | index.html” from the menu. If you are still in “Code” view when you switch to the index.html window, switch to the “Design” view by selecting “View | Design”.

When you are satisfied with the changes you have made, save your work with “File | Save All” from the menu. Note that you need to use “Save All” instead of “Save” because you have modified two files, index.html and SpryMenuBarVertical.css. Clicking “Save” alone will only save whatever file you happened to be working on last.

Again, use “Site | Put” to publish your work and check it out with your browser.

At this point, the home page for your website is complete. If you have been working on the page using some dummy text and pictures, such as the one I supplied in chapter 1, now is time to change them to your real content. You have learned everything you need to create a working main page that looks decent and works correctly. We will not be returning to this page in the next few chapters. Instead, we will be designing your other pages using this main page as the template.

Add a Feedback Form to Your Website in Dreamweaver

Generate a custom feedback form script In the next page, enter the information requested by the form. Modify the URLs supplied below to contain your real domain. For example, if your domain is "suchandsuchaname.com", use that instead of the "example.com" given below.

- Email: (enter your email address)
- URL of "Thank You" Page: <http://www.example.com/thankyou.html>
- URL of "Error" Page: <http://www.example.com/error.html>
- URL of Feedback Form: <http://www.example.com/feedback.html>

Finally, read the licence agreement. If you agree to the terms, indicate it in the form, and click "Generate script" to continue.

Do not close the web page that appears. Leave it open while you work on the next few steps.

Saving the script

Start up Dreamweaver. Select "File | New" from the menu. That is, click the File menu, followed by the "New..." item on the menu that appears. Click "Blank Page" from the leftmost column. In the "Page Type" column, select the "PHP" item. Click "Create".

Click "View | Code" from the menu to switch to Code view. Note: this step is very important. If you omit it, your feedback form will not work. Select everything you see in the window with your mouse and hit the DEL key. You should now be left with a blank window.

Switch to your web browser, and locate the section that has the header "Feedback Form Script". Select everything in the box below. If you are using Windows, one easy way to select everything is to simply click your mouse somewhere in the box and type Ctrl+A (hold down the Ctrl key and type 'a'). Then copy the text you have selected to the clipboard. To do this, use Ctrl+C in Windows, or use "Edit | Copy" from the browser's menu. If your browser does not have an "Edit" menu, try clicking the right mouse button in the box and selecting "Copy" from the menu.

Switch back to Dreamweaver, and select "Edit | Paste". The entire content of the script generated by the Feedback Form Wizard appears (in various colours). Do not attempt to beautify it, add or change anything. Do not even add a blank line. This is not the user-visible portion of your web page. We will come to that later.

Note: if you do not see the output displayed in a variety of colours, you have omitted the very

important step mentioned above. Close the document without saving it and restart this section again.

Select “File | Save As” and type “feedback.php” into the “File name” box. Do not use any other name. Do not use capital letters. Select “View | Design”. You should see a blank page. Do NOT type anything here. Click “File | Close” to close the file.

Creating the feedback form web page

Select “File | New”, choose “Page from Template” and click “Create”. Modify the title field to “Contact Us”. Modify the “Page Title” editable region to read “Contact Us” as well. Delete all the text in the “Page Description” editable region.

Now switch to the browser window that contains the generated code from the site wizard. This time locate the section in the output generated by the wizard that reads “HTML Code”. Click in the box below those words, select everything in the box and copy it to the clipboard.

Switch back to Dreamweaver. Make sure your cursor is in the “Page Description” editable region. Select “View | Code” from the menu. Dreamweaver will switch to the HTML code view. Your text cursor should be just after “<p>” and before “ <p>”. Using the arrow keys on your keyboard, move the cursor to the end of that line (that is, after the “<p> <p>”. Then select “Edit | Paste”. The text from the site wizard’s feedback form wizard should be inserted at that point.

Now use “View | Design” to switch back to the Design mode. You should now be able to see the feedback form in your web page.

To widen the input field of “Name”, click somewhere in the box next to “Name”. In the “Properties” pane at the bottom of the screen, change the default “Char width” of “25” to a value that better suits your page. For example, increase the number if you want the box to be wider and decrease it if you want it to be narrower. Repeat the process with the “Email address” field so that both the “Name” field and the “Email address” fields have the same width on the screen.

Similarly, you can change the width and height of the “Comments” box. Click the box under the word “Comments”. In the “Properties” pane, change the “Char width” to a more appropriate number than “25” if you wish. To change the default height of the “Comments” box, look for the “Num lines” box in the “Properties” pane and change it to the height you want to have. You can experiment with the values until you are satisfied with the appearance of the boxes on your page.

Note that modifying the size of the various boxes in the form merely changes the appearance of the box on the screen. These sizes do not affect how much text your visitor can type into the field. Most browsers will simply scroll the text if the box is not wide or tall enough for what the visitor wants to type.

If you like, you can also change the text appearing on the button. By default, this text is "Send Feedback". To change it click on the button. In the "Properties" pane at the bottom of the Dreamweaver window, change the text in the "Value" box to some other text if you wish.

Click "File | Save As" and type "feedback.html" into the "File name" box. Note that you should not type any other name here, since the navigation menus you created for your site.

Creating the "Thank You" and "Error" pages

By now, you should have no trouble creating new pages from your template, having done so a few times already when creating the other pages of your site. Use the same method that you have been using in the past and create two new pages: the "ThankYou" page and the "Error" page.

The "Thank You" page is displayed by the feedback form script after your visitor clicks the "Send Feedback" button. It typically thanks your visitor for sending his comments. The main purpose of such a page is to provide feedback to the visitor that his comments had been successfully submitted. You may write anything you wish for this page. If you don't know what to say, you may use the following text: Thank you for your comments. If your message requires a reply, I typically reply within 24 hours of the receipt of the message.

The "Error" page is shown whenever the visitor submits the form without filling one of the fields. For example, if he fails to enter an email address when the form is submitted, the "Error" page will be displayed instead of the "ThankYou" page. Your error page should inform the visitor that he needs to complete all the fields in the form, and that he is to click the browser's "Back" button to go back to the form to repair the error. If you don't know what to say, you may use the following text: There were errors in the form that you submitted. Please complete all the requested information before submitting the form. Click the 'Back' button on your browser to return to the form to fix the error.

Save your "ThankYou" page with a filename of "thankyou.html" (without the quotes) and your "Error" page with a name of "error.html" (without the quotes). These are the names you supplied earlier to the Feedback Form Wizard. The customized script that the wizard created has the names hardcoded into it. You should therefore not change the names at this point, or 254

the script will not work properly.

Make Money From Your Website

If you look at many websites, you will probably notice that there are banner advertisements displayed on most pages. If you are a newcomer to the scene, you might think that you must either be a company or that your site must be famous before you can get advertisers, just as it is the case in hardcopy publications.

In reality, anyone with a website can get advertisers. While it is true that if your site is well-known, you may get companies contacting you to offer to advertise on your site, you can get advertising revenue even if you are just starting out and your site is relatively unknown.

The way to do this is to join as an “affiliate” of various companies or sites, either directly, or through an affiliate network. An affiliate network is simply an intermediary with whom you can sign up to get advertisers (as opposed to dealing with individual companies separately).

>> Payment Schemes

Before joining any program, you should probably be aware of the different payment schemes available.

1. Pay Per Impression (CPM)

Here, you are paid according to the number of times the advertiser’s banner is displayed on your site. The amount you earn is typically calculated based on the number of thousand impressions of the banner (impressions = number of times the banner is displayed), often abbreviated CPM (cost per thousand, with the M being the Latin numeral for thousand). That is, \$5 CPM means that you get paid \$5 for 1,000 displays of the banner. In general, the amount paid is usually small, but it is easy to earn since everytime a visitor loads the page, you earn. This is known as a “high conversion rate”. Needless to say, this method will allow you to automatically earn more if your site attracts a lot of visitors.

2. Pay Per Click (PPC)

When you are paid per click, you are only paid when visitors click the advertiser’s banner on your site. The amount paid is usually higher than the pay per impression scheme. Whether you get a high conversion rate here depends on the banner (whether it attracts people to click it), although in general, it has a higher conversion rate than the pay per sale method. A high traffic site will probably enjoy a higher click rate than a lower traffic

site, although you will probably get better results if your banners are carefully selected to suit the target audience of your site.

3. **Pay Per Sale or Lead** (sometimes referred to as Cost Per Action, or CPA)

While you will probably get the highest payment rates with this method, it has the lowest conversion rate of the three schemes. You will only earn if your visitors click through the banner and either purchase an item from the advertiser or take some other prescribed action (eg, sign up for a service). Like the Pay Per Click method, you get much better results if you carefully select your advertisers to suit the target audience of your site.

In general, to avoid wasting resources in issuing cheques for very small amounts, advertisers will usually accrue the amount owing to you until it reaches a certain level (such as \$25) before they pay you.

Customise the Navigation Menu Bar on Your Website using Dreamweaver

Most websites have some sort of navigation menu.

Your Navigation Menu

As it stands, the navigation menu in your left column has four buttons that currently do not appear to actually do anything. Carry out the following steps to make them into working buttons.

Select "Link one" by dragging your mouse over those words to highlight it. Type "Home" (without the quotes), overwriting the existing words.

Click to put your text cursor in the "Link" field of the Properties panel, and replace the hash ("#") mark that is currently there with the web address of your home page. For example, if your website has a URL of "http://www.example.com/", type "http://www.example.com/" (without the quotes) followed by the ENTER (or RETURN key on the Mac). Alternatively, you can also use a relative URL.

With this step, the top button of your menu now says "Home" and is a clickable link pointing to your home page.

Incidentally, I know that you already made the site logo link to your home page in the previous chapter. However, the home page is also de rigueur the first link of a site's navigation menu, and users have come to expect it there. Not only will keeping to this convention make your site more user-friendly, since the links are where they are "supposed to be", but it will also help novice users who don't know that the site logo is actually clickable.

(By the way, when you hit the ENTER key after typing your URL, your bufon may have an additional thin blank line underneath. This is just a temporary visual glitch. You didn't do anything wrong. Just ignore it. It will go away eventually when you replace the text on the next bufon or when you do something else.)

1. The Feedback (or Contact) Form

Apart from the topmost link, which should always be "Home", the other links can be in any order you want. I'll simply suggest a sequence in this article, but feel free to put them in a different order.

Select "Link two" and replace the words with "Feedback" (without the quotes). Note that unlike the "Home" link above (which has a fixed convention across nearly every site on the internet), you don't actually have to use the word "Feedback"; for instance, some people prefer to say "Support", "Contact Us" or "Contact Form".

Modify the "Link" field for that bufon so that it says "feedback.html" (without the quotes). Do not use any other name for this link. Do not use capital (uppercase) letters, spaces or change it in any way. If you do, you will have problems when you complete chapter 8. Don't worry if your bufon says "Support", but the link says "feedback.html". What the bufon reads and what the link says are two separate things. One is for the user to read, and should be in plain English so that they can understand it. The other one is for the browser to use, and can be in thick computerese or whatever. The reason it needs to say "feedback.html" and not some other thing is because you'll create a file called "feedback.html" in chapter 8, and if you use a different name here, your bufon will not link to the right file.

2. The About Us Page (Optional)

If you are running a business, you probably should have an "About Us" page somewhere on your site, to tell your visitors something about your company. (Look at it as a chance to promote your company.) The page is optional for personal and hobby websites. For those not planning to create an "About Us" page, skip to the next point.

Select "Link three" and replace the text with "About Us", "About Me", "About" or some such thing. Change the link from "#" to "about.html" (without the quotes).

3. The Site Map

Replace "Link four" (or "Link three" if you have skipped the About Us page above) with "Site Map" and its corresponding link "#" with "sitemap.html" (without the quotes).

When you reach this paragraph, you will either have an extra unused bufon (because

you didn't create an About Us bufon), or you have run out of dummy bufons to reuse (because you did). Whichever the case may be, you will undoubtedly want to add more bufons to your menu to point to the other important pages. Some of you will also want to know how to delete unwanted bufons that you have added by mistake.

How to Add a New Bufon to the Navigation Menu

1. Click somewhere in the bottommost bufon in your menu. This will put the blinking text cursor somewhere amidst the text. Position the cursor so that it comes after all the words in that bufon, but still on the same line. You can do this using the arrow keys on your keyboard. For example, if the last bufon says "Site Map", move the text cursor so that it is just after the "p" in "Map".
2. Hit the ENTER key (or the RETURN key on the Mac). This will create a very thin anaemic-looking bufon underneath, and puts the text cursor there. In fact, at this point, it won't even look like a bufon to you, but more like a very thin line.
3. Type the words you want the bufon to show. For example, if you are creating a page to list all your products, type "Products" (without the quotes). The bufon will become taller, to accommodate the words you entered, but it will still not look like the others: the text will not be aligned properly, and the colour will be wrong.
4. Select the words that you've just typed. If you find it difficult to highlight everything using the mouse, use the keyboard: ie, hold down the shift key on your keyboard while using the arrow keys to move the cursor over the letters you want to select.
5. Type the URL that you want the bufon to point to into the "Link" field of the Properties panel, followed by the ENTER key. There will not be any "#" for you to overwrite, so just type your address into the blank field. For example, if you're linking to the Products page, type "products.html" (without the quotes).

The text appearing on your bufon should now be centred, and have the same colour scheme as the rest of your menu.

Repeat the above procedure as many times as you need, till you have all the bufons you want.

How to Delete a Bufon from the Navigation Menu

1. Select all the words appearing on the bufon that you want to delete.
2. Hit the Delete key on your keyboard. This causes the bufon to collapse into a thin sliver.
3. Move your mouse pointer so that it is directly over the remnants of the bufon and click

the right mouse button.

4. Click the "Remove tag " item in the menu that pops out. The button should disappear completely.

Warning: if you don't see "Remove tag " in the menu, but see something else, like "Remove tag ", do not click it. Hit the ESC key instead to get rid of the menu, and try again. Clicking "Remove tag" with wild abandon, without making sure that it's really "Remove tag " and not something else, is generally a bad thing. It may result in your accidentally deleting the formatting from the menu or even the entire menu itself.

If you make a mistake that you don't know how to recover from, try using the "Edit | Undo" menu item. That is, click "Edit" from the menu bar, followed by "Undo [whatever]" from the menu that appears, where "[whatever]" is the operation that you last performed. (The "Undo" menu item says different things depending on what you did before invoking the menu, but it will always begin with the word "Undo".) On the other hand, if you have made so many errors that even the "Undo" button is unable to repair, you may want to abandon all the work you did in the current session and reload your file from your last save. To do this, click "File | Close" and when Dreamweaver issues a dialog box saying "Save changes to index.html?", click "No". Then reopen the file again by doubleclicking the "index.html" line in the Files panel. Be warned that this will cause you to lose everything you have done since your last save, so only do it as a last resort. And don't do it at all if you have saved your file after you made your mistake, since you'll only load back the same error-filled page, this time with no Undo facility.

How to Customise the Colours of Your Navigation Menu

If you have altered your background colours in chapter 4, and have been waiting with bated breath to match your menu colours to the scheme found on the rest of the page, your moment has arrived.

Unlike the rest of the page, however, the buttons on the menu actually have different colours depending on whether a mouse pointer is hovering over it. (You will only be able to see the button's default colour in Dreamweaver; to view the colour when a mouse pointer is over it, you will need to use a web browser.) 1. Click your mouse pointer somewhere in any one of your navigation menu buttons (it doesn't matter which). This puts your text cursor in the middle of the word (or words) on one of the buttons.

2. Look for the Rules section in the CSS Styles panel on the right side of Dreamweaver. You should see these 2 lines.
 - The line saying “ul.nav a, ul.nav a:visited <a>” contains the rules for the default button. By “default”, I mean the button as it appears on the page when the mouse is not pointing at it.
 - Another line saying “ul.nav a:hover, ul.nav... <a>” holds the rules for the button when the mouse pointer is hovering over it. Notice that the line is almost the same as the other one, except that “a:hover” occurs somewhere within it.

Double clicking one or the other of these lines will bring up the CSS Rule Definition dialog box with the relevant rules that you can modify. For example, if you want to change the default colours, double click the first line described earlier. Do the same with the “a:hover” line to customize the button colour when the mouse is over it.

3. The CSS Rule Definition dialog box, which you’ll probably find very familiar since you have repeatedly encountered it in the earlier chapters, will appear. Yes, it is the same dialog box and it behaves exactly as it has in the previous chapters with no new unpleasant surprises.

Click the “Background” line in the list box on the left to bring up the options pertaining to colours.

4. Change the colour of your button to your satisfaction using the colour picker for the “Background-color” field.
5. Click the “OK” button for the CSS Rule Definition dialog box when you’re done.

Knowledge Check Points

Dreamweaver Multiple Choice Questions and Answers

1. How many Sites can you define with one copy of Dreamweaver installed on your computer?

- A. unlimited
- B. 2
- C. 10
- D. 999

Ans: A

2. What do you add to a template in order to control where page content goes?

- A. TextFrames
- B. HTML Controllers
- C. Editable Regions
- D. Page Content Controllers

Ans: C

3. Which of the following is NOT a Style?

- A. Linked
- B. Embedded
- C. Inline
- D. Orthogonal

Ans: D

4. Which of the following is NOT a Hotspot tool?

- A. Orthogonal Hotspot Tool
- B. Rectangular Hotspot Tool
- C. Oval Hotspot Tool
- D. Polygon Hotspot Tool

Ans: A

5. Which of the following is not supported by older browsers?

- A. CSS
- B. Layers
- C. Frames
- D. All of the above

Ans: D

6. Which of the following is the HTML tag to start a Heading Level 3? A. <H3> B. </H3>

C. <#H3> D. <H3/>

Ans: A

7. Which type of style should you use if you want to use the formats on multiple pages?

- A. Linked
- B. Embedded
- C. Inline
- D. Orthogonal

Ans: A

8. When you create a "recipient" hidden field for a form, which of the following is the ONLY correct way to type the word "recipient"?:
 A. Recipient B. <recipient>/recipient>
 C. recipient D. RECIPIENT Ans: C
9. Which file controls how your frames will appear?
 A. Frameset B. Master Document
 C. Template D. Timeline Ans: A
10. What can't layers do if you want to convert them to tables?
 A. Be close B. Contain a Color
 C. Be larger than the target table D. Overlap Ans: D
11. The trick to getting a ball to bounce around a Webpage is to:
 A. Add Animation Bounce layers
 B. Add keyframes to the timeline
 C. Add Bounce parameters to the Object properties
 D. Dreamweaver does not support animation... use Flash instead Ans: B
12. By default, what's the Fps shown on the timeline? A. 15 B. 1
 C. 20 D. huh?
 Ans: A
13. When you swap images, it's best if:
 A. The images are the same "Mime" type
 B. The images are the same color
 C. The images are the same size
 D. You use the "Constrain" tool Ans: C
14. Which of the following is false?
 A. The Site Map can be saved as an image
 B. You can FTP files using Dreamweaver
 C. You can create forms in Dreamweaver

D. None of the above Ans: D

15. Which of the following is NOT a Page Property?

A. Title B. Tracing Image

C. Margin Width D. Timeline Ans: D

16. Dreamweaver users work in the Document Window using one of how many views?

A. 3 B. 5

C. 2

Ans: A

17. The general definition of a(n) is a set of linked documents with shared attributes, such as related topics, a similar design, or a shared purpose.

A. index B. website

C. Internet D. Homepage Ans: B

18. _____ provides the largest text.

A. H6 B. 24

C. H1 D. Bold

Ans: C

19. Dreamweaver's feature allows users to select colors and make perfect color matches.

A. Color Cube B. Palafes

C. HTML view D. Eye dropper Ans: D

20. The W and H boxes in the Property inspector indicate the width and height of an image, in

A. inches B. pixels

C. points D. millimeters Ans: B

21. A subfolder is a folder inside another folder.

A. True B. False

Ans: A

22. A Website's home page is normally named home.htm or home.html
A. True B. False
Ans: B
23. _____ view is a hand-coding environment for writing and editing code.
A. Design B. Split
C. Code Ans: C
24. _____ images are used to add texture and interesting color to a Web page.
A. Clip Art B. Animated
C. Background D. Cropped Ans: C
25. In the _____ mode, you create tables by drawing them.
A. Layout B. Expanded
C. Standard Ans: A
26. A _____ is a vertical collection of cells in a table.
A. Row B. Column
C. Table ID Ans: B
27. A _____ is the container/intersection where a row and column meet in a table.
A. tag B. table ID
C. link D. cell
Ans: D
28. A _____ can connect users to a place on the same web page or to a place on another site.
A. root folder B. typeface
C. text editor D. hyperlink Ans: D
29. In order to define a site, users must create both a _____ and a _____.
A. domain name IP address B. login password
C. site name home page D. site name root folder Ans: D

30. Which of the following is NOT a valid reason for defining a local site in Dreamweaver?
- A. To enable Dreamweaver to create relative links between documents
 - B. To enable Dreamweaver to display all your sites files in the 'Files Panel'
 - C. To provide details of your Webserver so that you can upload you site
 - D. To allow Dreamweaver to conduct link checking between documents
- Ans: C
31. To view and change current formafing for selected objects or text, you would use:
- A. Insert bar
 - B. Property Inspector
- C. File Panel
- Ans: B
32. You can insert dates into your web page that will automatically be updated whenever you save the page.
- A. True
 - B. False
- Ans: A
33. To insert a special character, what category on the Insert bar do you use?
- A. Common
 - B. HTML
- C. Text
- Ans: C
34. Which panel can be used to manage and create new sites?
- A. Files
 - B. Application
- C. Tag Inspector
- Ans: A
35. What should the home page of your site be named?
- A. home.html
 - B. Anything you want to name it
- C. index.html
- Ans: C
36. Cell padding determines the number of pixels between adjacent cells.
- A. True
 - B. False
- Ans: B

37. Which graphic format can you Not insert into your web page?
 A. bmp B. gif
 C. png Ans: A
38. Which view must you be in to draw out a table visually.
 A. Standard B. Layout
 C. TableAns: B
39. Formating using CSS styles allows each individual's browser to control thewayyour page is displayed.
 A. True B. False
 Ans: B
40. What is the properwayto manually type an email link?
 A. email:myname@austincc.edu B. mailto:myname@austincc.edu
 C. mail:myname@austincc.eduAns: B
41. The latest version of Dreamweaver is:
 A. Adobe Dreamweaver CS5.5 B. Adobe Dreamweaver CS5
 C. Adobe Dreamweaver CS4 D. Macromedia Dreamweaver 8Ans: A
42. Dreamweaver is sold by what software company:
 A. Adobe
 B. Macromedia
 C. Microsoft
 D. No company, the program simply appeared one day on the web. Ans: A
43. Youcan use Dreamweaver to create:
 A. HTML, XML, and CSS files
 B. PHP, Java, and ASP.NET
 C. The new space-time continuum format STCML
 D. all of the above, except the space-time continuum thing... Ans: D

44. HTML tags are surrounded by:
- A. brackets < ... >
 - B. parenthesise (...)
 - C. quote marks " ..."
 - D. Fire-breathing dragons who try to keep you away from tags Ans: A
45. You can save images for the Web in these formats:
- A. JPG, GIF, PNG B. PSD, Tiff
 - C. Flickr D. ftp, fla, jsp
- Ans: A
46. The first page of a web site should most commonly be named:
- A. home.html
 - B. index.html or default.htm depending on the server
 - C. MySite.html
 - D. Something cool, so the other sites will not make fun of it Ans: B
47. The </h1> is an opening tag.
- A. True
 - B. False
 - C. Do I have to learn HTML tags?
 - D. Close your darn tags! Were you born in a barn? Ans: B
48. Bonus question: What is the refrain of the pop hit single Dreamweaver by Gary Wright
- A. Tomorrow, tomorrow, there's always tomorrow...
 - B. You never count your money ...
 - C. Yesterday, all my troubles seemed so far away...
 - D. Dream weaver, I believe you can get me through the night Ans: D
49. What option in the Target pop-up menu is chosen to open a linked document in a new browser window while keeping the current window available?
- A. top B. self
 - C. blank D. parent
- Ans: C

50. What does the asterisk after the file name in the document title bar signify?

- A. document is untitled
- B. page is not located within the site
- C. the extension to the file name has not been specified
- D. unsaved additions or deletions were made to the page Ans: D

51. Using Dreamweaver, it is possible to convert layers to tables and tables to layers.

- A. True
- B. False Ans: A

52. What describes the correct way to create a page layout that always fills the browser window, no matter what size window the viewer has set?

