CHAPTER 1

Computer Knowledge

WHAT IS A COMPUTER

A computer is an electronic and programmable device that receives input, stores, manipulates and processes data to provide output in a useful format. It is used to solve problems relating to almost all fields such as administration, defence, education, home, medicine, science and technology, research, designing, accounts, publishing, etc. No doubts, in recent years, Computer and Information Technology (IT), has became an integral part of human life. As computer is an information-processing and information-accessing tool, it accepts some information/data from the outside world, processes those data and produce a new information/ data. Hence, information processing is the essence of computing.

Meaning of the word 'Computer': The word computer has its origin from an English word 'Compute', which means 'to calculate'.

A computer is an advanced electronic device that takes raw data as input from the user and processes this data under the control of set of instructions (called program) and gives the result (output) and saves the output for the future reference and usage.

Computer is an electronic machine which processes the input information/data as per the given set of instructions that is called **'program'.**

CHARACTERISTICS OF COMPUTER

Computer has become an essential part of our day-to-day activities. Computers are used more or less in every sphere of life. Its growing importance is because of its unique features which are as follows.

- **Accuracy :** Computers are very accurate. They do make mistakes but seldom. This is because of their physical circuit. Even if they make mistakes, it might be because of the faulty programs, some mistake made while feeding in the data or poorly designed system. The highly efficient error detecting techniques of the computer prevents it from showing false results.
- **Speed :** The computer was initially invented as a very high speed calculator. This helped in completing many scientific projects that were previously impossible. The landing on the moon would not have been possible if computer had not been there, neither would we take an umbrella if we saw clear sky and weather forecast told us that it would rain in the afternoon. We would have taken a lot of time in making the arrangements for flying abroad if computers were not there to book our seats so easily and fast. This ability to get the answers fast enough so that one has time to take an action on them (to make alternative arrangements in case of reservations) makes real-time computing possible. It uses Electrical pulses, so its speed is virtually instantaneous. When talking about speed of the computer, we don't talk in seconds or microseconds but in nanoseconds (10^{-9} seconds) or even picoseconds (10^{-12} seconds).
- **Versatility :** This means that the computers are capable of performing any type of task, provided the activity could be put into logial steps. It can be used from cooking (microwave oven) to spending a night on the moon (through satellites). In today's world it is difficult to imagine even a single field which is untouched by computer invation.
- **Storage :** A human mind acquires some knowledge and after it has used, it might keep it in its subconscious mind or might even forget it after some time. But computers can store massive amounts of information. This information can be used and reused time and again for years (unless something goes wrong with the hardware). Today's computers have the disks, which have the capacity of storing billions of characters. This is big enough to store the complete Britanica Theasaurus, dozens of computer programs or the applications, thousands of songs, huge databases, all the projects we have ever done in our life and much more.
- **Memory :** Sometimes if we try to recall what we studied last year, we are not able to recollect. In case of computer, it's not like that. If we store any information in the computer's memory, it remains there till we do not delete it.
- **Automation :** A computer is much more than just a calculator in which we need to give the instructions at every step. Once the instructions are fed into computer, it works automatically without any human intervention is an intelligent device and if programmed for an activity, it keeps doing it till it finishes, without any human intervention.
- **Diligence:** Computer being a machine, does not show any signs of fatigue, tiredness, lack of concentration, or lost interest. A computer will never fail to perform its task due to distraction or laziness. The speed, accuracy and the quality would be absolutely same in the first and the last calculation, even if millions of calculations are done by computer. It will not complain even once that they are bored. Thus, it is best specially for monotonous and voluminous work.
- **Reliability :** Above all qualities of the computer make them reliable and also make us too dependent on them. They can be run for years and years without any loss of data or any other problem.

- **Convenience :** Computers are usually easy to access, and allow people to find information easily that without it would be very difficult.
- **Flexibility :** Computers can be used for entertainment, for business, by people who hold different ideals or who have varied goals. Almost anyone can use a computer, and computers can be used to assist with almost any goal.

DEVELOPMENT OF COMPUTERS

• 1600 A.D.– Napier Bones

Another counting device is "Napier Bones". John Napier, a Scottish Mathematician, invented it. The "bones" were strips of ivory with numbers written in them. When the bones were arranged properly, the user could read the numbers in adjacent columns to get the answer of a multiplication operation.

• 1642 A.D.– Adding Machine– Blaise Pascal– France

The well known French Scientist and Mathematician, Blaise Pascal invented the first machine which could add, carry digits automatically. He was only nineteen years old at that time. His machine was so revolutionary that the principle behind it is still used in most of the mechanical counters.