- A. Add a spacer image to the table.
- B. Create the table cell with a percentage width in the HTML.
- C. Use the Dreamweaver Autostretch option to set the table width to resize automatically.
- D. Create a fixed width table that corresponds with the specific numeric width of the viewer's browser.

Ans: C

53. Selecting header in the Property inspector for a given table's cell makes that content (Choose two)

- A. bold and centered in most browsers
- B. justified in all browsers
- C. a <th> element
- D. bold and italicized in most browsers
- E. left-justified in all browsers \ Ans: C

54. A template can be modified after documents have been created based on the template.

- A. True B. False

Ans: A

55. What accurately describes the way templates work in Dreamweaver? If a template file is opened you can edit
- A. nothing in the file, unless no pages have been created from the template.
 - B. everything in the file.
 - C. any editable region.
 - D. anything in the file, but only in Code View. Ans: B

56. What happens when content in <DIV> tags is viewed with 3.0 versions of Netscape?
- A. No content is displayed at all.
 - B. The content looks the same as it does in any other browser.
 - C. The content is only displayed if the visible attribute is set to true.
 - D. The content appears in the same location as where the <DIV> tags appear in the code.

Ans: D

57. The behaviors that come with Dreamweaver were written to work in all browsers.
- A. True B. False

Ans: B

58. What panel is used to change the event that triggers an image swap?
- A. CSS Panel B. Assets Panel

C. Frames Panel D. Objects Panel

E. Behaviors Panel Ans: E

59. What is one way you change the color of text in Dreamweaver 4.0?
- A. Highlight the text and then select: Edit>Font>Color from the menu
 - B. Highlight the text and select a new color with the Color Picker in the Properties panel
 - C. You are unable to change the text color in Dreamweaver, it can only be changed in the HTML
 - D. Highlight the text and change the color in the Objects panel Ans: B

60. Bullets in unordered lists can only be circles.
- A. True B. False

Ans: B

Skill Check Point

1. Write HTML Code for creating a website of your organization.
 - a) The website site should contain five pages *i.e.* Home, About us, Profile, Details, Contact us.
 - b) Home page should be Main page (first page)
2. Create Enquiry form and use their validation form
 - a) Last name, Contact us, and email is compulsory field.
 - b) Information should be submit.

ITDC-412
Web Scripting - Java Script

- Java Script Review
- Functions - user defined
- String Object
- Math Object
- Array Object
- Events
- Case Studies

JAVASCRIPT REVIEW

JavaScript is a programming language used to make web pages interactive. JavaScript was designed primarily for adding interactivity to Web pages and creating Web applications. JavaScript is used for client side scripting. Client-side JavaScript programs, or scripts, can be embedded directly in HTML source of Web pages. JavaScript is widely supported by most of the browsers available today.

- JavaScripts in HTML must be inserted between `<script>` and `</script>` tags.

- JavaScripts can be put in the `<body>` and in the `<head>` section of an HTML page.

JavaScript is a lightweight, interpreted programming language with object-oriented capabilities that allows you to build interactivity into otherwise static HTML pages.

Client-side JavaScript

Client-side JavaScript is the most common form of the language. The script should be included in HTML document for the code to be interpreted by the browser. It means that a web page need no longer be static HTML, but can include programs that interact with the user, control the browser, and dynamically create HTML content.

The JavaScript code is executed when the user submits the form, and only if all the entries are valid they would be submitted to the Web Server. JavaScript can be used to trap user-initiated events such as button clicks, link navigation, and other actions that the user explicitly or implicitly initiates.

Advantages of JavaScript

- Less server interaction: You can validate user input before sending the page off to the server. This saves server traffic, which means less load on your server.

- Immediate feedback to the visitors: They don't have to wait for a page reload to see if they have forgotten to enter something.

- Increased interactivity: You can create interfaces that react when the user hovers over them with a mouse or activates them via the keyboard.

- Richer interfaces: You can use JavaScript to include such items as drag-and-drop components and sliders to give a Rich Interface to your site visitors.

Limitations with JavaScript

- Client-side JavaScript does not allow the reading or writing of files. This has been kept for security reason.



- JavaScript cannot be used for Networking applications because there is no such support available.
- JavaScript doesn't have any multithreading or multiprocess capabilities.

JAVASCRIPT FUNCTIONS

A function is a block of code that will be executed when someone calls it. Functions can be classified in two categories: Library functions and User defined functions. The difference between these two functions is, Library functions are already built in and we need not to write its code, whereas a User defined function has to be written to get it executed during the output.

User Defined Functions

The user-defined functions are defined by a user as per its own requirement. The user-defined functions are part of the program. In user-defined functions the name of function is decided by user that can be changed at any time, whereas in library function name of function can't be changed.

Example:

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript"> function myFunction()
{
    alert("Hello World!");
}

</script>
</head>
<body>
<button onclick="myFunction()">Try it</button>
</body>
</html>
```

Syntax of user-defined function

A function is written as a code block inside curly { } braces, preceded by the function keyword:

```
function function-name()
{
    273
```

```
some code to be executed
```

```
}
```

The code inside the function will be executed when someone calls the function. The function can be called directly when an event occurs (like when a user clicks a button), and it can be called from anywhere by JavaScript code.

JavaScript is case sensitive. The function keyword must be written in lowercase letters, and the function must be called with the same capitals as used in the function name.

Calling a Function with Arguments

When you call a function, you can pass along some values to it, these values are called arguments or parameters. These arguments can be used inside the function. You can send as many arguments as you like, separated by commas (,) myFunction(argument1,argument2)

Declare the argument, as variables, when you declare the function: function myFunction(var1,var2)

```
{
```

```
some code
```

```
}
```

The variables and the arguments must be in the expected order. The first variable is given the value of the first passed argument *etc.*

Example:

```
<button onclick="msg('SCERT','Delhi')">Try it </button> <script type="text/javascript"> function msg(name,place)
```

```
{
```

```
    alert("Welcome To " + name + " " + place);
```

```
}
```

```
</script>
```



```
<!DOCTYPE html> <html>
<body>
<p>Click the button to call a function</p>
<button onclick=msg('SCERT','Delhi')>Try It</button>
<script type="text/javascript"> function msg(name,place)
```

```

{
    alert("Welcome To " + name + " " + place);
}

</script>

```

```
</body>
</html>\
```

The function above will alert "Welcome To SCERT Delhi" when the button is clicked.

Functions with a Return Value

Sometimes you want your function to return a value back to where the call was made. This is possible by using the return statement. When using the return statement, the function will stop executing, and return the specified value.

Syntax:

```
function myFunction()
{
    var x=5; return x;
}
```

The function above will return the value 5.

The function-call will be replaced with the return value: var myVar=myFunction(); The variable myVar holds the value 5, which is what the function myFunction() returns. You can also use the return value without storing it as a variable: 275

```
document.getElementById("demo").innerHTML=myFunction();
```

The innerHTML of the "demo" element will be 5, which is what the function myFunction() returns. You can make a return value based on arguments passed into the function:

Example:

Calculate the product of two numbers, and return the result: function prod(a,b)

```

    {
        return a*b;
    }

document.getElementById("demo").innerHTML=prod(4,3); The innerHTML of the "demo" element will be:
12
The return statement is also used when you simply want to exit a function. The return value is optional: function add(a,b)
    {
        if (a>b)
        {
            return;
        }
        x=a+b;
    }
```

The function above will exit the function if a>b, and will not calculate the sum of a and b.

Scope of JavaScript Variables

Local Variables
A variable declared within a JavaScript function becomes local and can only be accessed from within that function. You can have local variables with the same name in different functions, because local variables are only recognized by the function in which they are declared. Local variables are deleted as soon as the function is completed.

Global Variables

Variables declared outside a function, become global, and all scripts and functions on the web page can access it. If you assign a value to variable that has not yet been declared, the variable will automatically be declared as a global variable. This statement: `carname="Volvo";` will declare the variable `carname` as a global variable, even if it is executed inside a function.

The Lifetime of JavaScript Variables

The lifetime JavaScript variable starts when they are declared. Local variables are deleted when the function is completed. Global variables are deleted when you close the page.

JAVASCRIPT OBJECTS

Everything in JavaScript is an object: a String, a Number, an Array, a Date. In JavaScript, an object is data, with properties and methods.

- Properties are values associated with an object.

- Methods are actions that can be performed on objects. When you declare a JavaScript variable like this: `var txt = "Hello";` You actually create a JavaScript String object. The String object has a built-in property called `length`. For the string above, `length` has the value 5. The String objects also have several built-in methods.

Example:

```
person=new Object(); person.firstname="John"; person.lastname="Write"; person.age=50;
person.eyecolor="blue";
```

 This example creates an object called "person", and adds four properties to it.

Accessing Object Properties

The syntax for accessing the property of an object is: `objectName.propertyName`

This example uses the `length` property of the `String` object to find the length of a string:
`var message="Hello World!"; var x=message.length;`

The value of `x`, after execution of the code above will be: 12

Accessing Object Methods

The syntax for calling a method of an object is: `objectName.methodName()`

This example uses the `toUpperCase()` method of the `String` object, to convert a text to uppercase:

```
var message="Hello world!"; var x=message.toUpperCase();
```

The value of `x`, after execution of the code above will be: HELLO WORLD!

Creating JavaScript Objects

With JavaScript you can define and create your own objects. There are 2 different ways to create a new object:

1. Define and create a direct instance of an object.
2. Use a function to define an object, then create new object instances.

Creating a Direct Instance

This example creates a new instance of an object, and adds four properties to it.

Example:

```
person=new Object();
```

```
person.firstname="John"; person.lastname="Write"; person.age=50; person.eyecolor="blue";
Alternative syntax (using object literals). person=
{firstname:"John",lastname:"Write",age:50,eyecolor:"blue"};Using an Object Constructor This example
uses a function to construct the object
```

Example:

```
function person(firstname,lastname,age,eyecolor)

{

    this.firstname=firstname; this.lastname=lastname; this.age=age; this.eyecolor=eyecolor;

}
```

The reason for all the "this" stuff is that you're going to have more than one person at a time (which person you're dealing with must be clear). That's what "this" is: the instance of the object at hand.

Creating JavaScript Object Instances

Once you have a object constructor, you can create new instances of the object, like this: var myFather=new person("John","Write",50,"blue"); var myMother=new

```
person("Sally","Rally",48,"green");
```

Adding Properties to JavaScript Objects

You can add new properties to an existing object by simply giving it a value. Assume that the person Object already exists - you can give it new properties named firstname, lastname, age, and eyecolor as follows: person.firstname="John"; person.lastname="Write";


```
person.age=30; person.eyecolor="blue"; x=person.firstname;
```

The value of x, after execution of the code above will be: John

Adding Methods to JavaScript Objects

Methods are just functions afached to objects. Defining methods to an object is done inside the constructor function: function person(firstname,lastname,age,eyecolor)

```
    {  
  
    this.firstname=firstname; this.lastname=lastname; this.age=age; this.eyecolor=eyecolor;  
  
    this.changeName=changeName; function changeName(name)  
  
        {  
  
            this.lastname=name;  
  
        }  
    }  
}
```

The changeName() function assigns the value of name to the person's lastname property. myMother.changeName("Write"); JavaScript knows which person you are talking about by substituting this with myMother.

JAVASCRIPT NUMBER OBJECT

The Number object is an object wrapper for primitive numeric values. The Number object represents numerical date, either integers or floating-point numbers. In general, you do not need to worry about Number objects because the browser automatically converts number 280

Literals to instances of the number class.

Syntax for creating a number object:

```
var val = new Number(number);
```

If the argument cannot be converted into a number, it returns NaN (Not-a-Number).

Number Properties

Property	Description
MAX_VALUE	The largest possible value a number in JavaScript can have 1.7976931348623157E+308
MIN_VALUE	The smallest possible value a number in JavaScript can have 5E-324
NaN	Equal to a value that is not a number.
NEGATIVE_INFINITY	A value that is less than MIN_VALUE.
POSITIVE_INFINITY	A value that is greater than MAX_VALUE
prototype	A static property of the Number object. Use the prototype property to assign new properties and methods to the Number object in the current document

Number Methods

The Number object contains only the default methods that are part of every object's definition.

Method	Description
constructor()	Returns the function that created this object's instance. By default this is the Number object.
toExponential()	Forces a number to display in exponential notation, even if the number is in the range in which JavaScript normally uses standard notation.
toFixed()	Formats a number with a specific number of digits to the right of the decimal.
toLocaleString()	Returns a string value version of the current number in a format that may vary according to a browser's locale settings.
toPrecision()	Defines how many total digits (including digits to the left and right of the decimal) to display of a number.
toString()	Returns the string representation of the number's value.
valueOf()	Returns the number's value.

JAVASCRIPT STRING OBJECT

The String object is used to manipulate a stored piece of text. String objects are created with new String().

Syntax
var txt = new String("string"); var txt = "string";

String Object Properties:

Property	Description
constructor	Returns the function that created the String object's prototype
length	Returns the length of a string
prototype	Allows you to add properties and methods to an object

Example:
<!DOCTYPE html>
<html>
<head>
 Example for String Properties
<script type="text/javascript"> function book(title, author){
 this.title = title; this.author = author;
 }

</script>
</head>
<body>
<script type="text/javascript">
 var str = new String("Hello World"); document.write("
" + "str.constructor is:"
+ str.constructor+ "
"); document.write("str.length is:" + str.length+ "
");
 var myBook = new book("Conversations with Myself","Nelson Mandela"); book.prototype.price = null;
 myBook.price = 28; document.write("Book title is : " + myBook.title + "
");

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```
document.write("Book author is : " + myBook.author + "<br>"); document.write("Book price is : $" +
myBook.price + "<br>"); </script>
</body>
</html>
```

String Object Methods:

Method	Description
charAt()	Returns the character at the specified index
charCodeAt()	Returns the Unicode of the character at the specified index
concat()	Joins two or more strings, and returns a copy of the joined strings
fromCharCode()	Converts Unicode values to characters
indexOf()	Returns the position of the first found occurrence of a specified value in a string
lastIndexOf()	Returns the position of the last found occurrence of a specified value in a string
match()	Searches for a match between a regular expression and a string, and returns the matches
replace()	Searches for a match between a substring (or regular expression) and a string, and replaces the matched substring with a new substring
search()	Searches for a match between a regular expression and a string, and returns the position of the match
slice()	Extracts a part of a string and returns a new string
split()	Splits a string into an array of substrings
substr()	Extracts the characters from a string, beginning at a specified start position, and through the specified number of character
substring()	Extracts the characters from a string, between two specified indices
toLowerCase()	Converts a string to lowercase letters
toUpperCase()	Converts a string to uppercase letters
valueOf()	Returns the primitive value of a String object

Example:

```
<!DOCTYPE html>
<html>
<head><b> Example for String Properties </b>
</head>
<body>
<script type="text/javascript"> var str1 = new String( "Hello" ); var str2 = new String( "World" );
document.write("<br>" + "String 1 : " + str1); document.write("<br>" + "String 2 : " + str2);
document.write("<br>" + "Concatenated String 1 & String 2 : " + str1.concat( str2 ));
document.write("<br>" + "String 1 toUpperCase: " + str1.toUpperCase( )); document.write("<br>" +
"String 2 toLowerCase: " + str2.toLowerCase( )); </script>
</body>
</html>
```

JAVASCRIPT MATH OBJECT
The Math object allows you to perform mathematical tasks. Math is not a constructor. All properties/methods of Math can be called by using Math as an object, without creating it.

Syntax:

```
var x = Math.PI; // Returns PI
var y = Math.sqrt(16); // Returns the square root of 16
```

Math Object Properties:

Property	Description
E	Returns Euler’s number (approx. 2.718)
LN 2	Returns the natural logarithm of 2 (approx. 0.693)
LN 10	Returns the natural logarithm of 10 (approx. 2.302)
LOG 2E	Returns the base-2 logarithm of E (approx. 1.442)
LOG 10E	Returns the base-10 logarithm of E (approx. 0.434)
PI	Returns PI (approx. 3.14)
SQRT 1_2	Returns the square root of 1/2 (approx. 0.707)
SQRT 2	Returns the square root of 2 (approx. 1.414)

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript Math Property Example : </b>
</head>
<body>
<script type="text/javascript">
var property_value = Math.SQRT 1.2 document.write("<br>" + "Property Value of SQRT 1.2 Property is : " +
property_value); document.write("<br>" + "Property Value of SQRT 2 Property is : " + Math.SQRT 2);
document.write("<br>" + "Property Value of PI Property is : " + Math.PI); </script>
</body>
</html>
```

Math Object Properties:

Method	Description
abs(x)	Returns the absolute value of x
acos(x)	Returns the arccosine of x, in radians
asin(x)	Returns the arcsine of x, in radians
atan(x)	Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians
atan2(y,x)	Returns the arctangent of the quotient of its arguments
ceil(x)	Returns x, rounded upwards to the nearest integer
cos(x)	Returns the cosine of x (x is in radians)
exp(x)	Returns the value of Ex
floor(x)	Returns x, rounded downwards to the nearest integer
log(x)	Returns the natural logarithm (base E) of x
max(x,y,z,...,n)	Returns the number with the highest value
min(x,y,z,...,n)	Returns the number with the lowest value
pow(x,y)	Returns the value of x to the power of y
random()	Returns a random number between 0 and 1
round(x)	Rounds x to the nearest integer
sin(x)	Returns the sine of x (x is in radians)
sqrt(x)	Returns the square root of x
tan(x)	Returns the tangent of an angle

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript Math Object Method Example :
</b>
</head>
<body>
<script type="text/javascript"> var value1 = Math.sin(30); var value2 = Math.cos(30); var value3 =
Math.tan(30); var value4 = Math.pow(5,2); var value5 = Math.sqrt(25); document.write("<br>" + "Test
Value of sin(30)
: " + value1);
document.write("<br>" + "Test Value of cos(30) : " + value2 ); document.write("<br>" + "Test Value of tan(30) : "
+ value3 ); document.write("<br>" + "Test Value of power(5,2) : " + value4 ); document.write("<br>" + "Test
Value of sqrt(25) : " + value5 ); </script>
</body>
</html>
```

JAVASCRIPT ARRAY OBJECT

The Array object is used to store multiple values in a single variable. An array is a special variable, which can hold more than one value at a time. For example if you have a list of car names, storing the cars in single variables could look like this: var car1="Toyota"; var car2="Volvo"; var car3="BMW";

An array can hold many values under a single name, and you can access the values by referring to an index number.

Creating an Array

An array can be created in three ways. The following code creates an Array object called myCars:

1. Regular:
var myCars=new Array(); myCars[0]="Saab"; myCars[1]="Volvo"; myCars[2]="BMW";
2. Condensed:
var myCars=new Array("Saab","Volvo","BMW");
3. Literal:
var myCars=["Saab","Volvo","BMW"];

Accessing an Array

You refer to an element in an array by referring to the index number. This statement access the value of the first element in myCars: var name=myCars[0];
This statement modifies the first element in myCars: myCars[0]="Opel";

Array Object Properties:

Property	Description
constructor	Returns the function that created the Array object's prototype
length	Sets or returns the number of elements in an array
prototype	Allows you to add properties and methods to an Array object

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript Array constructor Property Example</b>
</head>
<body>
<script type="text/javascript"> var arr = new Array( 10, 20, 30 );
document.write("arr.constructor is:" + arr.constructor);  document.write("arr.length is : " + arr.length); </script>
</body>
</html>
```

Array Object Methods

Method	Description
concat()	Joins two or more arrays, and returns a copy of the joined arrays
indexOf()	Search the array for an element and returns its position
join()	Joins all elements of an array into a string
lastIndexOf()	Search the array for an element, starting at the end, and returns its position
pop()	Removes the last element of an array, and returns that element
push()	Adds new elements to the end of an array, and returns the new length
reverse()	Reverses the order of the elements in an array
shift()	Removes the first element of an array, and returns that element
slice()	Selects a part of an array, and returns the new array
sort()	Sorts the elements of an array
splice()	Adds/Removes elements from an array
toString()	Converts an array to a string, and returns the result
unshift()	Adds new elements to the beginning of an array, and returns the new length
valueOf()	Returns the primitive value of an array

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript Array Method Example</b>
</head>
<body>
<script type="text/javascript">
var arr = new Array("Orange", "Mango", "Banana", "Apple", "Pineapple");
document.write("<br>" + "Original array is : "
+ arr);
document.write("<br>" + "Sorted array is : " + arr.sort() );
document.write("<br>" + "Reversed array is : "
+ arr.reverse() );
</script>
</body>
</html>
```

JAVASCRIPT DATE OBJECT

The Date object is used to work with dates and times. Date objects are created with new Date(). There are four ways of instantiating a date: var d = new Date();

var d = new Date(milliseconds); var d = new Date(dateString);

var d = new Date(year, month, day, hours, minutes, seconds, milliseconds);

Date Object Properties

Property	Description
constructor	Returns the function that created the Date object's prototype
prototype	Allows you to add properties and methods to an object

Date Object Methods

Method	Description
getDate()	Returns the day of the month (from 1-31)
getDay()	Returns the day of the week (from 0-6)
getFullYear()	Returns the year (four digits)
getHours()	Returns the hour (from 0-23)
getMilliseconds()	Returns the milliseconds (from 0-999)
getMinutes()	Returns the minutes (from 0-59)
getMonth()	Returns the month (from 0-11)
getSeconds()	Returns the seconds (from 0-59)
getTime()	Returns the number of milliseconds since midnight Jan 1, 1970
getTimezoneOffset()	Returns the time difference between UTC time and local time, in minutes
getUTCDate()	Returns the day of the month, according to universal time (from 1-31)
getUTCDay()	Returns the day of the week, according to universal time (from 0-6)
getUTCFullYear()	Returns the year, according to universal time (four digits)
getUTCHours()	Returns the hour, according to universal time (from 0-23)
getUTCMilliseconds()	Returns the milliseconds, according to universal time (from 0-999)
getUTCMinutes()	Returns the minutes, according to universal time (from 0-59)
getUTCMonth()	Returns the month, according to universal time (from 0-11)
getUTCSeconds()	Returns the seconds, according to universal time (from 0-59)
getYear()	Deprecated. Use the getFullYear() method instead
parse()	Parses a date string and returns the number of milliseconds since midnight of January 1, 1970
setDate()	Sets the day of the month of a date object
setFullYear()	Sets the year (four digits) of a date object
setHours()	Sets the hour of a date object
setMilliseconds()	Sets the milliseconds of a date object
setMinutes()	Set the minutes of a date object
setMonth()	Sets the month of a date object
setSeconds()	Sets the seconds of a date object
setTime()	Sets a date and time by adding or subtracting a specified number of milliseconds to/from midnight January 1, 1970

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setUTCDate()	Sets the day of the month of a date object, according to universal time
setUTCFullYear()	Sets the year of a date object, according to universal time (four digits)
setUTCHours()	Sets the hour of a date object, according to universal time
setUTCMilliseconds()	Sets the milliseconds of a date object, according to universal time
setUTCMinutes()	Set the minutes of a date object, according to universal time
setUTCMonth()	Sets the month of a date object, according to universal time
setUTCSeconds()	Set the seconds of a date object, according to universal time
setYear()	Deprecated. Use the setFullYear() method instead
toString()	Converts the date portion of a Date object into a readable string
toGMTString()	Deprecated. Use the toUTCString() method instead
toISOString()	Returns the date as a string, using the ISO standard
toJSON()	Returns the date as a string, formatted as a JSON date
toLocaleDateString()	Returns the date portion of a Date object as a string, using locale conventions
toLocaleTimeString()	Returns the time portion of a Date object as a string, using locale conventions

<code>toLocaleString()</code>	Converts a Date object to a string, using locale conventions
<code>toString()</code>	Converts a Date object to a string
<code>getTimeString()</code>	Converts the time portion of a Date object to a string
<code>toUTCString()</code>	Converts a Date object to a string, according to universal time
<code>UTC()</code>	Returns the number of milliseconds in a date string since midnight of January 1, 1970, according to universal time
<code>valueOf()</code>	Returns the primitive value of a Date object

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript Date Method Example</b>
</head>
<body>
<script type="text/javascript"> var dt = new Date();
document.write("<br>" + "Date and Time : " + dt );
document.write("<br>" + "Today's date and time : " + dt.getDate() ); document.write("<br>" + "Today's month : " +
dt.getMonth() ); document.write("<br>" + "Today's year : " + dt.getFullYear() );
document.write("<br>" + "Today's time zone : " + dt.getTimezoneOffset() );
</script>
</body>
</html>
```

JAVASCRIPT BOOLEAN OBJECT

The Boolean object is used to convert a non-Boolean value to a Boolean value (true or false).

Boolean Object Properties

Property	Description
constructor	Returns the function that created the Boolean object's prototype
prototype	Allows you to add properties and methods to a Boolean object

Boolean Object Methods

Method	Description
toString()	Converts a Boolean value to a string, and returns the result
valueOf()	Returns the primitive value of a Boolean object

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript toString() Method Example</b>
</head>
<body>
<script type="text/javascript"> var flag = new Boolean(false);
document.write( "<br>" + "flag.toString is : " + flag.toString() );
document.write( "<br>" + "flag.valueOf is : " + flag.valueOf() );
</script>
</body>
</html>
```

JAVASCRIPT REGEXP OBJECT

A regular expression is an object that describes a pattern of characters. Regular expressions are used to perform pattern-matching and search-and-replace functions on text.

Syntax

```
var paf=new RegExp(pattern,modifiers);var paf=/pattern/modifiers;
```

pattern specifies the pattern of an expression

modifiers specify if a search should be global, case-sensitive, etc.

Modifiers

Modifiers are used to perform case-insensitive and global searches:

Modifier	Description
i	Perform case-insensitive matching
g	Perform a global match (find all matches rather than stopping after the first match)
m	Perform multiline matching

Brackets

Brackets are used to find a range of characters:

Expression	Description
[abc]	Find any character between the brackets
[^abc]	Find any character not between the brackets
[0-9]	Find any digit from 0 to 9
[A-Z]	Find any character from uppercase A to uppercase Z
[a-z]	Find any character from lowercase a to lowercase z
[A-z]	Find any character from uppercase A to lowercase z
[adgk]	Find any character in the given set
[^adgk]	Find any character outside the given set
(red blue green)	Find any of the alternatives specified

Metacharacters

Metacharacters are characters with a special meaning:

Metacharacter	Description
.	Find a single character, except newline or line terminator
\w	Find a word character
\W	Find a non-word character
\d	Find a digit
\D	Find a non-digit character
\s	Find a whitespace character
\S	Find a non-whitespace character
\b	Find a match at the beginning/end of a word
\B	Find a match not at the beginning/end of a word
\0	Find a NUL character
\n	Find a new line character
\f	Find a form feed character
\r	Find a carriage return character
\t	Find a tab character
\v	Find a vertical tab character
\xxx	Find the character specified by an octal number xxx
\xdd	Find the character specified by a hexadecimal number dd
\uxxxx	Find the Unicode character specified by a hexadecimal number xxxx

Quantifiers

Quantifier	Description
n+	Matches any string that contains at least one n
n*	Matches any string that contains zero or more occurrences of n
n?	Matches any string that contains zero or one occurrences of n
n{X}	Matches any string that contains a sequence of X n's
n{X,Y}	Matches any string that contains a sequence of X to Y n's
n{X,}	Matches any string that contains a sequence of at least X n's
n\$	Matches any string with n at the end of it
^n	Matches any string with n at the beginning of it
?=n	Matches any string that is followed by a specific string n
?!n	Matches any string that is not followed by a specific string n

RegExp Object Properties

Property	Description
global	Specifies if the "g" modifier is set
ignoreCase	Specifies if the "i" modifier is set
lastIndex	The index at which to start the next match
multiline	Specifies if the "m" modifier is set
source	The text of the RegExp pattern

RegExp Object Methods

Method	Description
compile()	Compiles a regular expression
exec()	Tests for a match in a string. Returns the first match
test()	Tests for a match in a string. Returns true or false

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript RefExp() Method Example</b>
</head>
<body>
<script type="text/javascript"> var str="Hello world!";
//look for "Hello"
var paf1= new RegExp("Hello","g");var result=paf1.exec(str);
document.write("<br>" + "<br>" + "Original String: " + str);
document.write("<br>" + "Search pafern: " + paf1);
document.write("<br>" + "Returned value: " + result);
//look for "World"
var paf2= new RegExp("world","g"); var result=paf2.test(str);document.write("<br>" + "<br>" + "Searchpafern: " + paf2); document.write("<br>" + "Returned value: " + result);
</script>
</body>
</html>
```

JavaScript Global

The JavaScript global properties and functions can be used with all the built-in JavaScript objects.

JavaScript Global Properties

Property	Description
Infinity	A numeric value that represents positive/negative infinity
NaN	“Not-a-Number” value
undefined	Indicates that a variable has not been assigned a value

JavaScript Global Functions

Method	Description
Function	Description
decodeURI()	Decodes a URI
decodeURIComponent()	Decodes a URI component
encodeURI()	Encodes a URI
encodeURIComponent()	Encodes a URI component
escape()	Encodes a string
eval()	Evaluates a string and executes it as if it was script code
isFinite()	Determines whether a value is a finite, legal number
isNaN()	Determines whether a value is an illegal number
Number()	Converts an object's value to a number
parseFloat()	Parses a string and returns a floating point number
parseInt()	Parses a string and returns an integer
String()	Converts an object's value to a string
unescape()	Decodes an encoded string

Example:

```
<!DOCTYPE html>
<html>
<head>
<b>JavaScript Global Functions Example</b>
</head>
<body>
<script type="text/javascript">
var test1= new Boolean(true); var test2= new Boolean(false); var test3= new Date();
var test4= new String("111"); var test5= new String("111 222"); document.write("<br>" +
Number(test1)+ "<br>");
document.write(Number(test2)+ "<br>"); document.write(Number(test3)+ "<br>");
document.write(Number(test4)+ "<br>"); document.write(Number(test5)+ "<br>");
</script>
</body>
</html>
```

```
document.write("isFinite(111) : " + isFinite(111) + "<br>"); document.write("isFinite(-9.23) : " + isFinite(- 9.23)+
"<br>"); document.write("isFinite(0) : " + isFinite(0)+ "<br>");
document.write("isFinite(Hello) : " + isFinite("Hello")+ "<br>"); document.write("isFinite(2012/01/01) : " +
isFinite("2012/01/01")+ "<br>"); document.write("isNaN(111) : " + isNaN(111)+ "<br>");
document.write("isNaN(-9.23) : " + isNaN(- 9.23)+ "<br>");
document.write("isNaN(0) : " + isNaN(0)+ "<br>");
document.write("isNaN(Hello) : " + isNaN("Hello")+ "<br>"); document.write("isNaN(2012/01/01) : " +
isNaN("2012/01/01")+ "<br>"); </script>
</body>
</html>
```

JAVASCRIPT EVENTS

A JavaScript can be executed when an event occurs, like when a user clicks on an HTML element. HTML events can be occurs:

- When a user clicks the mouse
- When a web page has loaded
- When an image has been loaded
- When the mouse moves over an element
- When an input field is changed
- When anHTMLform is submifed
- When a user strokes a key

To execute code when a user clicks on an element, add JavaScript code to an HTML event afribute:

```
onclick=JavaScript
```

Example:

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript"> function sayHello() {
    alert("Hello World")
}

</script>
</head>
<body>
<input type="button" onclick="sayHello()" value="Say Hello" />
</body>
</html>
```

HTML DOM Events

HTML DOM events allow JavaScript to register different event handlers on elements in an HTML document. Events are normally used in combination with functions, and the function will not be executed before the event occurs such as when a user clicks a button.

Mouse Events

Property	Description
onclick	The event occurs when the user clicks on an element
ondblclick	The event occurs when the user doubleclicks on an element
onmouseup	The event occurs when a user releases a mouse button over an element
onmousedown	The event occurs when a user presses a mouse button over an element
onmouseover	The event occurs when the pointer is moved onto an element
onmouseout	The event occurs when a user moves the mouse pointer out of an element
onmousemove	The event occurs when the pointer is moving while it is over an element

Example:

<pre><!DOCTYPE html> <html> <head> <script type="text/javascript"> function click1() { alert("Hello Sir, You have clicked the bufon") } function click2() { alert("Hello Sir, You have double clicked the bufon") } </script> </head> <body> <input type="bufon" onclick="click1()" value="Click" /> <input type="bufon" ondblclick="click2()" value="Double click" /> </body> </html></pre>	
--	--

Keyboard Events

Aflribute	Description
onkeydown	The event occurs when the user is pressing a key
onkeyup	The event occurs when the user releases a key
onkeypress	The event occurs when the user presses a key

Example:

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript"> function function1()
{
    alert("You pressed a key inside the input field");
}

</script>
</head>
<body>
<p>Press a key in the input field.</p>
<input type="text" onkeypress="function1()">
</body>
</html>
```

Frame/Object Events

Aflribute	Description
onload	The event occurs when a document, frameset, or <object> has been loaded
onunload	The event occurs once a page has unloaded (for <body> and <frameset>)
onresize	The event occurs when a document view is resized
onscroll	The event occurs when a document view is scrolled
onabort	The event occurs when an image is stopped from loading before completely loaded (for <object>)
onerror	The event occurs when an image does not load properly (for <object>, <body> and <frameset>)

Example:

```
<!DOCTYPE html>
<html>
<head>
<h1> Welcome to SCERT Delhi</h1>
<script type="text/javascript"> function msg()
{
alert("Page loaded successfully");
}

</script>
</head>
<body onload=msg()>
</body>
</html>
```

Form Events	
Aflribute	Description
onsubmit	The event occurs when a form is submifed
onreset	The event occurs when a form is reset
onchange	The event occurs when the content of a form element, the selection, or the checked state have changed (for <input>, <select>, and <textarea>)
onselect	The event occurs when a user selects some text (for <input> and <textarea>)
onfocus	The event occurs when an element gets focus (for <label>, <input>, <select>, textarea>, and <bufon>)
onblur	The event occurs when a form element loses focus



Example:

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript"> function msg1()
```

```
    alert('Thank you ' + myform.data.value + '!')
```

```
    {
    }
}
```

```
</script>
</head>
<body>
<b>Type your name and press the button</b><br>
<form name="myform" onSubmit=msg1()>
<input type="text" name="data">
<input type="submit" name="submit" value="Submit this form">
</form>
</body>
</html>
```

EVENTS CASE STUDIES

1) Change the color of a block when a user holds down the mouse button.

```
<!DOCTYPE html>
<html>
<head>

<script type="text/javascript">
function mDown(x)

    {

x.style.backgroundColor="#7CFC
00";
x.innerHTML="<b>MOUSE
DOWN</b>"

    }

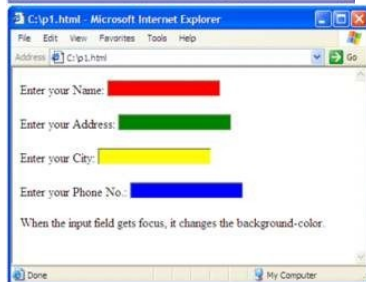
function mUp(x)

    {

x.style.backgroundColor="#FF
0000";
x.innerHTML="<b>MOUSE
UP</b>"

    }

</script>
```

```

</head> <body>
<div onmousedown="mDown(this)" onmouseup="mUp(this)" style="background-color:#FFFF 00;
width:120px;height:20px;padding:40px;"> <b>Click Me</b></div>
</body>
</html>

2)Display an error message when an image does not load properly.
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript"> function imgError()
{
alert('The image could not be loaded.');
```

<pre> } } </script> </head> <body> <h1> Welcome to SCERT </h1> </body> </html> 3)Change the background-color of an input field when it gets focus.</pre>	
---	--

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<pre> x.style.background="yellow"; } function function4(x) { x.style.background="blue"; } </script></pre>	
---	--

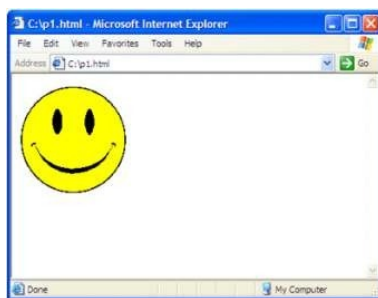
```

</head>
<body>

<p>Enter your Name: <input
type="text"
onfocus="function1(this)"> </p>
<p>Enter your Address: <input
type="text"
onfocus="function2(this)"> </p>
<p>Enter your City: <input
type="text"
onfocus="function3(this)"> </p>
<p>Enter your Phone No.:
<input type="text"
onfocus="function4(this)"> <p>
<p>When the input field gets
focus, it changes
the background-color.</p>

</body>
</html>

```



4)Change the size of an image when the cursor moves over it.

```

<!DOCTYPE html>
<html>
<head>

<script type="text/javascript">
function mover(x)
    {

x.style.height="396px";
x.style.width="396px";

    }

function mout(x)
    {

x.style.height="132px";
x.style.width="132px";

    }

</script>
</head>
<body>

 </body>  
</html>

5) Display the message to state browser has enabled cookies or not.

```
<!DOCTYPE html>
<html>
<body onload="chkcookies()">
<script type="text/javascript">
function chkcookies()
{
if
(navigator.cookieEnabled==true)
{
alert("Cookies are enabled")
}
else
{
alert("Cookies are not
enabled")
}
}
}
</script>
</body>
</html>
```

### Exercise Knowledge Check Point

1. JavaScript is used for ..... side scripting.
  - a) Client
  - b) Server
  - c) Local
  - d) Global
2. A JavaScript can be executed when ..... occurs,
  - a) Function
  - b) Event
  - c) Command
  - d) Call
3. A ..... is a block of code that will be executed when someone calls it.
  - a) Function
  - b) Event
  - c) Command
  - d) Call
4. A variable declared within a JavaScript function becomes ..... and can only be accessed from within that function.
  - a) Local
  - b) Global
  - c) Free
  - d) Universal
5. Variables declared outside a function, become ..... and all scripts and functions on the web page can access it.
  - a) Local
  - b) Global
  - c) Free
  - d) Universal
6. In JavaScript, an ..... is data, with properties and methods.
  - a) Function
  - b) Event
  - c) Command
  - d) Object
7. The ..... object represents numerical data, either integers or floating-point numbers.
  - a) Number
  - b) String
  - c) Math
  - d) Array
8. The ..... object is used to manipulate a stored piece of text.
  - a) Number
  - b) String
  - c) Math
  - d) Array

9. The ..... object allows you to perform mathematical tasks.
- a) Number
  - b) String
  - c) Math
  - d) Array
10. The ..... object is used to store multiple values in a single variable.
- a) Number
  - b) String
  - c) Math
  - d) Array
11. The ..... object is used to work with dates and times.
- a) Number
  - b) Date
  - c) Math
  - d) Array
12. The ..... object is used to convert a non-Boolean value to a Boolean value.
- a) Boolean
  - b) Date
  - c) Math
  - d) Array
13. HTML ..... events allow JavaScript to register different event handlers on elements in an HTML document.
- a) Window
  - b) Keyboard
  - c) DOM
  - d) Mouse
14. The ..... event occurs when the user clicks on an element.
- a) onclick
  - b) onmouseover
  - c) onmouseup
  - d) onkeypress
15. The ..... event occurs when a user releases a mouse button over an element.
- a) onclick
  - b) onmouseover
  - c) onmouseup
  - d) onkeypress
16. The ..... event occurs when the pointer is moved onto an element.
- a) onclick
  - b) onmouseover
  - c) onmouseup
  - d) onkeypress
17. The ..... event occurs when the user presses a key.
- a) onclick
  - b) onmouseover
  - c) onmouseup
  - d) onkeypress
18. The ..... event occurs when a document, frameset, or object has been loaded
- a) indexOf()
  - b) onsubmit
  - c) onload
  - d) onkeypress

19. The ..... event occurs when a form is submitted.
- |              |               |
|--------------|---------------|
| a) indexOf() | b) onsubmit   |
| c) onload    | d) onkeypress |
20. The method ..... search the array for an element and returns its position.
- |              |             |
|--------------|-------------|
| a) indexOf() | b) concat() |
| c) pop()     | d) push()   |

**Hands on Activities**

1. Define a function max() that takes two numbers as arguments and returns the largest of them. Use the if-then-else construct available in Javascript.
2. Define a function maxOfThree() that takes three numbers as arguments and returns the largest of them.
3. Write a function that takes a character (i.e. a string of length 1) and returns true if it is a vowel, false otherwise.
4. Define a function sum() and a function multiply() that sums and multiplies (respectively) all the numbers in an array of numbers. For example, sum([1,2,3,4]) should return 10, and multiply([1,2,3,4]) should return 24.
5. Define a function reverse() that computes the reversal of a string. For example, reverse("jag testar") should return the string "ratset gaj".
6. Write a function findLongestWord() that takes an array of words and returns the length of the longest one.
7. Write a function filterLongWords() that takes an array of words and an integer i and returns the array of words that are longer than i.
8. Create a page with JavaScript to generate Alert Box if user tries to change text in text input field.
9. Create a page with JavaScript to show the date and time when the page loads.
10. Create a page with JavaScript to create a navigational bar with images. When the mouse is over the image, an alternate version of the image should appear. When the mouse moves off the image, the original image should reappear.

#### Skill Check Point

Write the JavaScript code for creating a Registration Form with following client side validations:

- a) The Login name, Email address, Password, Confirm password cannot left empty.
- b) The Email address needs to be scanned for the presence of an '@' and '.' Symbol.
- c) The Password and Confirm password has to be same.
- d) The length of password should not be less than 8 characters

References:

1. Ivan Bayross, WebEnabled Commercial Application Development Using HTML, DHTML, javascript, Perl CGI, BPB Publication, New Delhi (2005)
2. JavaScript Tutorial - W3Schools, [www.w3schools.com/js/](http://www.w3schools.com/js/)
3. JavaScript Tutorial, [www.tutorialspoint.com/javascript/](http://www.tutorialspoint.com/javascript/)
4. JavaScript Tutorial, [www.echoecho.com](http://www.echoecho.com)
5. Learn JavaScript Programming, [www.codecademy.com/tracks/javascript](http://www.codecademy.com/tracks/javascript)
6. JavaScript Tutorial, <http://html.net/tutorials/javascript/>

## ITDC-413

### *Work Integrated Learning IT - WA-II*

- Identification of Work Areas
- Work Experience

Outline

- Skills required for Web Designing •Skills Required For Multimedia Professional



Skills required for Web Designing:

Webdesign is a broad area covering many different skill sets and disciplines that are used in the production and maintenance of websites. The different areas of web design include interface design, web graphic design, authoring, user experience design and search engine optimization. To be a successful web designer you must have personal skills, self learning, technical, writing and editorial skills, you must be well versed with graphic design theory.

The following personal technical and additional skills are needed to be a good Web designer.

1. Personal Skills:  
•Logical thinking •Creativity •Communication skills •Written skills •Organization skills •Punctuality •Design Sense •Self learning
2. Technical Skills:

The following list of technical skills is a list of the skills you need to be a good Web designer.

- HTML, XHTML
- CSS
- JavaScript and Ajax
- Database - MySQL, MSSQL
- Flash
- PHP, ASP, Java, Perl or C++
- SEO Techniques
- Dreamweaver •Windows Movie Maker

3. Additional Skills  
•Web Server Administration •Database concepts •Project Management •Creativity & Graphics Design

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- Business Sense
  - Graphic Design Theory •Know Typography well •Must be aware of UI ( User Interface ) design patterns.
1. HTML: For Beginners HTML (HyperTextMark-up Language) is the starting point for web design. It is the basic and fundamental skill that is used to create web pages. HTML uses tags to open and close a passage of text.
  2. CSS: Cascading Style Sheets (CSS) is another fundamental skill in web design to convert HTML codes into formatted web pages. It has to do with the appearance and format of each web page with respect to color, text, fonts, borders, etc.
  3. JavaScript: JavaScript is the script language which is associated with HTML and used in web design. This language improves the interactivity of a Web page with the addition of dynamic content. The JS is embedded in HTML code.
  4. SEO: A web designer must ensure that the site is search engine friendly. You must understand the basics of search engine optimization and integration of their design features so as to help the website in gaining more visibility on the Internet.
  5. JQUERY: This is latest website design craze, with the ability to interact with the server on the fly. For a while now, we have seen on larger corporate sites, the introduction of what appear to mainly be usability improvements, and slick CSS transitions and effects.
  6. PHP: Regarded as the Internet's number one choice for server-side languages, its open source benefits come right out on top again. PHP is used widely throughout the internet from simple functions for using dynamic dates, and including template files right through to complete object oriented application development.
  7. FLASH: Animation on the web is as popular as ever with more focus on 3D tools interactivity and compatibility. Having the skills to be able to create nice animations can certainly give your work the wow factor that will sell your work to your clients. Animation and video are one of the best ways to get the attention of your users.
  8. SERVER ADMINISTRATION: There are certainly many areas of web design that are not glamorous, but equally as important if you are to maintain a high level of service. Administering Domains, Hosting, Emails, servers, backups etc is essential for smooth website running.

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9. **PROJECT MANAGEMENT:** When running or working for a web company, although not necessarily related to website design, but more good business practice in general, being able to manage the project to the constraints of time, budget and resources, could be the difference between a successful project with on going support, maintenance and future developments and a disappointed client that looks elsewhere for future WebsiteDesign

10. **MYSQL:** Open source technologies on the web have so far dominated when it comes to all round uptakes. Web designers of all levels can use MySQL technology freely within the Website Design. With the bulk of web applications using MySQL along with PHP, it's no surprise that having this skill set can certainly be valuable in this day and age.

Additional skills explained:

1. **Sketching/Drawing:** This is the basic skill that the graphic designers should possess to get their ideas on paper. The designer can also learn a variety of software to improve its ability to delineate.
2. **Typography:** Typography is the art of type design and requires a good understanding of font families, with the use of line-height, kerning and tracking. A graphic designer should know the difference between the families and styles and how best to use.
3. **Print Design & Layout:** An understanding of Print Layout and design is a prerequisite for a graphic designer. The use of design programs such as Adobe In Design and Quark is necessary. The designer must have a detailed knowledge of the printing process to understand the use of the color space.
4. **Photography:** This photography is a skill that can enhance the designer's ability to impress his clients. Using a digital camera, the designer could illuminate the subject. This is an add-on skill.

**Skills Required For Multimedia Professional:**

Multimedia is media and content that uses a combination of different content forms and to develop such media, content a multimedia professional must be well versed with multimedia software, tools, techniques, services and media devices.

Following is the list of a successful multimedia professional skill set and technical qualities:

1. Personal Skills:
  - Active •Critical •Judgment•Time •Speaking•Writing - •Reading •Active •Monitoring•Instructing•Service •Social •Systems •Management
  - Listening Thinking and Management Communicating Comprehension Learning Orientation Perceptiveness Evaluation of Material
  - Decision Making
2. Technical Skills:
  - Adobe Acrobat •Photoshop •Page Maker/Quark•Corel Draw•Flash/Shockwave•Web Development Tools for FrontPage•HTML-XML-HTXML
  - Video Edit Magic•3D Max Studio•Dreamviewer •Illustrator •Paint •Windows Movie Maker
3. Additional Skill set
  - Troubleshooting•Operation and Control•Complex Problem Solving•Equipment Maintenance

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- Systems Analysis
- Quality Control Analysis•Management of Personnel Resources•Coordination

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***ITDC-410***  
***Movie Editing Tools(with Premier Pro)***

- Familiarisation of interface components
- Importing pictures
- Importing Audio and Video Files
- Splitting and Joining Movie Clips
- Adding Titles and publishing

#### Introduction

Adobe Premiere is a video Editing software package suitable for both amateur enthusiasts and professionals. It can be purchased and used alone, or alongside other applications such as Adobe Photoshop, After Effects, *etc.*

Premiere is a powerful editing tool, capable of producing broadcast-quality and high-definition video. It is a very popular package amongst video enthusiasts and professionals, although other packages are usually preferred for the very top level of television production.

#### Familiarization of Interface Components Premiere Pro Workspace: Overview

The screenshot below shows the default workspace. This workspace can be customized in many ways — you can rearrange the panels and use specialist panels for different tasks (audio Mixer, titles, etc). For now we will stick to the default workspace.

The default panels

1. The Tools Panel is where you can select various editing tools to use in the timeline.
2. The Project Panel is where you store all the elements which make up your edited video (Video Clips, audio clips, graphics, titles, etc).
3. The Source Monitor is where you can preview clips, make simple adjustments and add them to the timeline.
4. The Program Monitor shows the edited video from the timeline.
5. The Media Browser allows you to browse, preview and import clips from your hard Drives and network.
6. The Timeline Panel is where you arrange the elements of your video in the desired order.
7. The Audio Meters display the volume level from the timeline.

Exporting Video from Adobe Premiere Pro

This section shows how to export Video clips using Adobe Premiere Pro. You can export in a variety of formats and it's important to choose the right one for the job.

Export options can be found in the menu under File > Export.

Important: Before exporting, make sure you have the correct panel and source selected in the workspace. For example, select the [timeline panel](#) to export the timeline, or select the [preview monitor](#) to export a clip shown there. If the export option is grayed out, you don't have a clip or timeline selected.

AVI

To export as an AVI file, choose File > Export > Movie.

This creates a large file but is the best quality. Use this option for mastering purposes or if you want to be able to edit the video later. For maximum quality, export as an uncompressed AVI.



Working with project :

Step by step instructions to start a new project :-

1. Start adobe premier
2. Click new project icon
3. Chose preset
4. Name the project
5. Click on browser and locate a directory to save the project
6. Click ok button

After that left panel where storage and clips middle project window and below timeline and right side tools shows there

#### Tools

Premiers give a number of tools that help you to work faster and easy



#### Adobe Premiere Tools Panel (Toolbox)

The toolbox contains common tools used for editing clips in the [timeline](#). Click on any of the buttons (or use the keyboard shortcuts) to select each tool. The default tool is the selection tool.

When you select a tool the mouse pointer will usually change to a new icon to represent the tool when held over the timeline panel. In some cases you can change the behaviour of a tool by holding down a modifier key such as the Shift key.

The tools are described below with links to more information.

#### Button Keyboard Description Shortcut

##### V Selection tool

The default tool, used to select clips in the timeline.

##### M TrackSelect tool

Select all clips on a track from a given point, or select multiple tracks.

##### B Ripple Edit tool

Adjust an edit point and move other clips in the timeline to compensate.

##### N Rolling Edit tool

Adjust an edit point between two clips without affecting the rest of the timeline.

##### X Rate Stretch tool

Change the duration of a clip while simultaneously changing the speed to compensate.

##### C Razor tool

Cut a clip (or multiple clips) into two clips.

##### Y Slip tool

Move a clip's in and out points by the same amount simultaneously, so the rest of the timeline is not affected.

##### U Slide tool

Move a clip back and forth in the timeline, while simultaneously adjusting adjacent clips to compensate.





**P Pen tool**

Create control (anchor) points.



**H Hand tool**

Drag the timeline view left and right.

**Z Zoom tool**

Click in the timeline to magnify the view, or drag and select a rectangular area to zoom into.

**Importing Audio and Video Files** Insert the sound file in any clip

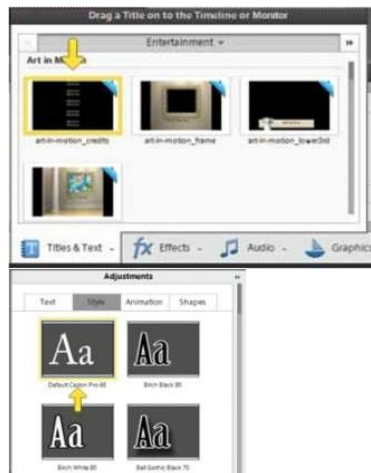
1. Click Select and Import the file to the Project Assets panel. Ensure that you do not click the drop down menu. Switch to Adobe Premiere Elements and notice that the file has been added to the Project Assets panel.
2. Use the file as you would any other sound files in Adobe Premiere Elements.

**To import additional files from Smart Sound, click Use Smart Sound from the Music panel, and re-run this procedure.**

1. Click Add media to import the video clip you want to enhance. Ignore if the video clip is already present on the timeline.
2. Select the option to import media.
3. Select Guided > Adjusting Title to your movie.
4. Click Titles & Text on the action bar.
5. Select a template and drag-and-drop it to the timeline. There are several templates available with predefined text. Select from the drop-down list to explore other templates.

**Select Title**

1. To add custom text, select the default text and type in your desired text. Doubleclick to select the text if the text is not selected.
2. Doubleclick the text panel to open it. You can adjust the font, style, size, and color in the Adjustments panel.



3. There are various predefined styles you can select from. Click the Style tab in the Adjustments bar.

#### *Choose and Add Styles*

Click the desired style to apply it to the text.

4. You can animate your text. To add an animation, click the desired animation and select Apply.

#### Import a title file

You can import a title into a project that was exported from another Premiere Elements project.

1. In the Expert view, click Project Assets to open the Project Assets panel.
2. Right-click/Ctrlclick on the Project Assets panel and select Get Media From > Files And Folders.

#### Align objects

1. If necessary, doubleclick the title in the Expert view timeline to open it in the Monitor panel.
2. In the Monitor panel, Shift-click two or more objects or drag a marquee over them.



3. Do one of the following:  
 -Right-click/ctrlclick any of the objects selected, and choose Align Objects. Or-Choose Text > Align Objects.
  4. Select the type of alignment you want.
- Distribute objects**
1. If necessary, doubleclick the title in the Expert view timeline to open it in the Monitor panel.
  2. In the Monitor panel, Shift-click three or more objects or drag a marquee over them.
  3. Do one of the following:  
 -Right-click/ctrlclick any of the objects selected, and choose Distribute Objects. Or-ChooseText> Distribute Objects.
- Transform objects**  
 You have full flexibility in adjusting an object's position, rotation, scale, and opacity—afributes collectively referred to as transform properties. To transform an object, you can drag in the Monitor panel or choose a command from the Text menu.
- Create a rolling or crawling title**  
 Although static titles, graphics, and images may suffice for some projects, others require titles that move. Using roll and crawl options, you can instantly create professional-looking moving titles.

The length of the title in the Quick view timeline determines the speed of the movement. The more you increase the title clip length, the slower the movement.

*Rolling titles* move characters vertically across the screen.

*Crawling titles* move characters horizontally across the screen.

*Keyframes* let you move characters across a custom path that you create by setting different position keyframes at several points in time.

*Note:* You cannot add a roll or crawl, or apply keyframes to a title that uses an animation preset. Applying an animation preset will overwrite all roll, crawl, and keyframe settings.

Use Roll/Crawl options to change a rolling title to a crawling title or vice versa, specify the direction of a crawl, and set the timing of movement.

*A rolling title is commonly used for production credits.*

Create a rolling or crawling title

1. Do one of the following:

To create a rolling title, choose Text > Roll/Crawl Options > Roll. To create a crawling title, choose Text > Roll/Crawl Options > Crawl.

2. Create the text and graphic objects for the title. Use the Monitor panel's scroll bar to view offscreen areas of the title. When the title is added to the Quick view timeline or the Expert view timeline, the hidden offscreen areas roll or crawl into view.
3. Select the Roll/Crawl Options in the Roll/Crawl Options dialog box.
4. Specify options as desired, and then click OK.

*Note:* You can specify a direction for crawling titles only. Rolling titles always move from the bottom to the top of the screen.

Adjust an object's opacity

1. If necessary, doubleclick the title in the Expert view timeline to open it in the Monitor panel.
2. In the Monitor panel, select an object.
3. Do one of the following:

Right-click/ctrlclick the object and choose Transform > Opacity. Choose Text > Transform > Opacity.

4. Type a new Opacity value, and click OK.

*Note: The Opacity property setting adjusts the opacity of objects within a title. You can set the overall opacity of the entire title in the Expert view timeline as you would any video clip, using effects.*

#### Move objects

1. If necessary, doubleclick the title in the Expert view timeline to open it in the Monitor panel.
2. In the Monitor panel, select one or more objects.
3. Do one of the following:

Drag the selected object or objects to a new position. Choose **Text > Transform > Position**. Type new x and y position values, and then click **OK**. Right-click/ctrlclick the selected object or objects, and choose **Transform > Position**. Type new x and y position values, and then click **OK**.

*note: The x and y position values correspond to a coordinate system in which the upper-left corner of the title is 0, 0. When you enter values for x and y, Premiere Elements places the center of the selected object's bounding box at that point.*

**BringToFront** Brings the object to the top of the stacking order. **Bring Forward** Switches the object with the object directly in front of it. **Send To Back** Moves the object to the bottom of the stacking order.

**Send Backward** Switches the object with the object directly behind it.

*note: If your text or shape elements are densely stacked, it may be difficult to select an element within the stack. You can use the **Text > Select** or right-click/ctrlclick > **Select** command to navigate easily through the stacked elements to reach the target element.*

#### Expert view timeline

For more advanced editing, use the Expert view timeline. The Expert view timeline graphically represents your movie project as video and audio clips arranged in vertically stacked tracks. When you capture video from a digital video device, the clips appear sequentially as they occur.

#### Expert view timeline

The Expert view timeline uses a time ruler to display the components of your movie and their relationship to each other over time. You can trim and add scenes, indicate important frames with markers, add transitions, and control how clips are blended or superimposed. Compared to the Quick view, the Expert view timeline has more tracks.

**Organizer:** Opens Elements Organizer to let you organize and manage your media files



**Instant Movie:** Automatically guides you through the movie creation process. It lets you quickly select movie templates and edit clips. Instant Movie also lets you add theme-based effects, titles, transitions, and audio to your movie. You can change settings as desired.

**Tools:** Provides options that let you add cool effects to your video. For example, use Time Remapping and Smart Mix to add sophisticated motion effects to your video. You can choose Smart Trim to let Premiere Elements automatically edit your footage for a crisper video.

**Transitions:** Provides transitions you can use between your movie clips. The Transition contextual control appears automatically when you apply a transition for the first time. Use it to modify the transition properties. To open the Transition contextual control later, doubleclick the transition. The Expert view provides more transition effects compared to the Quick view.

**Titles and Text:** Contains pre-formatted title templates you can use in your movie. The Title contextual control appears automatically when you apply a title to your movie for the first time. Use it to modify the title properties. To open the Title contextual control later, doubleclick the title. The Expert view provides more title templates compared to the Quick view.

**Effects:** Shows special effects and presets you can apply to clips in your movie. To edit a special effect after applying it, click Applied Effects to modify the properties in the Applied Effects panel. Compared to the Quick view, the Expert view provides more effects that are organized under various categories.

**Audio:** Lets you add theme music to your movie. You can select multiple music clips from here, and they are played in the order selected. Click Use Smart Sound to choose third-party music plugins for your movie.

**Graphics:** Lets you add graphic images, such as clip art and callouts (thought bubbles or speech balloons) to specific portions in your clips.



Adjust panel

The Adjust panel lets you adjust the inherent properties of your clip, for example color and lighting. You can also use the Smart Fix tool to enhance the quality of your video footage.

**Adjust panel**

To display the Adjust panel, select the clip and then click Adjust on the right. If you add a title to your clip, use the Adjust panel to alter its properties, if required.

Applied Effects panel

The Applied Effects panel lets you view the properties of effects already applied to your clip. The panel provides various options that enable you to modify the applied effects.

**Applied Effects panel**

To display the Applied Effects panel, select the clip to which effects are applied, and click Applied Effects on the right.

#### Importing media through Embedded Elements Organizer

You can import media (photos, videos, and audio) in Elements Organizer to the Adobe Premiere Elements Editor workspace. You can import media present in a catalog to PRE workspace. However, the media that has been organized into albums in Elements Organizer appears as local albums in the Embedded Elements Organizer. The Embedded Elements Organizer or Embedded EO enables you to add media to the timeline directly. You can access the Embedded EO option from the Add Media drop-down list.

*Note: The creation and deletion of albums is not possible in Embedded EO.*

#### Accessing media through Embedded EO

You can now access the albums created in Elements Organizer from PRE Editor workspace itself. There is an Embedded Elements Organizer option present under Add Media that enables access to EO albums. To import media through Elements Organizer, follow these steps:

1. Click Add Media > Elements Organizer.

2. Click Local Albums. The albums created in Elements Organizer are displayed under Local Albums. Click on an Album to display the media present under that album in Embedded EO. You can click again on the album to deselect it, this refreshes the media visible in Embedded EO and displays all the media available in the Elements Organizer catalog. Click on the Show Still Image icon if nothing is displayed in Embedded EO.

1. Double-click on a video or audio file to preview it in the Source Monitor.
2. Click on a file to select it. Click Add Files to add it to the timeline.

You can select multiple files and add them to the timeline. Also, you can drag and drop media from the Embedded EO to specific points in the video on the timeline.

3. Click Done once you are through adding the files to exit Embedded EO.

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#### Working with files in the Embedded EO

You can perform various tasks on your files in the Embedded EO panel. Click Add Media > Elements Organizer to access this panel. You can perform the following tasks in this panel:

- A. Back button Click Back to return to the Add Media options.
- B. Local Albums Click Local Albums to view the media in the Elements Organizer catalog. Click an album to view the media present in that album.
- C. Previous and Next button Click the previous or next button to move through the displayed media.

*Note: You can view up to 1000 files in Embedded EO. Embedded EO panel buttons*

- A. Search content Click this icon to open a text box. Enter the search criteria and press Enter to search for a specific media file. This is not a live search so must press Enter after entering your search criteria.
- B. Show Video Click this icon to view video files only.
- C. Show Audio Click this icon to view audio files only.
- D. Show Still Image Click this icon to view photos only.
- E. Select order

Click this to sort the files by date or the batches in which they were imported. You can sort the photos in the following ways: Newest/Oldest first: Sorts the files by creation date. Default order of display in Embedded EO is newest first. Import batch: Sorts the files according to the batches in which they were imported. The rendition videos are not visible when files are sorted by the Import batch option.

Projects Review project presets and settings Start a new project Open a project

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## Projects

Premiere Elements creates a project file for every new project that you want to publish or save to work on it later. You can also create a project before importing media.

The project file references the media that you add to a project including videos, images, titles, and themes.

Project files are small in size. They include title files and references to the source files that you capture or import. Because the project files store references, avoid moving, renaming, or deleting the source files so that Premiere Elements can locate them.

### Review project presets and settings

When you create a project, you can review the default preset and settings by clicking the Change Settings button in the New Project dialog. Adobe Premiere Elements automatically adjusts your project settings based on the type of media you import.

1. In Premiere Elements, select File > New Project.
2. Click Change Settings.

### Start a new project

1. Do one of the following:

From the Welcome screen, click Video Editor and select New Project. If Premiere Elements is open, choose File > New Project.

2. (Optional) To change the project settings, click Change Settings, select a different preset, and click OK.

*Note: After you change your project settings, you cannot modify them later.*

If you do not change the project settings, Adobe Premiere Elements uses the settings of your previous project. Alternatively, it creates an NTS/PAL AVCHD full HD project based on your region settings.

You can import a clip whose settings do not match the settings of an empty project. Adobe Premiere Elements overwrites the project settings with the settings of your clip when you drop it on to the Expert view timeline.

By default, the folder where you save your project also stores rendered previews, conformed audio files, and captured audio and video. These files are large, so save them to your largest, fastest hard drive. To store the files separately from projects, choose Edit > Preferences > Scratch Disks.

Open a project You can open only one project at a time. To ensure that Premiere Elements can open an existing project, ensure that both the project file (.PRE) and the source files are

accessible on your computer. Do one of the following: In the Welcome screen, click Video Editor and then click Existing Project. Choose the project name. (If the project isn't listed, choose Open, select the project file, and click Open.) If Premiere Elements is open, choose File > Open Project or Open Recent Project; then select the project file, and click Open.

In Windows®, doubleclick the project file.

*note: Premiere Elements can open projects you create in earlier versions. However, previous versions cannot open projects you create in later versions. If you have multiple versions of Premiere Elements installed, open a project from within the software. Alternatively, right-click/ctrlclick the file and choose the application.*

Saving and backing up projects

Save a project Back up a project with Auto Save Open an Auto Save project Save a project

Saving a project saves your editing decisions, references to source files, and the most recent arrangement of panels. Protect your work by saving often.

To save the currently open project, choose File > Save.

To save a copy of a project, choose File > Save As, specify a location and filename, and click Save.

To save a copy of a project and continue working in the original project, choose File > Save A Copy. Specify a location and filename, and click Save.

*Tip: To specify where Premiere Elements stores project-related files, such as captured video and audio, and previews, set up a scratch disk.*

Back up a project with Auto Save

To revisit editing decisions or recover from a crash, enable the Auto Save option. This option automatically saves backup project files to the Adobe Premiere Elements Auto-Save folder at a specified time interval. For example, you can set Premiere Elements to save a backup copy every 15 minutes.

Automatic saving serves as an alternative to the Undo command, depending on the project changes between each save. Because project files are smaller compared to source video files, archiving multiple versions of a project consumes less disk space.



1. Choose Edit > Preferences > Auto Save.
2. Do one of the following, and then click OK:

Select Automatically Save Projects, and enter the duration in minutes after which Adobe Premiere Elements saves the project.

Type a number for the Maximum Project Versions to specify how many versions of each project file you want to save. For example, if you type 5, Premiere Elements saves five versions of each project you open.

*note: Each time you open a project, save it at least once before the Auto Save option takes effect.*

Open an Auto Save project

1. Do either of the following:

Start Adobe Premiere Elements. In the Welcome screen, click Video Editor and then click Existing Project.

In Adobe Premiere Elements, choose File > Open Project.

In the project folder, open the file in the Adobe Premiere ElementsAuto-Savefolder. (If no files are available, theAutoSave preference is possibly turned off.) 2.

*Note:When you start Premiere Elements after a crash, a message prompts whether you want to open the last saved version of your project.*

Project settings and presets

About project settings and presets Dynamic sequence preset Create or change project presets Check your project's settings

About project settings and presets

Project settings determine the properties of your video and audio project assets. For example, they determine their format(DV,HDV,AVCHD),source (hard disk or Flash memory camcorder), and aspect ratio (standard or widescreen video). Project setting also specify the frame rate, audio sample rate, upper or lower field first, and bit depth for your project.

When you start a new project, Premiere Elements applies a project preset to it. A project preset is a collection of preconfigured project settings.You can use the default project preset for the television standard for the Premiere Elements version installed on your computer.

NTSC (National Television Standards Committee) is the television standard for the Americas, the Caribbean, Japan, South Korea, and Taiwan.

PAL (Phase Alternating Line) is the standard format for Europe, Russia, Africa, Middle East, India, Australia, New Zealand, South Pacific, China, and other parts of Asia.

Because you can't change the project preset after starting a project, verify the format of your source footage before selecting a project preset.

*If you specify lower quality settings for output (such as streaming web video), do not change your project settings. Change your export settings instead.*

Dynamic sequence preset

When you add a movie clip to the Expert view timeline, Adobe Premiere Elements automatically changes your project settings in the background to match the clip properties. They include dimension, fps, pixel aspect ratio, and field order.

#### Create or change project presets

Adobe Premiere Elements includes default project presets for media from common sources, including DV camcorders, cameras, DVD discs, and mobile phones. You cannot create a custom project preset or change a project preset after selecting a preset and starting a project.

To change the project preset when starting a new project, click the Change Settings button in the New Project dialog. Select the preset that matches your footage.

If you add a movie clip whose preset does not match the project's preset to the Expert view timeline, a message appears. Click Yes to let Adobe Premiere Elements change the project's settings to use the closest available preset. For more information, see Dynamic Sequence Preset.

#### Select a project preset

By default, Premiere Elements uses an AVCHD preset for the television standard you specify when you install the program. Select a new preset to create projects in a different format, television standard, or frame aspect ratio.

The preset you select becomes the default, which is used for all new projects, until you select another preset. If you choose a preset temporarily, change it when you've finished using it.

1. Start Premiere Elements.
2. In the Welcome screen, click Video Editor, and then click New Project. (Or, choose File > New > Project.)
3. In the New Project dialog box, click Change Settings.

Select the preset that matches the format and standard of the footage you want to edit. For example, to edit most HDV footage from 1080i camcorders, choose HDV 1080i 30 or HDV

4. Click OK.
5. Provide a name and location for your project, and click OK.

#### Change the settings of an open project

After you create a project, you can only make minor display-related changes to the project settings.

*Note: You cannot change the Editing mode and the format of Preview files after you create a project.*

1. Choose Edit > Project Settings > General.
2. In the Project Settings dialog box, specify project settings for General, Capture, and Video Rendering.
3. Click OK

#### Check your project's settings

Project presets include project settings under three categories: General, Capture, and Video Rendering. After you start a project, you can't change most of the settings, such as frame rate, size, and aspect ratio. However, you can review the settings to ensure that the media you want to add to the project is compatible.

Open the project in Premiere Elements, and choose Edit > Project Settings > [category].

*Note: Third-party products, such as PCs, capture cards, and hardware bundles sometimes include custom presets. See the third-party documentation for details.*

#### NTSC vs PAL presets

NTSC presets conform to the NTSC standard, where each video frame includes 525 horizontal lines displayed at 29.97 frames per second. The Standard NTSC preset applies to footage that has a 4:3 aspect ratio. The Widescreen NTSC preset applies to footage that has a 16:9 aspect ratio.

PAL presets conform to the PAL standard, where each video frame includes 625 lines displayed at 25 frames per second.

#### General settings

General settings (Edit > Project Settings > General) control the fundamental characteristics of a project. They include the editing mode used to process video, frame size, aspect ratios, count time (Display Format), and playback settings (Time base). These settings match the most common source media in your project. For example, if most of your footage is DV, use the DV Playback editing mode. The quality of your video can deteriorate if you change these settings arbitrarily.

General settings include the following options.

Editing Mode identifies the television standard and format for the project. You cannot change the Timebase, Frame Size, Pixel Aspect Ratio, Fields, and Sample Rate preview settings. The 335

editing mode determines these settings.

*note: The Editing Mode setting represents the specifications of the source media, not the final output settings. Specify output settings when you export a project.*

**Timebase** Specifies the time divisions used to calculate the time position of each edit (PAL: 25,NTSC: 29.97).

**Playback Settings** This button is available if you use a DV preset, a DV editing mode, or install a plug-in that provides additional playback functions. For a DV editing mode, this option indicates where you want your previews to play. For information on the playback settings for third-party plugins, see the developer documentation.

**Frame Size** Specifies the frame pixels for your project playback. In most cases, the frame size for your project matches the frame size of your source media. You can't change the frame size to compensate for slow playback. However, you can adjust the playback settings: Right-click/click the monitor and choose Playback Settings. Adjust the frame size of the output by changing the Export settings.

**Pixel Aspect Ratio** Sets the aspect ratio for pixels. The video format (PAL or NTSC) determines this ratio. If you use a pixel aspect ratio that is different from your video, the video can appear distorted when you render it and play.

**Fields** Specifies the field dominance, or the order in which the two interlaced fields of each frame are drawn. Premiere Elements captures DV footage with fields, even if the footage was recorded as progressive scan.

**Display Format (video)** Specifies the way time appears throughout the project. The time display options correspond to standards for editing video and motion-picture film. For DV NTSC video, choose 30-fps Drop-Frame Timecode. For DV PAL video, choose 25-fps Timecode.

**Title Safe Area** Specifies the frame edge area to mark as a safe zone for titles, so that titles aren't cut off by TVs that zoom the picture. A rectangle with crosshairs marks the title-safe zone when you click the Safe Zones button in the monitor. Titles require a wider safe zone than action.

**Action Safe Area** Specifies the frame edge area to mark as a safe zone for action so that TVs that zoom the picture do not exclude the action. A rectangle marks the action-safe zone when you click the Safe Zones button in the monitor.

**Sample Rate** Identifies the audio sample rate for the project preset. In general, higher rates provide better audio quality in projects, but they require more disk space and processing. Record audio at a high-quality sample rate, and capture audio at the rate at which it was 336

recorded.

**Display Format (audio)** Specifies whether audio time display is measured by using audio samples or milliseconds. By default, time is displayed in audio samples. However, you can display time in milliseconds for sample-level precision when you are editing audio.

**Capture settings**

Capture settings (Edit > Project Settings > Capture) control how video and audio are transferred directly from a deck or DV camcorder. (Other Project Settings panels do not affect capturing.)

**Video Rendering settings**

Video Rendering settings control the picture quality, compression settings, and color depth that Premiere Elements uses when you play video from the Expert view timeline.

To access Video Rendering settings, choose Edit > Project Settings > Video Render. These settings include the following options: **Maximum Bit Depth** Allows Premiere Elements to use up to 32-bit processing, even if the project uses a lower bit depth. Selecting this option increases precision but decreases performance.

**File Format** Specifies the format of the preview video. **Compressor** identifies the codec (compressor/decompressor) that Premiere Elements applies to generate movie previews. The project preset defines the codec. You cannot change it because it must conform to the DV standard.

*note: If you don't apply effects to your clip or change its frame/time characteristics, Adobe Premiere Elements uses the clip's original codec for playback. If your changes necessitate frame recalculation, Adobe Premiere Elements applies the codec identified here.*

**Optimize Stills** Select this option to use still images efficiently in projects. For example, you can use an image that has a duration of 2 seconds in a 30-fps project. Premiere Elements creates a 2-second frame instead of 60 frames, each with a duration of 1/30 second. Deselect this option if projects encounter playback problems when displaying still images.

**Project Assets panel overview** Rename a source file in a project Find an item in a project Locate missing files for a project Delete a clip

**Project Assets panel overview**

The Project Assets panel lets you preview source material for your projects. Select the Expert view and then click Project Assets.

You can view the contents of a project using the list view or the grid view. Use the panel



options menu to switch between the views.

The grid view displays a snapshot of the video you imported into the project. The Project Assets panel indicates files that you use in the Expert view timeline with a green icon. Use the Search box to search for files within the panel.

Display and arrange media items

In the Project Assets panel, you can display items in the List view. The List view lets you view more items simultaneously, search, and sort items by properties such as media type and duration.

To sort items in List view, click the column heading by which you want to sort the items. (For example, click Media Type to sort items by type.) If folders are expanded, items sort from the top level and down the Project Assets panel hierarchy. To reverse the sort order, click the column heading again.

To see more of the column headings in List view, drag the right side of the Project Assets panel to the right. Alternatively, drag the scroll bar at the bottom of the panel to the right.

Organize clips in folders

The Project Assets panel can include folders into which you can organize project contents in the same way as folders in Windows Explorer. Folders can contain media files or subfolders. Consider using folders to organize media types, such as DV captures, Adobe Photoshop Elements still images, and audio files.

In the Project Assets panel, do any of the following:

*Note: To access the Project Assets panel, select Project Assets in the Expert view.*

To add a folder, click the New Folder icon at the bottom of the Project Assets panel. In the list view, if you click New Folder multiple times in a row, each new folder is nested inside the previous new folder.

To move an item into a folder, drag the item to the Folder icon. You can move folders into other folders to nest them.

To display the contents of a folder, doubleclick the folder. Alternatively, in List view, click the triangle beside the Folder icon to expand the folder.

To navigate to parent folders, click the appropriate icon. You can click and hold this button to see a list of all the folders above the one currently listed. You can also jump to a folder by highlighting it and releasing the mouse button.

Rename a source file in a project

To rename a clip, select it, choose Clip > Rename, type the new name, and press Enter. (The

change affects only references used in the Project; the name of the original source file in the Project workspace and Windows remains the same.) To rename an original source file, close Premiere Elements, and rename the file in Windows. The next time you open the project, Premiere Elements asks you to locate the file.

*Tip: You can also rename a selected clip by clicking its name once to select the text, typing the newname, and pressing Enter.*

Find an item in a project

Right-click an item in the Expert view timeline, and select Reveal In Project.

To find an item on the hard drive, right-click the clip, choose Properties, and note the path at the top of the Properties panel.

Locate missing files for a project

Premiere Elements doesn't store original source files in a project—it references the name and location of each source file when you import it. If you later move, rename, or delete a source file in Windows, the Where Is The File dialog box opens when you next open the project.

In addition to source files, a project also references *preview files*. Preview files allow you to preview effects in real time without having to render them—a process that can take hours. Preview files can be recreated if necessary.

*Note: After you create the final movie, you can delete source files if you do not plan to reuse them. If you plan to re-edit the movie in the future, archive the project with the Project Archiver before deleting source files.*

In the Where Is The File dialog box, choose one of the following options:

**Display Only Exact Name Matches** Displays only the files that match the name of the missing file when the project was last closed. If you know that the name of a file has changed, deselect this option.

**Select** Replaces the missing file with the original or replacement file.

**Find** Starts the Windows XP Search feature.

**Skip Preview** Ignores missing preview files so you aren't asked to find them.

**Skip** Replaces the missing file with an *offline file*. The offline file acts as a placeholder for related clips in the Project Assets panel and the Expert view timeline.

**Skip All** Replaces all missing clips with offline files without asking you for confirmation.

**Delete** a clip

Because Premiere Elements doesn't store media files in the project, deleting a clip from a project removes all instances from a movie. However, Premiere Elements does not delete the 339

clip's source file from the Windows desktop. To conserve disk space, delete the source file. To delete a media file from the Project workspace, do one of the following : **Select the file in the panel and click the Delete icon. Right-click/ctrlclick it in the Expert view timeline, and choose Delete.** You can also delete by selecting the file and pressing the Delete key. The file is deleted from the Elements Organizer, but it is not deleted from your hard disk.

*Tip: To identify unused items in a project, see the Video Usage and Audio Usage columns in List view. To display these columns, scroll to the right. A green check mark (list view) and a green dot (grid view) indicates that the asset is being used in the project.*

#### Viewing clip properties

See an overview of basic clip properties [View comprehensive file information](#) [Customize List view properties](#) [View details about effect properties](#) See an overview of basic clip properties

To view the basic properties of a clip, right-click/ctrlclick the clip in the Project Assets panel, choose Properties.

#### View comprehensive file information

Premiere Elements includes tools that you can use to evaluate a file in any supported format stored inside or outside a project. For example, you can determine whether a clip you exported has an appropriate data rate for Internet distribution. Video file properties can include file size, number of video and audio tracks, duration, average frame rate, audio sample rate, video data rate, and compression settings. In addition, they include information about dropped frames in captured clips.

Use the Get Properties feature to check for dropped frames in a clip you captured. Use the Data Rate Analysis graphs to evaluate how well the output data rate matches the requirements of your delivery medium. The graphs depict the render keyframe rate, the difference between compression keyframes and differenced frames (frames that exist between keyframes). They also depict the data rate levels at each frame.

Do one of the following:

If the clip is in the Expert view timeline, select it and choose File > Get Properties For > Selection.

If the clip is not in the project, choose File > Get Properties For > File. Locate the clip you want to analyze and then click Open.

#### Customize List view properties

You can customize the List view to display only the information you want to see. You can also

rename columns, add columns of your own, rearrange columns, and change the width of columns.

**Specify which properties appear in List view**

The Name property appears by default, and displays the clip name on disk. You cannot remove the Name property using the Edit Columns dialog box. You can change the name the clip uses inside the project.

Open the Project Assets panel. Right-click/ctrlclick in the Media view, and choose Edit Columns. Ensure that you click an area outside the rows containing the assets. Select any of the following properties you want to appear in Media view, and click OK : Used Displays a check mark if the clip is used in the project.

Media TypeMedia, such as Movie or Still Image.

Frame RateThe frame rate of the clip, such as 29.97 fps.

Media DurationLength of the captured media on disk, expressed in the Display Format specified in the General section of the Project Settings dialog box.

*note: In Premiere Elements, all durations in a panel include the frames that the In point and Outpoint specify. For example, setting the In point and Out point to the same frame results in a duration of one frame.*

Video DurationThe duration of the clip the Video In point and Out point define. Incorporating any adjustments applied in Premiere Elements, such as changing the clip speed.

Audio DurationThe duration of the clip the Audio In point and Out point define. Incorporating any adjustments applied in Premiere Elements, such as changing the clip speed.

Video InfoThe frame size and aspect ratio of the clip, and whether an alpha channel is present.

Audio InfoThe audio specifications of the clip.

Video UsageThe number of times the video component of a clip is used in the movie. Audio UsageThe number of times the audio component of a clip is used in the movie. StatusSpecifies whether a clip is online or offline. If a clip is offline, this option also indicates why.

ClientField for adding a client's name or other details.

**Adjust columns in List view**

Use the List view to quickly evaluate, locate, or organize clips based on specific properties.

1. Open the Project Assets panel.
2. Do any of the following:

To change the width of a column, position the pointer over a dividing line between column headings until the Column Resize icon appears. Then, drag horizontally.

To create a column, right-click/ctrlclick and choose Edit Columns, click Add and select a column name (after which the new column appears). Type a name and choose a type for the new column, and click OK. Text columns can contain any text you enter. Boolean columns provide a check box.

To display a column, right-click/ctrlclick and choose Edit Columns, and then click the box next to the column name you want to display.

To sort columns in ascending or descending order, click their heading.

To rearrange columns, right-click/ctrlclick and choose Edit Columns, select a column name, and click Move Up, or Move Down.

*note: Premiere Elements locks some column attributes. You can't locate or change these attributes in the Edit Columns dialog box.*

For example, you can change the names of columns you added, but not the names of columns built in Premiere Elements.

[View details about effect properties](#)

1. Select a clip in the Quick view timeline or the Expert view timeline.
2. Click the Applied Effects button and view the properties in the Applied Effects panel.

[Undo changes incrementally](#)

If you change your mind about an edit or effect, Premiere Elements provides several ways to undo your work. You can undo only those actions that alter video content; for example, you can undo an edit, but you cannot undo scrolling a panel.

To undo or redo the most recent change, choose Edit > Undo. (You can sequentially undo a series of recent changes.) To undo a change, and all successive changes that occurred since you last opened a project, delete it from the History panel.

To stop a change that Premiere Elements is processing (for example, when you see a progress bar), press Esc.

To undo all changes made since you last saved the project, choose File > Revert.

To undo changes made before you last saved a project, try opening a previous version in the Adobe



Premiere Auto-Save folder. Then choose **File > Save As** to store the project outside the AdobePremiere Auto-Save folder. The number of changes you can undo depends on the Auto Save-preference settings.

#### Undo any previous change

The History panel records the changes you make to a project. Each time you add a clip, insert a marker, or apply an effect, the History panel adds that action to its list. The tool or command you used appears in the panel along with an identifying icon. You can use the panel to quickly undo several changes. When you select a change in the panel, the project returns to the state of the project at the time of that change. The more recent changes turn gray and disappear when you make your next change.

The History panel records changes only for the current session. Closing a project or choosing the Revert command clears the History panel. While the panel lists most changes, it does not list individual changes within some panels, nor does it list program-wide changes, such as Preferences settings.

To display the History panel, choose **Window > History**. To select a change in the History panel, click it.

To delete a selected change, click and then click **OK**.

To move around in the History panel, drag the slider or the scroll bar in the panel. Or, choose **Step Forward** or **Step Backward** from the History panel menu.

To clear all changes from the History panel, choose **Clear History** from the History panel menu, and then click **OK**.

Create an Instant Movie from the workspace

1. From the Quick view timeline or the Expert view timeline, select the clips that you want to include in your movie.
2. From the Action bar, click Instant Movie.
3. Choose a theme for your movie or download a template. To download and online template for your instant movie:
  - a. Right-click/Ctrlclick the movie theme template.
  - b. Click Download Now to download selected template. Click Download All to download all the templates.
  - c. (Optional) Click the Download In Background button to let the content download in the background while you continue to work in Adobe Premiere Elements.
4. Specify the properties for the movie, as desired:

To preview a movie theme, move the mouse cursor over the theme's thumbnail to see a description, and click the Play button to watch a preview. Click Next.

Opening and Closing Titles: Opening and closing titles can be multiple lines. However, for best results, keep the opening title to one line. **InstantMovie:** Specifies whether you want to perform an auto edit, which automatically trims the clips and adds them to the project based on their Smart Tags. And whether to analyze clips and apply Smart Tags to them.

**Apply To:** Specifies whether to apply the theme to the entire project or to the selected clips in

the Quick view timeline/Expert view timeline. Music: Specifies whether to use the theme music, your own music (click Browse to locate and open it), or no music. You can select multiple music clips, and they are played in the order selected. Drag the slider between Music/Sound FX and My Clips to set the amount of soundtrack and audio effects used versus the sound from your clips. InstantMovie syncs with the beats of the music, so changing the song can significantly change the results. In addition, changing the song changes the duration of the movie to match the duration of the new song.

Speed And Intensity: Enables you to control the speed of cuts and amount of effect. Click the triangle beside the Speed And Intensity option and use the slider to adjust the speed of cuts and amount of effect. Duration: Specifies the length of the finished movie. Match Music creates a movie to the length of the theme music. This parameter lets you specify the exact length of time by dragging hours, minutes, and seconds. Use All Clips ensures all the selected clips are used and bases the length of time on their duration.

Note: If you specify a duration that is longer than the theme music, the music will loop. If the duration is shorter than the length of the theme music, the music ends with the last clip.

Sequence: Specifies whether clips are arranged according to the Time/Date stamp or according to the theme's editing rules. Theme Content: Specifies which aspects of the theme are included in the final movie. Select or deselect any of the options. If some of your clips have effects already applied, you can choose to keep the applied effects, or remove them and apply the theme's effects instead. Render Preview: If this option is enabled, the instant movie is rendered after it is created and placed on the timeline. Rendering improves the frame rate of the movie for playback.

Edit an Instant Movie

When you create an Instant Movie, Adobe Premiere Elements combines all the clips into a single clip. You can break apart this combined clip if you want to edit or replace the individual clips. Use the Replace Clip command to quickly replace one clip with another without having to trim and edit the new clip to fit. Alternatively, change the effects or overlays applied to the clip.

Because Instant Movie is created using beat detect on the added music clip, changing the Audio Adding media into Adobe Premiere Elements

Add media from Embedded Elements Organizer Import from Adobe Revel Add files from Files and Folders Import photos from your digital camera, phones, or removable drive Import from Flip, AVCHD, cameras, phones, or removable drives Capture video from DV/HDV camcorders, webcams, and WDM devices





You can add media to Premiere Elements using one of these methods: *capturing* from live or recorded sources *importing* files from other types of storage *adding* from the Project Assets panel *recording* narrations from a microphone When you add media files to Premiere Elements, they are added to the Quick view timeline and the Expert view timeline. In addition, they are added to the Project Assets panel in the Expert view. A thumbnail, called a clip, represents each file in the Project Assets panel. Clips, whether they contain audio, video, or images, are the building blocks of your movies.

To add new media into Premiere Elements, click Add Media. Use any of the following options in the Add Media panel to add media files: Add Media panel

**Elements Organizer** Select this option to add media from the albums in Elements Organizer. From the Elements Organizer application, drag video and images to the Quick view/Expert view timeline or the Project Assets panel.

**Adobe Revel** Select this option to add media from Adobe Revel. From the Adobe Revel online albums, drag video and images to the Quick view/Expert view timeline or the Project Assets panel.

**Files And Folders** Import videos, photos, and audio files from your personal computer's hard drive.

**Digital Still Camera, Phones, or Removable Drive** Import photos from a camera, mobile phone, or through USB. This option opens the Adobe Premiere Elements - Media Downloader window. It also imports media from devices that store video files in Flash

memory, or on a disk

Flip,AVCHD,Cameras, Phones or Removable DriveAdd media from devices that store video files in Flash memory or on a disk. Such devices include Flip and other compact video cameras, AVCHD, DVD, DSLR and other cameras, and mobile phones.

Webcam Or WDM DeviceCapture video from a webcam or WDM-compatible capture device. This option opens the Capture window.

DVD Camcorder or PC DVD Drive Import video from your DVD based AVCHD camers or your computer'sDVDdrive.Youcan import media files inAVCHDformat from aDVDCamcorder. This option opens the Adobe Premiere Elements - Video Importer window.

*Note: DVD drive is not detected in Mac OS.*

HDV CamcorderCapture video from an HDV camcorder through FireWire (IEEE 1394). This option opens the Capture window.

DV CamcorderCapture video from a DV camcorder through FireWire (IEEE 1394) or USB. This option opens the Capture window.

Add media from Embedded Elements Organizer

1Click Add Media, and select Elements Organizer. The Embedded Elements Organizer option launches.

2In the Embedded EO workspace, locate the album containing your media.

3Drag one or more media files to the Quick view timeline or Expert view timeline in Adobe Premiere Elements.

Import from Adobe Revel

You can import media (photos and videos) uploaded to libraries in Adobe Revel to Adobe Premiere Elements Editor workspace. Media uploaded to Adobe Revel are available in the Mobile album section of Embedded EO and Adobe Revel menu options. The Adobe Revel option is present under Add Media. To import media from Adobe Revel to PRE workspace, follow these steps:

1Click Add Media > Adobe Revel.

2Click Mobile Albums. The libraries created in Adobe Revel are displayed under Mobile Albums. Click on an Album to display the media present under that album in the Adobe Revel dialogbox.Youcan click again on the album to deselect it, this refreshes the media visible in Adobe Revel and displays all the media available in the Adobe Revel library.

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3Click on a file to select it. Click Add Files to add it to the timeline.

4Click Done after importing the files from Adobe Revel.

You can select multiple files and add them to the timeline. Also, you can drag and drop media to specific points in the video on the timeline.

Add file from folder :

Click Add Media, and then click Files And Folders. Locate and select the files that you want, and click Open. To add an entire folder, select it and click Import Folder. Drag files or folders from Windows Explorer to the Project Assets panel. Drag files from Windows Explorer directly to the Quick view or Expert view timeline.

*Note: You can also use the Elements Organizer to access files that are stored on your hard drive. Filesthat you added to the Elements Organizer from either Premiere Elements or Adobe Photoshop Elements are displayed.*

Import photos from your digital camera, phones, or removable drive

1. Connect the digital camera, or mobile phone to your computer.

*Note: Install any drivers your device requires. Consult the manual.*

2. In Adobe Premiere Elements, select Add Media > Digital Still Camera, Phones Or Removable Drives, and then click Advanced Dialog.

*Adobe Premiere Elements-Photo Downloader (Advanced Dialog view)*

1. Choose the drive or device from the Get Photos From pop-up menu. Thumbnails of all importable files appear in the dialog box.
2. To specify a location for the saved files, do one of the following:

To save files to the default Adobe folder, leave the location as it appears in the dialog box.

To specify a different location, click Browse (Windows)/Choose (Mac OS) and choose a folder. Alternatively, click Make New Folder (Windows)/New Folder (Mac OS) to create a folder and name it.

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To create one or more subfolders for grouping files by criteria, click the triangle next to the Create Subfolder field. Choose one of the options from the pop-up menu for naming the subfolder.

To rename the files in the folder consistently, click the triangle next to the Rename Files field. Choose an option from the pop-up menu for naming the files. The filename defaults to the folder name you enter. When the files are added to the folder and the Project Assets panel, the filenames are in increments of 0001.

Select files to add to the Project Assets panel. A check mark below the file's thumbnail indicates that the file is selected. By default, all files are selected. Click an option to remove the check mark and exclude a file. You can also select or deselect all files by using the Check All button or the Uncheck All button.

If you are using metadata, you can select Preserve Current Filename in XMP.

Click the triangle next to Apply Metadata, select a template, and fill in the Creator and Copyright fields.

Click Get Media. You can click Cancel in the Progress dialog box at any time to stop the process.

*Note: If you don't intend to use all the files you add, you can delete them from the Project Assets panel. Deleting files from the panel doesn't delete them from your hard drive.*

Import from Flip, AVCHD, cameras, phones, or removable drives

Many types of devices other than DV camcorders, HDV camcorders, webcams, and WDM devices record and store video.

Using the video importer, you can import video clips from tapeless camcorders, FLIP and AVCHD camera, removable memory devices, and mobile devices.

You can also import files from removable media, such as DVDs, memory cards, and multimedia cards. These files are copied to the hard drive location you specify. The files are also added to the Project Assets panel.

You can add clips directly to the Quick view/Expert view timeline without first creating a project. When you add a clip to either timeline, Adobe Premiere Elements automatically changes your project settings to match the clip properties.

However, if you add a clip to an existing project whose preset does not match the clip's preset, a message appears. Click Yes to let Adobe Premiere Elements change the project's settings to use the closest available preset.

*Note: Image files cannot be imported using this option. To import images, use the Photos From Cameras*

*Or Devices option in the Add Media panel.*

1. Do one of the following:

Place the DVD into your computer's DVD drive. Connect your card reader such as SD card or memory stick to your computer. Connect the digital camera, mobile phone, or other device to your computer using the USB 2.0 port.

*USB 2.0 port**Note:Install any drivers your device requires. Consult the manual.*

1. Click Add Media.

2. Click the device from which you want to import: Videos From Flip Or Camera

DVD Camera Or Computer Drive The Video Importer dialog box appears.

*note: Video Importer cannot import media from external hard drives. If you want to import media from an external hard drive, use the Files And Folders option in the Add Media panel.*

4. In the Source Menu, select the device from which you want to download movie clips. The contents of the device or disk are displayed in the panel below the Source menu. The number of files, and the size of the content is displayed at the bottom of the panel containing the content.

5. Do one of the following:

To import all the content displayed in the panel, click Check All. To import a few clips, click deselect All, and select only those clips that you want to import.

*Note: To preview the contents of a clip, click the clip. Click the Play button in the Preview panel.*

6. To specify a location for the saved files, do one of the following:

To save files to the default Adobe folder, leave the location as it appears in the dialog box. To specify a different location, click Browse (Windows)/Choose (Mac OS) and choose a folder. Alternatively, click Make New Folder (Windows)/New Folder (Mac OS) to create and name a new folder.

7. Select a naming convention for the downloaded files using the Presets menu.

Filename Retains the filenames the camcorder assigns.

Folder Name - Number If your folder name is Wedding Pics, the clips are assigned the names Wedding Pics-001, Wedding Pics-002, and so on.

Date - filename Adds a timestamp to the filename the camcorder assigns. The timestamp is the current date and time - the date and time on which the movies were transferred to

your computer.

*note: to rename files, delete them from the Project Assets panel in the Expert view, and reimport them.*

**Custom Name - Number** Enter a custom name in the Name field. For example, if you enter My Holiday in the field, the clips are named My Holiday-001, My Holiday-002, and so on.

**1 (Optional)** If you want to delete the selected files in the camera after import, select the option After Copying Delete Originals.

**2 (Optional)** If you do not want the imported clips added to the Quick view/Expert view timeline after import, deselect Add To Timeline. The imported clips are added only to the Project panel.

**3 (Optional)** If you want to create an InstantMovie using the selected clips, select Create InstantMovie.

**4** Click Get Media. You can click Cancel in the Progress dialog box at any time to stop the process.

*Note: If you don't intend to use all the files you add, you can delete them from the Project Assets panel. Deleting files from the panel doesn't delete them from your hard drive. This practice is recommended for large VOB files.*

Capture video from DV/HDV camcorders, webcams, and WDM devices

Devices, such as DV camcorders, HDV camcorders, webcams, and WDM devices capture live video. Using the Capture window, you capture live video from these devices and copy the video clips to the hard drive location you specify. You can add these clips to Adobe Premiere Elements by dragging them from Windows Explorer to the Quick view/Expert view timeline. You can also drag the clips to the Project Assets panel in the Expert view. Alternatively, use the File And Folders option in the Add Media panel to add the clips to the Quick view/Expert view timeline.

1. Do one of the following:

Turn on the webcam to capture live footage Connect the DV camcorder, HDV camcorder, or the WDM device to your computer using the FireWire (IEEE 1394) port. *FireWire port Note: Install any drivers your device requires. Consult the manual.*

1. Click Add Media.

2. From the Add Media panel, select the option for the device using which you want to capture video:

DV Camcorder HDV Camcorder Webcam or WDM  
The Capture window appears.

4. In the Capturing Source menu, select the device from which you want to capture video clips. The video that the device captures is displayed in the panel below the Capturing Source menu.

*Note: You can extract frames using stop motion or full motion from the integrated camera's webcam feed.*

1. Click the Capture button.

2. Specify a name for the captured video.

3. To specify a location for the video, do one of the following:

To save files to the default Adobe folder, leave the location as it appears in the dialog box. To specify a different location, click Browse (Windows)/Choose (Mac OS) and choose a folder. Alternatively, click Make New Folder (Windows)/New Folder (Mac OS) to create and name a new folder.

1. Click Add Media and select Files And Folders.

2. Browse to the location where you saved the video files and add them to the Quick view/Expert view timeline.

*Note: You can also use Windows Explorer to locate the saved video files and drag them to Adobe Premiere Elements.*

Add numbered image files as a single clip

1. Make sure that each still-image filename has the correct filename extension. All filenames in the sequence must contain an equal number of digits before the extension for example, file000.bmp, and file001.bmp.

2. Do one of the following:

Click Add Media and choose Files And Folders. Choose File > Add Media from > Files And Folders.

3. Locate and select the first image in the sequence. From the Files Of Type menu, select Numbered Stills, and click Open. Premiere Elements interprets all of the numbered files as a single sequence.

*note: For information on changing the duration of images, see "Set duration for imported images" in Help.*

5.1 audio import

Drag clips to the Monitor window

Adobe Premiere Elements facilitates importing and playing clips with 5.1 audio in the same format as the project preset. You can create movies combining AVCHD video and stereo audio and 5.1 audio and stereo audio. You can move clips from track to track in the Expert view timeline regardless of whether the audio is 5.1 or stereo. If you import 5.1 audio file to the stereo channel, it is converted to 5.1 and the other way around. To create a 5.1 channel track, drag a 5.1 onto the empty area on the Expert view timeline of a stereo project. Alternatively, drag a channel audio video clip or a 5.1 channel audio only clip. A 5.1 channel track in a stereo project is created. To create a stereo track in a 5.1 channel project, drag-and-drop a stereo clip into the empty area on Expert view timeline. A stereo track in a 5.1 channel project is created.

1. Do one of the following:

From the Welcome screen, click New Project.

If Adobe Premiere Elements is open, choose File > New Project.

1. Click Change Settings to change the preset used. Select FullHD1080i 30 5.1 channel from the AVCHD folder, and click OK.

2. In the New Project dialog box, specify a name and location for the project, and click OK. In the Expert view timeline, you can see 5.1 beside the Audio tracks. You can now include clips to your project. However, the audio is mapped to a channel type depending on how

you insert the media file.

Drag clips to the Monitor window

When you drag clips onto the Monitor window, the audio is mapped to the channel type of Audio 1 track.

However, when you drag onto the Monitor window, you are presented with the following additional options. The audio mappings change depending on the option you select.

Insert After This Scene Audio is mapped to the Audio one track, and the clip is inserted in the Video 1/Audio 1 track. The clip is inserted at the end of the existing clip.

Split And Insert Audio is mapped to the Audio1 track, and the clip is inserted in the Video1/Audio1 track. The current clip is split at the point where the CTI is pointing. The clip is inserted.

**Place On Top** If there is an empty track above Video 1/Audio 1, the selected clip is inserted on that track, and mapped to the corresponding track's channel type. If there is no empty track, a new track is created matching the channel type of the selected clip. Adobe Premiere Elements places the video on the CTI, in a track above the existing video. The new video file overlaps the existing video clip.

**Picture In Picture** If there is an empty track above Video 1/Audio 1, the selected clip is inserted on that track, and mapped to the corresponding track's channel type. If there is no empty track, a new track is created matching the channel type of the selected clip. Adobe Premiere Elements places the existing and the inserted videos simultaneously. The user can see both the videos.

**Place On Top, And Apply Videomerge** If there is an empty track above Video 1/Audio 1, the selected clip is inserted on that track and mapped to the corresponding track's channel type. If there is no empty track, a new track is created matching the channel type of the selected clip. Adobe Premiere Elements places the video on the CTI, in a track above the existing video and applies Videomerge effect on the new video. The underlying and the top videos can be seen.

**Replace Clip** The clip is replaced and the mapping matches the channel type of the replaced clip's track.

*Note: When you drop an audio-only clip into the Monitor window, it is placed on the Soundtrack track and mapped to stereo.*

Creating specialty clips

Add color bars and a 1-kHz tone Create and add a black video clip Create a colored maffe for a background Change the tone level of clips

You generate Specialty clips by using panel options in the Project Assets panel. They reside in the Project Assets panel along with your added clips.

You can create universal counting leaders, color bars, a 1-kHz tone, black video, and colored backgrounds for your project. Use Specialty clips for calibration of your video or simply as footage.

Create and add a black video clip

You add black video clips to separate multiple movies or to create pauses in a movie. You can also use a black video clip for a title.

1. Click Project Assets.
2. In the Project Assets panel, click New Item from the panel options and choose Black Video.



Create a colored maffe for a background

You can create a clip consisting of a full-frame maffe of solid color, which you can use as a solid background for titles or animated clips.

*Brightly colored maffes can serve as temporary backgrounds to help you see transparency more clearly while you adjust a key effect.*

1. Click Project Assets.
2. In the Project Assets panel, click New Item from the panel options and choose Color Maffe.
3. Choose a color in the Adobe Color Picker dialog box, and click OK. A color maffe clip is placed into both the Project Assets panel and the Expert view timeline.

Change the tone level of clips

1. Select a clip using one of the following methods:

To set the level for all new clip instances, click New Item from the panel options in the Project Assets panel. Then, select the Bars And Tone option.

To set the level for only one clip instance, select the clip in the Expert view timeline.

1. Choose Clip > Audio Options > Audio Gain.

2. In the Clip Gain dialog box, do one of the following, and click OK: Drag the value control left to decrease, or right to increase, volume.

Highlight the value control and type a number to increase or decrease volume. Positive numbers increase it. Negative numbers decrease it.

The Normalize option adjusts the peak amplitude in the selected clips to the user-specified value. For example, this option adjusts the gain of a clip with a peak amplitude of -6 dB to +6 dB.

Ensure that Normalize All Peaks To is set to 0.0 dB.

Guidelines for adding files

Guidelines for adding video files Guidelines for adding audio files Guidelines to add image files Guidelines for adding an animation or still-image sequence

Guidelines for adding video files

You can add various video file formats to your project. Imported video and sequence files can have frame sizes up to 4096 x 4096 pixels.

Before you add video files that you did not capture yourself, make sure you can view the video outside Premiere Elements. Usually, double-clicking a video file opens a playback window.

application, such as Windows Media Player and QuickTime player. (Be sure to use the most up-to-date version of Windows Media Player.) If you can play back your file in the player application, you can usually use that file in Premiere Elements.

*note: To play back VOB (Video Object) files, use the DVD player that came with your DVD burner.*

When adding video files, consider the following:

MPEG file compatibility

An MPEG file can be imported or played in Premiere Elements if it meets the following criteria:

The file must be in a format that Premiere Elements supports.

The compressor used to create the file must be compatible with the Premiere Elements decompressor. The compatibility requirements for playing compressed files are less stringent than the requirements for editing them. MPEG files that play in Windows Media Player and QuickTime can be imported or played in Premiere Elements if they meet the compatibility requirements.

*note: The first time you import an MPEG-2 file, Premiere Elements automatically activates the components if you are connected to the Internet. If you are not connected to the Internet, you are prompted to activate the MPEG-2 component. The instructions appear in the Activating Component dialog box.*

Type 1 AVI file render requirements

Render these files before you can preview them from your DV camcorder. To render a Type 1 AVI clip, add it to the Quick view/Expert view timeline. Build a preview file of that section of the Quick view/Expert view timeline by pressing Enter. If the clip must be rendered, a red line appears above the clip in the Quick view/Expert view timeline.

DVD file protection

If the DVD is a motion-picture disc that uses copy protection, you cannot add the files.

Guidelines for adding audio files

When you add audio files to a project, they are conformed to the audio sample rate specified in the Project Settings dialog box. During that process, you'll see a progress bar in the lower-right corner of the application window. You can play back conformed audio instantly at high quality because it's consistent with all other audio in the project.

By default, conformed audio is stored at the location

C:\Users\<username>\AppData\Roaming\Adobe\Common. You can change the default location of the media cache by choosing one of the following options: 356

(Windows) Edit > Preferences > Scratch Disks.

(Mac OS) Adobe Premiere Elements 12 > Preferences > Scratch Disks.

*Note: After you conform an audio clip, you don't have to confirm it again unless you delete the corresponding file in the Media Cache folder. If you delete conformed audio files, Premiere Elements regenerates them when you open related projects.*

When adding audio files, consider the following:

**Stereo and mono files** You can add many of the stereo audio files that you can open in another audio player, such as Windows Media Player, to your project. To create a stereo version of a mono file, the mono channel is copied to both the left and right channel in the new stereo track. In this case, both channels contain the same information.

**5.1 surround sound files** Importing clips containing 5.1 audio adds a 5.1-channel audio track to your project.

**mp3 and WMA files** Formats such as mp3 and WMA are compressed using a method that reduces some of the original audio quality. To play back compressed audio, Premiere Elements (like most video editing applications) must decompress and possibly alter the file's sample rate. Compressing can degrade the audio quality.

**CD files** If you want to add audio from a CD, copy, or rip, the audio tracks to your hard drive using another application. Windows Media Player, included with Windows XP, can perform this task. You can also use Adobe Audition to rip the CD at various quality settings and perform complex audio-processing functions on the file. If you plan to air or distribute your movie, ensure that you own the copyright, or have licensed the copyright to your CD audio.

**Internet files** You can download music from the Internet for your projects. WMA (Windows Media Audio) and AAC (QuickTime) files can have pre-encoded settings that don't allow you to play them in Premiere Elements.

**Importing Pictures** Guidelines to add image files

By default, Premiere Elements scales images to fit the project frame size. You can override this behavior and instead add your files at the size at which they were created. You can also set the default duration for all images that you add by changing the value in General Preferences.

You can add still images with frame sizes up to 4096 x 4096 pixels. Create files with frame size equal to or more than the frame size of your video. Choosing the appropriate frame size

ensures that you don't enlarge the image in Premiere Elements. When you scale up an image, it often becomes pixelated. Create it at a larger frame size than the project. For example, if you plan to scale an image 200%, create the image at double the project frame size before you add it.  
*You can also add animations, which are saved as a sequence of numbered still-image files.*

When adding still-image files, consider the following:

**Photoshop Elements files** Premiere Elements works well with images and video templates you create in Photoshop Elements.

**JPEG files** If you are having trouble importing JPEG files to Premiere Elements, open them in Photoshop Elements and resave them. Then try to import them again.

**TIFF images** You can add files from Photoshop 3.0 or later. However, Premiere Elements doesn't support 16-bit TIFF images created in Photoshop or other applications. Empty (transparent) areas of nonflattened Photoshop files appear transparent in Premiere Elements because the transparency is stored as an alpha channel.

**RGB mode** When you are editing or creating your still images, make sure that you do all of your work in RGB mode. For more information, consult your product's user guide about color management. RGB mode produces colors that are suitable for video.

**Guidelines for adding an animation or still-image sequence**

The frames in an animation are drawn as graphics and, therefore, are not scenes of live action, as in conventional digital video. Premiere Elements can also add a sequence of numbered still-image files and automatically combine them into a single clip; each numbered file represents one frame. Some applications, such as Adobe After Effects®, can generate a numbered sequence of still images. Images in a still-image sequence cannot include layers. Flatten images that are part of a sequence. For information on layers and flattening, see the documentation for the application that created the file.

*Note: Changing the default duration of still images in the Preferences dialog box does not affect the duration of still images that are part of a sequence.*

When creating three-dimensional images or animations for use in Premiere Elements, use the following guidelines whenever possible: Use broadcast-safe colors. Most applications that create animations (such as Adobe After Effects) allow you to check for broadcast-safe colors. See your application's documentation for more information.

Use the pixel aspect ratio and frame size specified in the project settings in Premiere Elements. Use the appropriate field settings to match your project.

You can use an Adobe application (such as Photoshop) to generate the sequence. Select Embed Project Link to open the sequence in the application that was used to create it. For example, select a PSD file in the Project Assets panel in Premiere Elements. Then, choose Edit > Edit Original to open the file in Photoshop with the original layers intact.

Set duration for imported still images

Change the default duration for still images Set a unique duration for a still image

When you add a still image, you can assign a specific duration to it. The duration specifies how much time the image occupies in the Quick view/Expert view timeline. You can set a default duration for all still images that you add, and you can change their duration in the Quick view/Expert view timeline.

The frame rate of your project determines the amount of time that a certain number of frames occupies. If you specify 30 frames for a 29.97 frame-per-second (fps) NTSC project, each still image has a duration of about one second. For PAL, if you specify 25 frames for a 25-fps project, each still image in the Quick view/Expert view timeline has a duration of one second.

Change the default duration for still images

1. Do one of the following:

On Windows, select Edit > Preferences > General. On Mac OS, select Adobe Premiere Elements 12 > Preferences > General.

Right-click/ctrlclick in the Project Assets panel and choose Still Image Duration.

2. For Still Image Default Duration, specify the number of frames you want as a default duration.

*Note: Changing the default duration of still images does not affect the duration of still images already in the Quick view/Expert view timeline or Project Assets panel. To apply the new default length to all still images in your project, delete them from the Project Assets panel and reimport them into your project.*

Set a unique duration for a still image

1. Do one of the following:

In the Expert view, position the Selection tool over either end of the image, and drag. Select the clip and choose Clip > Time Stretch. Enter a new duration and click OK.

Working with scratch disks  
• About scratch disks • Types of scratch disks • Set up a scratch disk • Maximizing scratch disk performance  
About scratch disks

When you edit a project, Premiere Elements uses disk space to store scratch files for your project. These include captured video and audio, conformed audio, and preview files. Adobe Premiere Elements uses conformed audio files and preview files to optimize performance, allowing real-time editing, high processing quality, and efficient output. All scratch disk files are preserved across work sessions. If you delete conformed audio files, Premiere Elements automatically recreates them. If you delete preview files, they are not recreated automatically.

By default, scratch files are stored where you save the project. The scratch disk space required increases as your movie becomes longer or more complex. If your system has access to multiple disks, choose Edit > Preferences > Scratch Disks / Adobe Premiere Elements 12 > Preferences > Scratch Disks. Specify the disks Premiere Elements uses for these files. For best results, set up your scratch disks at the very beginning of a project, before capturing or editing.

#### Types of scratch disks

While performance can be enhanced by setting each scratch disk type to a different disk, you can also specify folders on the same disk. Select Edit > Preferences > Scratch Disks / Adobe Premiere Elements 12 > Preferences > Scratch Disks to set the following scratch disk options.

**Captured Video** Folder or disk for video files and stop-motion still image files that you capture using the Capture panel.

**Captured Audio** Folder or disk for audio files that you capture using the Capture panel. **Video Previews** Folder or disk for video preview files. These files are created when you choose Timeline > Render Work Area, export to a movie file, or export to a DV device. If the previewed area includes effects, the effects are rendered at full quality in the preview file.

**Audio Previews** Folder or disk for audio preview files. These files are created when you choose Timeline > Render Work Area command. They are also created when you choose Clip > Audio Options > Render And Replace, export to a movie file or DV device. If the previewed area includes effects, the effects are rendered at full quality in the preview file.

**Media Cache** Folder or disk for audio peak files, audio conform files, video index files, and 360

other files Premiere Elements creates to improve performance when reading media files. DVD Encoding Folder or disk for encoded video and audio files that are generated when you create a DVD.  
*Note: Premiere Elements places preview files, encoded files, media cache files, and other types within subfolders of the folders you specify for these types. Each subfolder is named for the type of scratch files it contains.*

Set up a scratch disk

You set up scratch disks in the Scratch Disks panel of the Preferences dialog box. To verify the amount of free disk space on the selected volume, see the box to the right of the path. If the path is too long to read, place the pointer over the path, and the full path appears in a tool tip.

1. Choose Edit > Preferences > Scratch Disks / Adobe Premiere Elements 12 > Preferences > Scratch Disks.

2. For each scratch disk type, specify a disk location for Premiere Elements to store the corresponding files. Choose one of these options from the pop-up menu:  
My Documents Stores scratch files in the My Documents folder.

Same As Project Stores scratch files in the same folder where the project is stored. Custom Indicates that the current path isn't in the pop-up menu. The current path isn't changed until you click Browse to specify any available disk location.

Maximizing scratch disk performance

If your computer has only one hard disk, consider leaving all scratch disk options at their default settings.

If it has more than one, choose large, secondary hard drives for scratch disks and not the main load drive. In Premiere Elements, you can place each type of scratch file onto its own disk. For example, you copy video to one disk and audio to another.

Defragment scratch disks regularly by using the Disk Defragmenter tool in Windows or a third-party utility. To use the Disk Defragmenter tool, choose Start > All Programs > Accessories > System Tools > Disk Defragmenter. For more instructions, see the documentation provided with Windows or the third-party utility.

Specify your fastest hard disks for capturing media and storing scratch files. You can use a slower disk for audio preview files and the project file.

Specify only disks attached to your computer. The throughput from a hard disk on a network

is too slow. Avoid using removable media as scratch disks because Premiere Elements always requires access to scratch disk files. Scratch disk files are preserved for each project, even when you close the project. Premiere Elements reuses these files when you reopen the project associated with them. If scratch disk files are stored on removable media and the media is removed from the drive, the scratch disk is not available to Premiere Elements.

You can divide a single disk into partitions and set up each partition as a virtual scratch disk. However, partitioning doesn't improve performance because the single drive mechanism is a bottleneck. For best results, set up scratch disk volumes on actual separate drives.

Working with offline files

About offline files Edit an offline file Replace an offline file with a file on your computer About offline files

An offline file is a placeholder for a source file that Premiere Elements cannot currently find on your hard drive. Offline files remember information about the missing source files they represent. If an offline file appears in the Quick view/Expert view timeline, a "Media Offline" message appears in the monitor and in the Quick view/Expert view timeline.

Edit an offline file

In the Expert view, click Project Assets.

In the Project Assets panel, doubleclick the offline file. Where Is The File [name of the file] dialog box appears. Locate the source file, select the file, and click Select.

Right-click/Ctrlclick the file and select Edit Original to edit the file.

Replace an offline file with a file on your computer

In the Expert view, click Project Assets.

In the Project Assets panel, select one or more offline files.

Choose Edit > Locate Media.

Locate and select the actual source file, and click Select.

*Note: If you selected more than one offline file, the Aflach Which Media dialog box appears in turnfor each file you selected. Pay aflenention to the offline filename in the title bar of the dialog box so that you relink the correct source file to each offline file.*

Working with aspect ratios and field options

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Understanding aspect ratios

- Capturing or adding various aspect ratios
- View a project's aspect ratio
- Adjust pixel aspect ratio for a still image or source clip
- Use square-pixel files in a D1 or DV project
- Set field options for imported interlaced video

Understanding aspect ratios

The aspect ratio specifies the ratio of width to height. Video frames have an aspect ratio (frame aspect ratio) as do the pixels that make up the frame (pixel aspect ratio). Some video camcorders can record various frame aspect ratios, and the NTSC and PAL video standards use different pixel aspect ratios. If an image of a circle appears oval-shaped, there can be a mismatch between the aspect ratios of the image and your project.

Premiere Elements automatically afempts to detect and compensate for the pixel aspect ratio of source clips so that distortion doesn't occur. If a clip appears distorted in Premiere Elements, you can manually change its pixel aspect ratio. It's important to reconcile pixel aspect ratios before reconciling frame aspect ratios. Misinterpretation of a source clip's aspect ratio causes incorrect frame aspect ratio.

Frame aspect ratio

*Frame aspect rati*odescribes the ratio of width to height in the dimensions of an image. For example,DVNTSCHas a frame aspect ratio of 4:3 (or 4.0 width by 3.0 height). For comparison, a typical widescreen frame has a frame aspect ratio of 16:9; many camcorders that have a widescreen mode can record using this aspect ratio. Many films are shot using even wider aspect ratios.

A 4:3 frame aspect ratio (left), and a wider 16:9 frame aspect ratio (right)

When you add clips into a project with a different frame aspect ratio, decide how to reconcile the different values.Youcan show a widescreen movie with a 16:9 frame aspect ratio on a standardTVwith a 4:3 frame aspect ratio in two ways. Use the Leferboxing technique to fit the entire width of the 16:9 frame into a black 4:3 frame. Black bands appear above and below the widescreen frame.

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Alternatively, use the Pan and scan technique to fill the 4:3 frame with only a selected area of the 16:9 frame. Although this technique eliminates the black bars, it also eliminates part of the action. Premiere Elements automatically letterboxes any 16:9 footage that you add into a 4:3 aspect ratio project.

#### Pixel aspect ratio

Pixel aspect ratio describes the ratio of width to height in a single pixel of a frame. Pixel aspect ratios vary because different video systems make different assumptions about the number of pixels required to fill a frame. For example, many computer video standards define a frame that has a 4:3 aspect ratio as 640 x 480 pixels. Pixels that are square, which have an aspect ratio themselves of 1:1, perfectly fill the horizontal and vertical space the frame defines. However, video standards such as DV-NTSC (standard for DV camcorders in the U.S.) define a 4:3 aspect ratio frame as 720 x 480 pixels. Consequently, to fit all of these pixels in the frame, the pixels must be narrower than the square pixels. These narrow pixels are called rectangular pixels, and they have an aspect ratio of 0.9:1, or 0.9 as they are commonly called. DV pixels are vertically oriented in systems producing NTSC video and horizontally oriented in systems producing PAL video. Premiere Elements displays a clip's pixel aspect ratio next to the clip's image thumbnail in the Project Assets panel.

If you display rectangular pixels on a square-pixel monitor, images appear distorted, for example, circles distort into ovals. However, when displayed on a broadcast monitor, the images appear correctly proportioned because broadcast monitors use rectangular pixels. Premiere Elements exports clips of various pixel aspect ratios without distortion. It automatically adjusts the pixel aspect ratio of your project to the pixel aspect ratio of the clips. You can encounter a distorted clip if Premiere Elements interprets pixel aspect ratio incorrectly. Correct the distortion by manually by specifying the source clip's pixel aspect ratio.

#### Pixel and frame aspect ratios

A. Square pixels and 4:3 frame aspect ratio B. Nonsquare pixels and 4:3 frame aspect ratio C.

Nonsquare pixels displayed uncorrected on a square-pixel monitor

#### Capturing or adding various aspect ratios

Premiere Elements attempts to automatically compensate for pixel aspect ratios and preserve the frame size of added images. Images that you add are treated in the following ways: Add video with D1 resolution 720 x 486 or DV resolution 720 x 480. Premiere Elements automatically sets the video's pixel aspect ratio to D1/DV NTSC (0.9). For a footage with D1 or DV resolution 720 x 576, Premiere Elements sets its pixel aspect ratio to D1/DV PAL (1.067). However, it helps to see the Project Assets panel or the Interpret Footage dialog box to ensure that all files are interpreted correctly.

Premiere Elements automatically assigns pixel aspect ratios to files by using the Interpretation Rules.txt file in the Premiere Elements/Plug-in folder. If a specific type of image is consistently misinterpreted (distorted), modify the entries in the Interpretation Rules.txt file. If you want to override the pixel aspect ratio interpretation for files already in a project, use the Interpret Footage command.

To change the size of a clip in Premiere Elements, select the clip and change the Scale property of the Motion effect. The Motion effect is available in the Properties view with the clip selected in the Expert view timeline.

#### View a project's aspect ratio

The preset you choose when you start a project sets the pixel aspect ratio for the project. You can't change the aspect ratio after it is initially set.

Choose Edit > Project Settings > General.

Adjust pixel aspect ratio for a still image or source clip

To combine diverse footage within a project and generate an output without distorting source images, ensure that all files are interpreted correctly.

*Note: When you set the pixel aspect ratio of a file, use its original ratio, not the ratio of the project and final output.*

1. In the Expert view, click Project Assets.
2. Select the still image or source clip.
3. Choose File > Interpret Footage.
4. In the Pixel Aspect Ratio section, select Use Pixel Aspect Ratio From File to use the original ratio of the file. Alternatively, choose one of the following from the Conform To menu:

Square Pixels Uses a 1.0 pixel aspect ratio. Use this setting if your source clip has a 640 x 480 or 648 x 486 frame size. You can also use this setting if the file was exported from an application that supports only square pixels.

D1/DV NTSC Uses a 0.9 pixel aspect ratio. Use this setting if your source clip has a 720 x 480 or 720 x 486 frame size. This setting lets you maintain a 4:3 frame aspect ratio for the clip. Use this setting for clips exported from an application that works with nonsquare pixels, such as a 3D animation application.

*note: For more information about D1, see the Glossary in Premiere Elements Help.*

D1/DV NTSC Widescreen Uses a 1.2 pixel aspect ratio. Use this setting if your source clip has a 720 x 480 or 720 x 486 frame size. This setting lets you maintain a 16:9 frame aspect ratio.

D1/DV PAL Uses a 1.0666 pixel aspect ratio. Use this setting if your source clip has a 720 x 576 frame size and you want it to maintain a 4:3 frame aspect ratio.

D1/DV PAL Widescreen Uses a 1.4222 pixel aspect ratio. Use this setting if your source clip has a 720 x 576 frame size and you want it to maintain a 16:9 frame aspect ratio.

Anamorphic 2:1 Uses a 2.0 pixel aspect ratio. Use this setting if your source clip was anamorphically transferred from a film frame with a 2:1 aspect ratio.

HD Anamorphic 1080 Uses a 1.333 pixel aspect ratio.

Use square-pixel files in a D1 or DV project

You can use square-pixel footage in a DV project and generate output that does not appear distorted. Premiere Elements either “upsamples” (increases) or “downsamples” (decreases) the resolution of a file that does not match the project frame size. Downsampling results in a higher-quality image. Create files that are larger than the project’s frame size so that Premiere Elements need not upsample and enlarge them.

Prepare the file by using one of the following methods, and then capture or add the file to Premiere Elements: If your final output is DV (NTSC), create and save it at a 720 x 540 frame size.

Saving at this frame size prevents upsampling or 640 x 480 to prevent field distortion on a field-rendered file.

If your final output is DV (PAL), create and save it at a 768 x 576 frame size. Saving at this frame size prevents upsampling and field distortion on a field-rendered file.

If your final output is D1 (NTSC), create and save it at a 720 x 540 frame size.

The frame size of a square-pixel image can match the frame size of your project (for

example 720 x 480). However, if they have different pixel aspect ratios, redesign the image using a different frame size (such as 720 x 540). Redesigning is necessary when the application you use to prepare the file doesn't support nonsquare pixels.

Set field options for imported interlaced video

In most video, each frame consists of two *fields*. One field contains the odd-numbered lines in the frame, and the other contains the even-numbered lines. The fields are *interlaced*, or combined, to create the complete image. Adobe Photoshop Elements includes a reverse field order preset for video imported from a hard disk or Flash memory camcorder that uses upper fields first. You can capture source footage with upper fields first. For this footage, ensure that your project uses either the Standard or Widescreen preset from the Flash Memory Camcorders presets folder.

Ordinarily, interlacing isn't apparent to a viewer. However, each field captures the subject at a different time. Due to the time difference, playing a clip in slow-motion or creating a freeze frame makes the two fields discernible. You observe the same behavior when you export a frame as a still image. To avoid this situation, you can *deinterlace* the image. Deinterlacing eliminates one field and either duplicates or interpolates the lines of the remaining field.

Reversing the *field dominance*, the order in which the fields are recorded and displayed, can cause playback problems. When the field dominance is reversed, motion appears jerky because the fields no longer appear in chronological order. Fields are reversed when the original videotape's field dominance is the opposite of the field dominance of the video-capture card used to capture the clip. Fields are also reversed when the field dominance of the original videotape and the video-editing software are opposite to each other. Reversing can also happen when you set an interlaced clip to play backward.

To avoid these complications, you can *deinterlace* the image. Deinterlacing eliminates one field and either duplicates or interpolates the lines of the remaining field. You can also set field options for an interlaced clip so that the clip's picture and motion quality are preserved in certain situations. These include changing the clip speed, exporting a filmstrip, playing a clip backward, or freezing a video frame.

1Select a clip in the Expert view timeline, and choose Clip > Video Options > Field Options.

2Select Reverse Field Dominance to change the order in which the clip's fields appear. This option is useful when the field dominance of the clip doesn't match your equipment or when you play a clip backward.

3For Processing Options, select one of the following choices, and click OK.

NoneDoes not process the clip's fields.

Interlace Consecutive FramesConverts pairsofconsecutive progressive-scan(noninterlaced) frames into interlaced fields. This option is useful for converting 60 fps progressive-scan animations into 30-fps interlaced video because many animation applications don't create interlaced frames.

Always DeinterlaceConverts interlaced fields into whole progressive-scan frames. Premiere Elements deinterlaces by discarding one field and interpolating a new field based on the lines of the remaining field. It keeps the field specified in the Field Settings option in the Project Settings. If you specified No Fields, Premiere Elements keeps the upper field unless you selected Reverse Field Dominance, in which case it keeps the lower field. This option is useful when freezing a frame in the clip.

Flicker Removal Prevents thin horizontal details in an image from flickering by slightly blurring the two fields together. An object as thin as one scan line flickers because it can appear only in every other field.

[Supported devices](#) [Supported file types for import](#)

Verify whether Adobe Premiere Elements supports the file format and the device from which you import the file.

Supported file types for import

In addition to capturing footage, you can import image, video, and audio files.Youcan add files from folders on your computer, accessory hard drives, and mobile phones.Youcan also add files fromDVDs,Blu-ray discs,CDs,digital cameras, other devices, or the Internet. Adobe Premiere Elements 12.0 supports DV, HDV, WDM, and AVCHD formatted video.

Files that you add to a project are visible in the Project Assets panel in the Expert view. Adobe Premiere Elements automatically adds them to Elements Organizer.

*note: Some file formats require activation of components before you can add them to a project.*

Supported video formats

Adobe Flash®(.swf)AVIMovie (.avi)AVCHD(.m2ts, .mts, .m2t)DV Stream (.dv)MPEGMovie (.mpeg, .vob, .mod, .ac3, .mpe, .mpg, .mpd, .m2v, .mpa, .mp2, .m2a, .mpv, .m2p, .m2t, .m1v, .mp4, .m4v, .m4a, .aac, 3gp, .avc, .264) QuickTime Movie (.mov, .3gp, .3g2, .mp4, .m4a, .m4v) TOD (.tod) Windows Media (.wmv, .asf) - Windows only

*note: To import video from mobile phones (.3gp and .mp4), you must have the most recent version ofQuickTime installed on your computer.*

#### Supported image formats

Adobe Photoshop® (.psd) Adobe Premiere Elements title (.prt) Bitmap (.bmp, .dib, .rle) CompuServe GIF® (.gif) JPEG® (.jpg, .jpe, .jpeg, .gif) Pixar Picture (.pxr) Portable Network Graphic (.png) RAW (.raw, .raf, .crw, .cr2, .mrw, .nef, .orf, .dng)

#### Supported audio formats

AdvancedAudioCoding (.aac) Dolby®AC-3(.ac3) Macintosh®AudioAIFF(.aif, .aiff) M P 3®Audio(.mp3)M P E G ® Audio(.mpeg, .mpg, .mpa, .mpe, .m2a) QuickTime(.mov, m4a) Windows Media (.wma) - Windows only Windows WAVE (.wav) *note: Dolby AC-3 is imported as a standalone.ac3 file or as part of an encoded audio file in a .vob (DVD) or .mod (JVC® Everio) file, but exported as Dolby Digital Stereo only.*

#### Activate a component for import

Some file formats such as MPEG-2, MPEG 4(SP), and AMR require component activation before you can add them to a project. If you are connected to the Internet, component activation occurs automatically. If you are not connected to the Internet, the Activating Component dialog box appears.

1. When the Activating Component dialog box appears, connect to the Internet.
2. In the Activating Component dialog box, click Copy to copy the serial number.
3. Click the URL to go to the activation website.
4. Paste the serial number into the ID box on the website.
5. Copy the key, paste it in the Activating Component dialog box, and then click OK.

The website displays a key for unlocking.

#### Sharing files between Adobe Premiere Elements and Adobe Photoshop Elements

You can access all images in a Photoshop Elements catalog directly from the Elements Organizer workspace of Premiere Elements. You can also add, edit, and manage your images, and then drag them to the Quick view/Expert view timeline of Adobe Premiere Elements for use in your project.

Adobe Photoshop Elements and Premiere Elements are designed to work together, whether you purchase the products separately or bundled in one package. These programs seamlessly combine digital photography and video editing, letting you create exciting video projects. The two programs support many of the same file types, which makes the transfer of most files between them easy and efficient. For example, you can catalog PSD files in Photoshop Elements and then add them to the Quick view/Expert view timeline directly from the 369

Elements Organizer in Premiere Elements.

*note: The Photoshop Elements Organizer shows clips of audio/AVI files with broken video thumbnails. However, they play correctly. The Photoshop Elements Editor can import individual video frames from ASF, AVI, MPEG, and Windows Media files. (Choose File > Import > Frame From Video.)* Here are a few ways you can share files between Photoshop Elements and Premiere Elements: Organize your photos, video clips, and audio clips in either Premiere Elements or Photoshop Elements. Find the assets using Elements Organizer in either application and add them to a project.

Capture video in Premiere Elements and open it from the Elements Organizer and create and edit still images from the video.

(Windows only) Create a slideshow in Photoshop Elements 6.0 or later with captions, transitions, effects, music, narration, graphics, and titles. Import the slideshow into Premiere Elements to edit further or burn to DVD. Alternatively, import individual photos into Premiere Elements and create the slideshow there.

*note: The SendToAdobe Premiere Elements command in Photoshop Elements works only when you use Photoshop Elements 6.0 or later with Adobe Premiere Elements 4.0 or later.*

Customize menu templates in Photoshop Elements, and then use them in your Premiere Elements project. (Menu templates are PSD files stored in the Premiere Elements application folder.) Create a Photoshop Elements file with your video project's settings, enhance it in Photoshop Elements, and then use it in Premiere Elements.

Create and add a black video clip

You add black video clips to separate multiple movies or to create pauses in a movie. You can also use a black video clip for a title.

1. Click Project Assets.

2. In the Project Assets panel, click New Item from the panel options and choose Black Video.

Create a colored maffe for a background

You can create a clip consisting of a full-frame maffe of solid color, which you can use as a solid background for titles or animated clips.

*Brightly colored maffes can serve as temporary backgrounds to help you see transparency more clearly while you adjust a key effect.*

1. Click Project Assets.
2. In the Project Assets panel, click New Item from the panel options and choose Color Mafe.
3. Choose a color in the Adobe Color Picker dialog box, and click OK. A color mafe clip is placed into both the Project Assets panel and the Expert view timeline.

Change the tone level of clips

1. Select a clip using one of the following methods:

To set the level for all new clip instances, click New Item from the panel options in the Project Assets panel. Then, select the Bars And Tone option. To set the level for only one clip instance, select the clip in the Expert view timeline.

2. Choose Clip > Audio Options > Audio Gain.

3. In the Clip Gain dialog box, do one of the following, and click OK: Drag the value control left to decrease, or right to increase, volume. Highlight the value control and type a number to increase or decrease volume. Positive numbers increase it. Negative numbers decrease

Move through the Expert view timeline

When placing and arranging clips in the Expert view timeline, move the current-time indicator to the appropriate location. In the time ruler, the current-time indicator corresponds to the frame displayed in the Monitor panel.

A vertical line extends from this current-time indicator through all the tracks. Zooming in and out of the Expert view timeline can help you identify the exact location for placing a clip or performing an edit.

In the Expert view timeline, do any of the following: Drag the current-time indicator.

Click the time ruler where you want to position the current-time indicator.

Press Shift while dragging the current-time indicator to snap it to the edge of the closest clip or marker.

Drag the time display (below the Monitor panel) to the desired time value.

Click the time display (at the bottom of the Monitor panel), type a valid time, and then press Enter. (You need not type leading zeros, colons, or semicolons. However, Adobe Premiere Elements interprets numbers under 100 as frames.) *You can use the Home or End keys on the keyboard to skip between the beginning and end of the movie.*



*The Page Up and Page Down keys move the current-time indicator to the previous and next clips respectively. The Right or Left Arrow keys move the current-time indicator forward or back by a frame. Pressing Shift+Right Arrow or Shift+Left Arrow moves the current-time indicator forward or back by five frames each time.*

Add clips to the Expert view timeline

When you insert a clip into the Expert view timeline, adjacent clips on all tracks shift to accommodate the new clip. By shifting all clips together, the audio and video of the existing clips remain in sync.

Sometimes, you don't want all clips to shift with each insertion. For example, when you add background music that superimposes the entire movie, you don't want clips to shift.

To shift specific clips together, press the Alt key as you insert. At a time, you can shift specific clips simultaneously on a maximum of two tracks. These include the track receiving the insertion and the track containing the linked audio or video (if any). The affected tracks shift together, remaining aligned. The clips on other tracks are unaffected.

Insert a clip, shift clips in the Expert view timeline

Do one of the following:

Drag the clip from the Project Assets panel to the desired location in the Expert view timeline. When the pointer changes to the Insert icon, release the mouse.

Move the current-time indicator to the desired location in the Expert view timeline. Then select the clip in the Project Assets panel and choose Clip > Insert.

Insert a clip, shift clips on only the target and linked tracks

Alt-drag the clip from the Project Assets panel to the desired location in the Expert view timeline. When the pointer changes to the Insert icon, release the mouse.

If you drag a clip into the blank space above the topmost video track (for video) or below the lowest audio track (for audio), Adobe Premiere Elements creates a new track for the clip. If the clip contains both audio and video, it creates both a new video and new audio track.

Overlay a clip in the Expert view timeline

The easiest way to replace a portion of a video is to overlay it with other footage. When you overlay a clip, the clip you add replaces any existing frames starting at the location you designate.

If the new clip is 40 frames long, it overlays 40 frames of the existing clip. The frames following the overlay, if any, remain at the same location in the track. Overlays do not change the length 372

of the movie unless the overlay extends beyond the end of the movie. Do one of the following: **Ctrl-drag/Cmd-drag the clip from the Project Assets panel to the first frame you want to overlay. When the pointer changes to the Overlay icon, release the mouse.**

Move the current-time indicator to the first frame you want to overlay, select the clip in the Project Assets panel, and then choose **Clip > Overlay**.

Place one clip above another in the Expert view timeline

You can place one clip above another without replacing a section of the lower clip as is done with an overlay. You can use clips stacked in this way, for example, with various keying effects.

1. In the Expert view timeline, drag the current-time indicator to a location above a video clip where you want to overlay another clip.
2. Shift-drag a clip from the Project Assets panel, and drop it on to the Monitor panel.
3. Choose **Place On Top**.

Adobe Premiere Elements drops the second clip into the first available video track at the location of the current-time indicator.

Replace a clip in the Expert View timeline

To replace a clip in the middle of the Expert view timeline, without altering the length or changing the effects or overlays, use the **Replace Clip** command. This option is useful when editing expanded instant movies.

1. From the Project Assets panel, select the clip you want to use.
2. In the Expert view timeline, right-click/ctrlclick the clip you want to replace and choose **Replace Clip From Project Assets**.

If the incoming clip is longer in duration, it is trimmed from the end to match the existing duration of the outgoing clip.

If the incoming clip is shorter in duration, a warning message appears giving you the choice to cancel the replace action or use black frames to fill the excess duration.

Select, move, align, and delete clips in the Expert view timeline

After you've added a clip to your movie, you may need to rearrange clips, copy and paste scenes, and delete other clips. Several techniques let you select individual clips, a range of clips, or only the audio or video portion of a linked clip.

#### Select clips in the Expert view timeline

Using the mouse cursor, do any of the following:

To select a single clip, click the clip in the Expert view timeline. If the clip is linked or grouped, clicking one clip selects the other linked or grouped clips. To select only the audio or video portion of linked clips, Alt-click the desired clip. To select a single clip within a group, Alt-click the desired clip. To select multiple clips, Shift-click each clip you want to select. (Shift-click a selected clip to deselect it.) To select sequential clips, drag a rectangle (marquee selection) that includes the clips you want to select. To add a range of clips to the current selection, Shift-drag a marquee around the clips.

#### Selecting a range of clips by dragging a marquee

Move a clip in the Expert view timeline

You can easily rearrange clips in the Expert view timeline by dragging. By using the same techniques you use to add a clip, you can choose to insert or overlay clips when you move them.

To move a clip and insert it so all tracks shift after insertion, drag the clip to the desired location. When the pointer changes to the Insert icon, release the mouse button. To move a clip and overlay another clip in the movie, drag the clip to the first frame you want to overlay, and then press Ctrl/Cmd. When the pointer changes to the Overlay icon, release the mouse button.

To move only one clip of a linked pair, Alt-select the clip you want to move. Drag it to the desired location. If you want to shift clips only on the target tracks, release the mouse button when the pointer changes to the Insert icon. If you want to overlay another clip, press the Ctrl key, and when the pointer changes to the Overlay icon, release the mouse.

#### Align clips by using the Snap option

The Snap option, which is enabled by default, makes it easier to align clips with each other or with particular points in time. You can move a clip with the Snap option selected. The clip 374

automatically aligns with the edge of another clip, a marker, the start and end of the time ruler, or the current-time indicator.

Snapping also helps ensure that you don't inadvertently perform an insert or overlay edit when dragging. As you drag clips, a pop-up window displays the distance, in frames, that you have moved them. A negative number indicates you've moved them toward the beginning of the movie.

Choose Timeline > Snap. A check mark indicates that the option is enabled.

Delete a clip in the Quick view timeline or Expert view timeline

Deleting a clip from a movie doesn't delete it from the project. The clip is still available in the Project Assets panel.

1. In the Quick view timeline or Expert view timeline, select one or more clips. (Alt-click to select only the audio or video portion of a clip.)
2. Do one of the following:

To delete clips and leave a gap of the same duration, called *clearing*, choose Edit > Delete.

To delete a clip and close the resulting gap, called *ripple deletion*, choose Edit > Delete And Close Gap, or press the Delete or Backspace key.

*Note: When a clip is deleted from the Quick view timeline, a transition that follows the clip is also deleted. When a clip is deleted from the Expert view timeline, the preceding and following transitions are deleted.*

Delete empty space between clips in the Expert view timeline

You can quickly delete empty space between clips in the Expert view timeline by using the Delete And Close Gap command. Alternatively, press the Delete or Backspace key. Both techniques shift adjacent clips over to fill the gap.

In the Expert view timeline, do one of the following:

Right-click the empty space, and choose Delete And Close Gap.

Select the space you want to delete, and press the Delete or Backspace key.

*note: If the gap is small and difficult to select, move the current-time indicator to the gap and click the Zoom In button.*

Create a duplicate clip in the Expert view timeline

Each time you drag a source clip from the Project Assets panel to the Expert view timeline, you create a *clip instance*. This instance shares the source clip's default In and Out points. If you delete the source clip in the Project Assets panel, all instances of the clip in the Expert view 375



To create clip instances with different default In and Out points, duplicate the source clip in the Project Assets panel. If you delete a duplicate clip in the Project Assets panel, all instances of it in the Expert view timeline are deleted.

#### Link video and audio clips

Most video includes a soundtrack. In the Project Assets panel, clips that contain both video and audio appear as a single item. When you add the clip to a movie in the Expert view timeline, the video and audio appear on separate tracks with the video directly above the audio.

The video and audio remain linked. When you drag the video portion in the Expert view timeline, the linked audio moves with it, and vice versa. For this reason, audio/video pairs are called *linked clips*. In the Expert view timeline, the names of linked clips are underlined and identified with a [V] for video or [A] for audio.

*Linked clips share same name with either [V] or [A] appended and are underlined.*

All editing tasks (such as moving, trimming, or changing the clip speed) act on both parts of a linked clip. You can temporarily override the link by pressing the Alt key when you initiate editing tasks. You can also place the video or audio portion separately.

#### Link and unlink video and audio clips

You can link a video clip and an audio clip so that they act as a unit. When you select, trim, split, delete, move, or change the speed of one, you affect the other clip as well. You can temporarily override the link as needed. In the Expert view timeline, the names of linked clips are underlined and identified with a [V] for video or [A] for audio.

To link video and audio clips, Shift-click a video and audio clip to select them both, and then choose Clip > Link Audio And Video.

To unlink video and audio clips, select a linked clip and choose Clip > UnlinkAudioAnd Video. (Though the audio and video are unlinked, they are both still selected. Reselect either clip to use it separately.) 376



To select linked clips individually, Alt-click the desired clip. After selecting it, you can move or trim the clip independently of its linked clip.  
*To quickly delete an audio or video clip without unlinking it, right-click/ctrlclick the clip and choose either Delete Audio or Delete Video from the menu.*  
 Delete only the audio or video portion of a linked clip

In the Expert view timeline, do one of the following:

Right-click/Ctrlclick the linked clip and choose Delete Audio or Delete Video.

Alt-click the audio or video portion to select it alone, and press the Delete or Backspace key. Select a linked clip and choose Clip > Unlink Audio And Video. Reselect either clip and choose Edit > Clear or Edit > Delete And Close Gap.  
 The clips shift over to fill the gap left by the deleted clip.

Enable and disable clips

Occasionally, you might want to disable a clip while you try a different editing idea or to shorten the processing time. Disabling a clip hides it when you view the movie in the Monitor panel or when you export the movie. You can still move or change a disabled clip.

Select one or more clips in the Quick view timeline or the Expert view timeline, and choose Clip > Enable.

The check mark next to the command disappears when you disable a clip, and the clip appears dimmed in the Quick view timeline and the Expert view timeline.

Hand on Activities

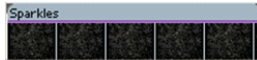
Star Trek Transporter Effect Step 1: The Files and Project The first task is to gather the required files and create the project.

(1)The Transport Scene

The first and most important video clip begins with an empty scene. The subject walks into shot and assumes their "materialized" position, then begins acting as if they had just beamed in. If you want to make your own transporter effect you will obviously need to provide this shot yourself.

*Note:*The shot must be steady — use a tripod.

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(2)The Transporter Sparkles

The second video clip provides the sparkling effect. This is a five-second clip of full-screen flickering sparkles on a black background. You can make your own sparkles or download the clip used in this tutorial (below).

(3)The Audio File

We will also add a transporter sound effect which is the same duration as the sparkle video clip.

2 Tutorial : Ghost Effect

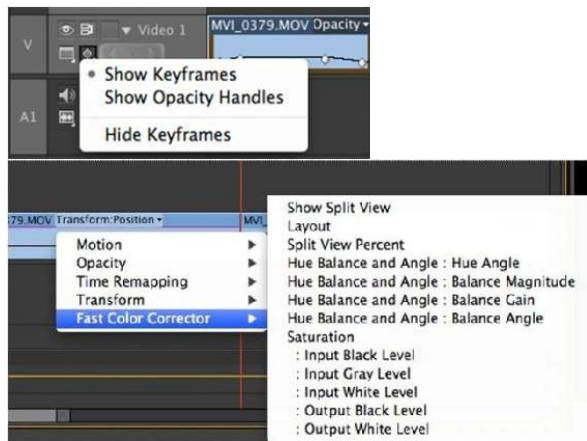
Creating a ghost effect for video is quite simple, as long as you have an editing package capable of using layers and setting layer opacity.

First of all, set the camera up on a tripod and frame the shot. Shoot the scene empty (without the ghost), then shoot the scene again with the ghost actor. It's very important that both versions (takes) of the shot are framed identically, so don't move the camera at all. The background also needs to be still.

Import both takes of the shot into your editing program (Adobe Premiere in this case). Place the empty shot on the first video track and the ghost shot on the next track.

Set the opacity of the ghost shot to around 30%, or whatever setting achieves the best result.

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#### Knowledge Check Points

Q1) how do you show keyframing on a video track.

Ans: You can see keyframes by twirling down the triangle and opening a view track. There lives a keyframe popup where you can show keyframes, show Opacity keyframes or hide keyframes.

Opacity has its own menu option because I can only assume it's the most often accessed parameter for things like fading up on a clip. Of note is the fact that with Show Keyframes selected you can then choose what type of keyframes to show on a PER CLIP basis with the clip keyframe menu:

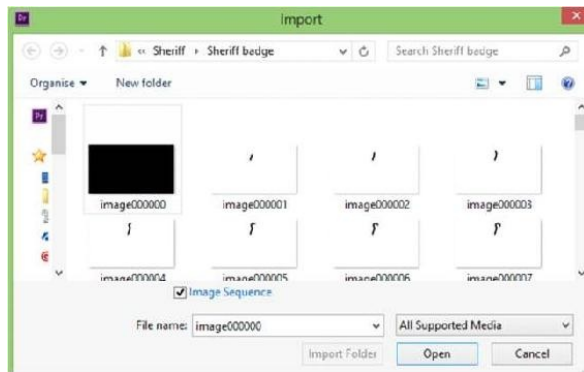
There you can even choose keyframes for things like filter effects as well as the usual Motion, Opacity and Time Remapping

Q 2) How to Import file ?

Answer : Then open up Adobe Premier. You then need to click 'file', 'import'

Now make sure you click on the first image in the sequence, (normally named 000000 ). Then check the 'image sequence' box. It will then bring in the whole sequence.





The sequence will now be ready for editing. And Click open

Q 3) How to fade music in and out for montage with adobe premiere pro ?

Ans : move the timeline cursor to where you want the audio to start to fade out

2on the upper middle window in premiere, make sure you are on the Effect Controls tab3expand Volume (this should be on the left column it actually says fx Volume)

3you will notice Bypass and Level now... expand Level

0adjust the 0.0 dB by holding down the left-click and dragging down. If it goes into the negative dBs, the volume is decreasing

4click on 0.0 dB this should set a key frame at the current point on the timeline.. leave it at that

7find a spot for where you want the volume to start to increase back to normal again by dragging the timeline cursor once again . then adjust the dB as needed.. this will again create a key frame

5move the timeline cursor to a good spot where you'd like the volume to be LOW

Q 4) How to upload a video from adobe premiere pro ?

Ans :Go to YouTube.

Click upload click browse, go into computer there's probably something along the lines of 'CD' or 'disk' there click it choose the file you want to upload done.

Q 5) Can a FCP project be brought into CS6?

Premiere Pro CS 6 supports FCP XML so projects can be both imported and exported from Premiere Pro to Final Cut Pro. Export your entire project from Final Cut Pro as an XML and then import that XML into Premiere Pro. You may have to reconnect some media and it might not be a one hundred percent translation but it's actually quite easy process.

Q 6 ) How to bring one timeline from one project to another?

Ans : The simplest method is you have a project open that you want to move a select sequence from is to just select the sequence and COPY. Then open the next project and PASTE. That will paste that new sequence into the edit. Note that all the media that is in that new timeline will get new items created in the project as well.

A more interesting method is to do a File>Import and choose a Premiere Pro project that contains a sequence you want to import. You'll get an option import an entire project or a selected sequence: Choose Import Selected Sequences and you can choose exactly what edits to import:



That's one of the joys of Dynamic Linking amongst the Creative Suite applications, great interchange.

Q 7) How can you move a clip to a different layer with keyboard shortcuts?

Ans : You're looking for the option up arrow, down arrow shortcut that Final Cut Pro uses to move clips up and down into higher and lower video tracks or audio tracks. Premiere Pro CS 6 does not have the shortcut or a similar keyboard shortcut. It's too bad as this is one of those life features that Final Cut Pro has that works very well and is very useful. Please Adobe add such a shortcut or something similar.

Q8) How can you remove audio from video clip quickly in the timeline?

Ans: The audio can begin before the video or extend it after the video into the next clip (or vice versa). Trimming linked audio and video separately is called a split edit. Usually, when you create a split edit in one clip, you must create one in the adjacent clip so they don't overlap each other.

You can create two kinds of split edits:

•A J-cut, or audio lead, in which audio starts before linked video, or video continues after



the audio.

•An L-cut, or video lead, in which video starts before linked audio, or audio continues after the video.

1. In the Expert view timeline, select the clip.
2. If the clip is adjacent to another, Alt-drag the audio portion down to a separate track so there is empty space next to it.
3. (Optional) Move the current-time indicator to the video frame you want to trim, and make sure Snap is enabled with a check mark. (If it isn't, choose Timeline > Snap.)
4. Position the pointer over the edge of the video clip you want to trim, and do one of the following:
  - If trimming the beginning of the clip, when the Trim-In icon appears, press Alt and drag the edge to the desired frame. (You can release the Alt key after you begin dragging.) Notice that the video stays aligned with the previous clip.
  - If trimming the end of the clip, when the Trim-Out icon appears, press Alt and drag the edge to the desired frame. (You can release the Alt key after you begin dragging.) Notice that subsequent clips in the track shift left.

Q9. How can I add new video tracks?

Ans : You have a video and you want to replace the soundtrack with one of your creations or another track?

Make use of Windows Movie Maker (it comes with Windows - if this was not the case you can download it here: [Windows Movie Maker](#)).

We will proceed in four steps:

•Import Video •Remove the sound of the video •Create / Add a new audio track •Save Video

Import Video

Firstly, run Windows Movie Maker.

Generally, it is found in Start Menu *All Programs* Accessories, but it depends on your version of Windows.

•Start by importing the video. To do this, click on "Import Media" (or directly on the "Video" tab).

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•Now the video is present in the imported media.

•Drag in the track "Video."

Remove the sound of the video

•Open the "Video" to show the audio track.

•Now right click on the audio track of the video and select "Mute".

Create / Add a new audio track

To record your voice if you want to insert it in the video, you can use:

•The recorder software of Windows (usually it is in Start Menu *All Programs* Accessories).

•Or an audio editing software like Audacity.

•Save the file as an mp3 or WMA, for Windows Movie Maker compatibility.

•Just as you opened the video, Open the new audio track.

•Once the files are imported, it will drag in the new audio track and not the one of the video.

•Just click on "Publish to This Computer "

Q 10. How can I copy and paste clips to the same tracks?

Ans : Copy and paste keyframes in a Timeline panel

When you paste keyframes into a Timeline panel, the earliest keyframe appears at the current time and the other keyframes follow in relative order. The keyframes remain selected after pasting, so you can fine-tune their location.

You can paste keyframes only to a clip or track that displays the same property as the copied keyframes. Also, Premiere Pro can paste keyframes at the current-time indicator on only one clip or track at a time. Because the current-time indicator can span multiple video and audio tracks, Premiere Pro uses criteria in the following order to determine where to paste the keyframes:

•If the current-time indicator is positioned within a selected clip, keyframes are pasted in that clip.

•If audio keyframes are cut or copied, Premiere Pro pastes in the first track where it finds a corresponding effect property, looking first at a sequence's audio tracks, then its submix tracks, and then the master track.

•If none of the above conditions produces a target video or audio track that matches both the effects property and the scope (clip or track) of the cut or copied keyframes, the Paste

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command is unavailable. For example, if you copy audio track keyframes but the targeted audio track displays clip keyframes, the keyframes can't be pasted.

1. In a Timeline panel, choose from a clip or track's effect menu to display the property containing the keyframes you want to copy.
2. Select one or more keyframes.
3. Choose Edit > Copy.
4. In the timeline for the sequence containing the destination clip or track, do one of the following:
  - Select the clip where you want to paste the keyframes.
  - Target the video or audio track where you want the copied keyframes to appear.
5. Make sure that the clip or track displays the same property as the keyframes you copied; otherwise, the Paste command is unavailable. If the property is not available on the clip or track's effect properties menu, you must apply the same effect that was applied to the clip or track from which the keyframes were copied.
6. Move the current-time indicator to the point in time where you want the keyframes to appear.
7. Choose Edit > Paste.

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#### Skill Check Point

- How to import Video in Premier.
- How to separate sound from video file.
- How to make movie.
- How to make Video CD in Adobe Premier-pro.

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## ***Annexure 2 New Applications***

New applications through internet and phones:

### **1. 3G**

International Mobile Telecommunications-2000 (IMT-2000), better known as 3G or 3rd Generation, is a generation of standards for mobile phones and mobile telecommunications services fulfilling specifications by the International Telecommunication Union. Application services include wide-area wireless voice telephone, mobile Internet access, video calls and mobile TV, all in a mobile environment.

In 2008, India entered into the 3G arena with the launch of 3G enabled Mobile and Data services by Bharat Sanchar Nigam Ltd. (BSNL) in Bihar (Patna). BSNL is the first Mobile operator in India to launch 3G services. Later, MTNL launched 3G in Mumbai & Delhi.

3G enables downloading of different types of files such as audio, video, etc. at a very high speed. The bandwidth and location information available to 3G devices gives rise to applications not previously available to mobile phone users. Some of the applications are: Mobile TV - a provider redirects a TV channel directly to the subscriber's phone where it can be watched.

Video on demand- a provider sends a movie to the subscriber's phone.

Video conferencing- subscribers can see as well as talk to each other.

Tele-medicine- a medical provider monitors or provides advice to the potentially isolated subscriber.

Location-based services - a provider sends localized weather or traffic conditions to the phone, or the phone allows the subscriber to find nearby businesses or friends.

### **2. Wi-Fi trademark of the Wi-Fi Alliance that refers to a range of connectivity**



technologies including wireless local area network (WLAN) and a range of technologies that support PAN, LAN and even Wide Area Network (WAN) connections.

Wi-Fi devices are installed in many personal computers, video game consoles, MP 3 players, smart phones, printers, and other peripherals, and newer laptop computers.

Wi-Fi enabled device such as a personal computer, video game console, smart phone or digital audio player can connect to the Internet when within range of a wireless network connected to the Internet. The coverage of one or more (interconnected) access points — called hotspots — can comprise an area as small as a few rooms or as large as many square miles. Coverage in the larger area may depend on a group of access points with overlapping coverage.

Wi-Fi also allows communications directly from one computer to another without the involvement of an access point. This is called *thead-hoc* mode of Wi-Fi transmission.

The most common wireless encryption-standard, Wired Equivalent Privacy (WEP), has been shown to be easily breakable even when correctly configured.

### 3. Wikipedia

<http://www.wikipedia.org/>

Wikipedia is a multilingual, web-based, free content encyclopedia project. Wikipedia is written collaboratively by volunteers from all around the world. With rare exceptions, its articles can be edited by anyone with access to the Internet. Wikipedia is a registered trademark of the non-profit Wikimedia Foundation. The name Wikipedia is a combination of the words wiki (a type of collaborative website) and encyclopedia. Since its creation in 2001, Wikipedia has grown rapidly into one of the largest reference web sites on the Internet.

In every article, links will guide you to associated articles, often with additional information. You are welcome to be bold and edit articles yourself, contributing knowledge further information, cross-references, or citations as you see fit in a collaborative way, so long as they do so within Wikipedia editing policies.

One need not fear accidentally damaging Wikipedia when adding or improving information, as other editors are always around to advise or correct obvious errors.

Because Wikipedia is an ongoing work to which in principle anybody can contribute, it differs from a paper-based reference source, as Wikipedia can be constantly updated, with articles on topical events being created or updated within minutes or hours or days of their occurrence.

#### 4. Blogs:

A blog (a contraction of the term "web log") is a type of website, usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly displayed in reverse-chronological order. From the most recent 'post' (or entry) at the top of the main page to the older entries towards the bottom.

Blogs are usually (but not always) written by one person and are updated pretty regularly. Blogs are often (but not always) written on a particular topic - there are blogs on virtually any topic you can think of. From photography, to spirituality, to recipes, to personal diaries to hobbies - blogging has as many applications and varieties as you can imagine. Whole blog communities have sprung up around some of these topics putting people into contact with each other in relationships where they can learn, share ideas, make friends with and even do business with people with similar interests from around the world.

Example of a blogging website:

<http://www.21classes.com/>

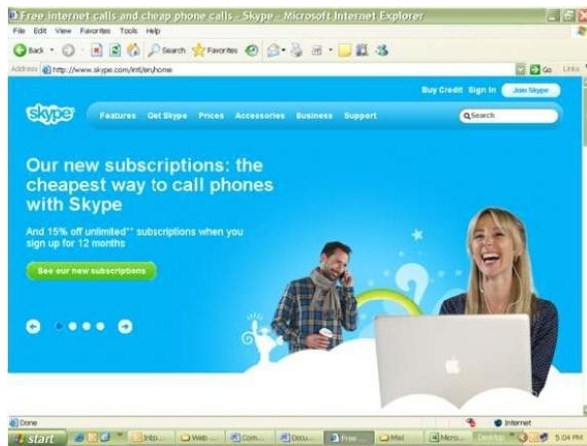




##### 5. Free Call and SMS sites

###### a. Skype <http://about.skype.com/>

Skype is software that enables the world's conversations. Millions of individuals and businesses use Skype to make free video and voice calls, send instant messages and share files with other Skype users. Everyday, people also use Skype to make low-cost calls to landlines and mobiles.



a. Wayto SMS

<http://site2.way2sms.com/content/index.html?>

First web to mobile Free SMS site Send, Free Chat, Free SMS Free Group SMS to India: to any mobile to any network.



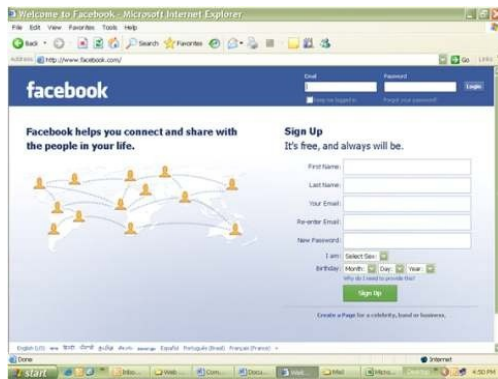
#### 6. Social Networking Websites:

A social networking and discussion service focuses on building and reflecting of social networks or social relations among people, e.g., who share interests and/or activities. Following are some of the most frequently used social networking sites.

Examples:

1. LinkedIn

<http://www.linkedin.com/>



2. Facebook

<http://www.facebook.com/>

3. Orkut

<https://www.orkut.com>



### ***Annexure 3***

#### ***Career/ Further Studies Options***

##### **Further Education**

Students can pursue courses in the areas of multimedia, graphics, animation, VFX, web designing at universities and other institutions for enhancing their knowledge and skills.

The students with vocational stream in 12th can pursue courses at ITIs(Industrial Training Institutes) The students with vocational stream in 12th can pursue diploma in computer science and engg and also in IT at Polytechnics.

Process of admission of vocational stream students into Polytechnics :

Vocational students seeking admission in Polytechnic have to appear for CET conducted by BTE,Delhi and upon qualification *selection will join the three year diploma programme in second year(I.e.heshe* will get admission into 2nd year of the three year course at Polytechnics directly) In case students want to pursue Degree in engineering after completing Diploma in their respective stream from Polytechnic, then he is required to appear again in CET conducted by the university offering Degree programme in engineering (for example GGSIPU in Delhi) for a regular course. Upon qualification *selection heshe* will directly be admided into 2nd year of the four year Degree course in Engineering.

OR

Alternatively he/she can pursue degree part time from DCE and Jamia in the evening and become graduate engineer.

OR

Else the student has the option of pursuing AMIE from the Institution of engineers , Delhi in

particular stream from the respective branch. AMIE is treated as equivalent to B.Tech. degree. AMIE is to be done through correspondence.

Once a student becomes graduate engineer through any of the above modes and wants to study further, he/she can pursue higher education such as post graduation, *etc.* as per the university norms, eligibility conditions, norms of equivalence of the courses, admission process, *etc.* with any of the Indian or foreign universities. He can pursue education upto Phd in their field. They can pursue career in industry as well as in academics.

Students may surf the internet, refer advertisements and notifications for admission to courses/programmes in training and educational institutions.

Skills needed for quality in trained and skilled manpower :IT requires precision in decision making, logical thinking and reasoning, some numerical abilities. Besides the students must have good communication in English (written and spoken), presentation and IT skills and sound knowledge of their domain.

#### Career Opportunities

After passing Class XII in IT vocational stream opportunities would be available in following work areas:-

Data entry operation, computer operation, word processing, *etc.*

With further up gradation of required IT skills and personal skills, *etc.* students can also seek job opportunities in web designing, web site creation, digital designing, multimedia and graphics and other related work.

Some of the companies which hire those students are TCS, Tech Mahindra, HCL, IBM, CSC, *etc.*

Opportunities available to students after passing CI XII are also given at the following web site as well as many other educational web sites : [http://edudel.nic.in/welcome\\_folder/after12th.htm](http://edudel.nic.in/welcome_folder/after12th.htm)

Students can consult YUVA Helpline for career guidance. Toll Free YUVA phone line is 1800-11-6888, 10580.

### ***Annexure 4 Important Links***

The page displays list of some of the relevant links to educational and government sites.

1. Education Department, GNCT, Delhi : <http://www.edudel.nic.in/>
2. SCERT : <http://www.edudel.nic.in/SCERT> OR [www.scertdelhi.nic.in](http://www.scertdelhi.nic.in)
3. Central Board of Secondary Education (CBSE): <http://www.cbse.nic.in/>
4. Central Institute of Educational Technology (CIET): <http://www.ciet.nic.in/>
5. Centre for Cultural Resources and Training (CCRT): <http://ccrtindia.gov.in/>
6. Indira Gandhi National Open University (IGNOU): <http://www.ignou.ac.in/>
7. Jamia Millia Islamia: <http://jmi.ac.in/>
8. National Council of Educational Research and Training: <http://www.ncert.nic.in>

9. University of Delhi: <http://www.du.ac.in> Subject wise Links for students:  
Math: <http://mathforum.org/dr.math> / <http://www.aplusmath.com/>  
This web site was developed to help students improve their maths skills interactively  
<http://www.aaastudy.com>

AAA Math features a comprehensive set of interactive arithmetic lessons. Unlimited practice is available on each topic which allows thorough mastery of the concepts.

Science: <http://www.exculink.com/~ekimmel/>

This is a website for high school science students. You'll find a variety of interactive quizzes,



games and puzzles to practice what you're learning. There are also some specific student resources for each course  
<http://cnx.org/content/col10264/latest/>

Each module develops a central concept in Chemistry from experimental observations and inductive reasoning. This approach complements an interactive  
<http://www.fun-science-fair-projects.com/>

This e-book is a compilation of 47 unique science projects covering ten different subject areas. All of the projects are easy-to-do and educational.  
<http://www.glenbrook.k12.il.us/gbssci/Phys/Class/BBoard.html>

The Physics Classroom is an online interactive tutorial of basic physics concepts. The lessons use an easy-to-understand language to present common physics

Social Science: <http://www.wou.edu/las/socsci/anthro/harappa.htm> <http://bla.stisd.net/resources/AncientCivilizations/default.htm> Hindi: <http://www.webduniya.com>

Useful Links for Teachers and Students : <http://www.ictmanual.net/>

It provides Online Training Manual for ICT Integration in School Education for teachers, teacher educators, ICT coordinators, trainers and any one else concerned about integrating ICT (web2 in particular) in improving the educational practices. It is compliant with the "ICT Competency Standards for Teachers" (ICT-CST) developed by UNESCO.

<http://www.geogebra.org/cms/>

Free mathematics software for learning and teaching, GeoGebra is an interactive geometry, algebra, and calculus application, intended for teachers and students. Constructions can be made with points, vectors, segments, lines, polygons, conic sections, inequalities, implicit polynomials and functions. All of them can be changed dynamically afterwards. Elements can be entered and modified directly on screen, or through the Input Bar. GeoGebra has the ability to use variables for numbers, vectors and points, find derivatives and integrals of functions.

<http://star.mit.edu/index.html>

It provides software tools for academics, researchers, teachers and students which facilitate

learning of various concepts. For example StarBiochem is a molecular 3-D viewer that allows students to learn key concepts in structural biology in an interactive manner. This software allows for the visualization and manipulation of any of the structures present in the Protein Data Bank; StarGenetics is a genetic cross simulator. Using StarGenetics students can performing virtual mating experiments between genetically different organisms across a range of traits.

Several useful tools and material are available on the web which can be used to aid and enhance learning. The teachers and the students can search for them using the search engines and the techniques described above.

Bibliography:[http://en.wikipedia.org/wiki/Operating\\_system](http://en.wikipedia.org/wiki/Operating_system) [http://en.wikipedia.org/wiki/Task\\_bar](http://en.wikipedia.org/wiki/Task_bar) <http://home.earthlink.net/~cassidy/spreadsheet.htm>  
<http://library.thinkquest.org/5862/partsof.htm>. <http://science.csustan.edu/tutorial/Excel/index.htm>  
<http://webmediaworkshop.com/Classes/cs100/mod.ss/unit.1/lesson.1/navigatess.html><http://wordprocessing.about.com/od/wordprocessingsoftware/a/tabletips.htm><http://www.adobe.com/devnet/dreamweaver.html>  
[http://www.atlantiswordprocessor.com/en/help/html/selecting\\_text.htm](http://www.atlantiswordprocessor.com/en/help/html/selecting_text.htm) <http://www.baycongroup.com/excel2003/excel03.htm>  
<http://www.computerhope.com/issues/ch000791.htm> <http://www.contextures.com/xlSort01.html> <http://www.dreamweavertutorial.co.uk/>  
[http://www.edu.pe.ca/journeyon/pro\\_d\\_pages/file\\_management/FileManagementinWindows.htm](http://www.edu.pe.ca/journeyon/pro_d_pages/file_management/FileManagementinWindows.htm) [http://www.elearningplace.co.uk/6852/taster/tastertypescomp.php?sess\\_key](http://www.elearningplace.co.uk/6852/taster/tastertypescomp.php?sess_key)  
[http://www.esu.edu/win\\_tutorial/dt\\_2.html](http://www.esu.edu/win_tutorial/dt_2.html) <http://www.geocities.com/Athens/Delphi/6470/word.htm>

<http://www.gobe.com/gp/help/Overview/GSDocWindows.htm>[http://www.internet4classrooms.com/on-line\\_ie.htm](http://www.internet4classrooms.com/on-line_ie.htm) <http://www.internefuturals.net/internet.html>  
<http://www.jegsworks.com/Lessons/words/basics/step-spelling.htm> <http://www.learn-dreamweaver-tutorials.com/> [http://www.ncsu.edu/it/edu/winword\\_trng/word/editing.html](http://www.ncsu.edu/it/edu/winword_trng/word/editing.html)  
<http://www.nos.org/html/ms-word3.htm> <http://www.thesitewizard.com/#> <http://www.tutorialspoint.com/lis/tutorials/dreamweaver/1>  
<http://www.webopedia.com/TERM/k/keyboard.html><https://www.adobe.com/> <http://www.tutorialized.com/tutorials/Premiere/1> <http://www.microsoft.com/en-in/server-cloud/products/sqlserver/><http://www.w3schools.com/sql/> <http://www.sqlservercentral.com/><http://windows.microsoft.com/en-us/windows/home>[www.bsedelhi.com](http://www.bsedelhi.com).  
<http://www.passportindia.gov.in/AppOnlineProject/welcomeLink> [www.movies.ticketplease.com](http://www.movies.ticketplease.com)  
<http://www.makemytrip.com/> <https://www.irc.co.in/eticketing/loginHome.jsf> <http://www.flipkart.com/>  
<http://moodle.com/>  
<http://code.tutsplus.com/tutorials/the-essentials-of-writing-high-quality-javascript--net-15145>  
<http://www.webestools.com/>  
<https://docs.google.com/file/d/0BzsgtY7KuQUXdzgyLURVZ3BuS3c/edit?pli=1>  
[http://sumtotalz.com/TotalAppsWorks/Javascript/JS\\_BasicCalc.html](http://sumtotalz.com/TotalAppsWorks/Javascript/JS_BasicCalc.html)<http://www.javascriptsource.com/miscellaneous/basic-javascript-quiz.html>

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Adobe Dream Weaver CS 3

Help file of Windows Movie Maker

Ivan Bayross, Web Enabled Commercial Application Development Using H T M L , DHTML, javascript, Perl CGI, BPB Publication, New Delhi (2005) JavaScript Tutorial - W3Schools, [www.w3schools.com/js/JavaScriptTutorial](http://www.w3schools.com/js/JavaScriptTutorial), <http://html.net/tutorials/javascript/> JavaScript Tutorial, [www.echoecho.com](http://www.echoecho.com) JavaScript Tutorial, [www.tutorialspoint.com/javascript/LearnJavaScriptProgramming](http://www.tutorialspoint.com/javascript/LearnJavaScriptProgramming), [www.codecademy.com/tracks/javascript](http://www.codecademy.com/tracks/javascript) Open source software and free online tutorials Premier Pro

Software and their Help files used in the manualSQL Server Windows Movies Maker

Tutorials on Dreamweaver, Premier Pro, Java Script, SQL, SQL Server, Movie Maker, onlinereservation system, e-governance, online shopping and bill payments.

Other relevant web sites

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STATE COUNCIL OF EDUCATIONAL RESEARCH & TRAINING  
Varun Marg, Defence Colony, New Delhi - 110024

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