• 1692 A.D. – Multiplying Machine-gottfried Leibnitz- Germany

Gottfried improved upon Pascal's machine and introduced a mechanism to carry out automatic multiplication of numbers. Leibnitz is best known for his work with Sir Isaac Newton in developing a branch of Mathematics, known as Calculus. The calculator invented by him could add, subtract, multiply and divide accurately. It could even perform square root function, although not always accurately.

• 1813 A.D. – Difference Engine – Charles Babbage– England

Since early 19th century, Charles Babbage, an Englishman, had been working on the development of a machine, which could perform complex calculations. In 1813 A.D., he invented the 'Difference Engine' which could perform complex calculations and print them out as well. This machine was a steam powered machine.

• Early 1800's Jacquard Loom-joseph Marie Jacquard

In the early nineteenth century, a French weaver Joseph Marie Jacquard developed a programmable loom, which used large cards and holes punched in them to control the pattern automatically. The output was a thick rich cloth with repetitive floral or geometric patterns.

COMPUTER GENERATIONS

In recent years, the computer industry has grown at a phenomenal pace. In a short time of 35 years or so, computers have improved tremendously. In the last decade, the speed of computer has increased 200 times. Not only that the reliability curve has also taken a sharp increase. The cost per unit of calculating has gone down by 500 times. The storage capacity is increasing so fast that now it seems that nothing is impossible to store. Large data can be stored in very small devices.

The term "generations" was initially introduced to distinguish between different hardware technologies. Gradually it shifted to both hardware and software as the total systems consists of both of them. The computers can be divided in five past generations, depending upon the technologies used. The five generations of computer are:

Ist Generation (1942-1955)

- Until 1951, electronic computers were the exclusive possession of scientists and the military. Till then nobody tried to use them for business purpose. The idea of marketing them was conceived by Mauchy and Eckert, creators of ENIAC. As US census bureau was already using IBCP cards, they were the pioneers in buying this computer for the first time in 1951. The company created by M and ETS became UNIVAC division of Sperry and Corporation.
- The bringing of first UNIVAC (Universal Automatic Computers) general purpose electronic digital computer, marks the beginning of the first generation of electronic computers. These computers used valves and all the components were joined by copper wires. Due to large size of the components and due to the facts that the components had to be spaced apart as the valves dissipated a lot of heat, the computers were very bulky and required huge electric power, airconditioners, maintenance and space for their installation.
- Computers belonging to this generation had the following characteristics:
  1. Comparatively large in size as compared to present day computers.
  2. Generated lot of heat, they were not consistent and reliable as the valves tended to fail frequently.
  3. Low capacity internal storage.
  4. Individual, non-related models.
  5. Processors operated in the speed range of milliseconds.
  6. Internal storage consisted of magnetic drum and relay lines.

2nd Generation (1955-1964)

- First Generation Computers were very unreliable, mainly because of vacuum tubes which kept on burning out. Users had to be prepared all the time with dozen of extra tubes to replace them. The computers of this generation were characterized by the use of solid state devices (transistors) instead of vacuum tubes. Transistorised circuits were smaller, generated little heat, were less expensive and consumed less power than vacuum tube circuits and were much greater in processing capacity.
- Computers of this generation had the following characteristics:
  1. Smaller in size compared to the first generation computers.
  2. Generated a lower level of heat, as components were much smaller.
  3. Greater degree of reliability because of solid state technology.
  4. Higher capacity of internal storage.
  5. Use of core storsage instead of magnetic drum and relay lines.

3rd Generation (1964-1975)

- A revolution in the computer development took place with the development of Integrated Circuits (IC) on a single silicon chip. In 1958, Jack St. Clair Kelby and Robert Noyce invented the first IC. IC incorporated number of transistors and electronic circuits on a single wafer or chip of silicon. IC was called chip because of the way they were made.
  One more technology development which took place was the launching of first telecommunication satellite. The communication stations on the earth were now in a position to send and receive data by means of satellite communications between the computer systems around the world.
- Computers of this generation has the following characteristics:
  1. Smaller in size as compared to second generation computers.
  2. High capacity internal storage.
  3. Remote communication facilities.
  4. Multiprogramming facilities.
  5. Wide range of optional peripherals.

4th Generation (1975-1989)

- The 1970's marked the beginning of a new generation of computers, the development of microprocessor chip which contains an entire Central Processing Unit (CPU) on a single silicon chip led to the mushroom growth of expensive computers. They were not computers by themselves but they can perform all the functions of arthimatic and logic unit and control units of the CPU, memory and input-output devices, they become microcomputers. The semiconductor memories were also very small and very cheap. There were several types of memory chips. Three of the most commonly used are (a) Random Access Memory (RAM) in which data can be read or written corresponding to the main memory of the conventional computer. (b) Read Only Memory (ROM) and (c) Programmable Read Only Memory (PROM).

5th Generation (1989-Present)

- Till fourth generation of computers, the major stress was on improving the hardware from valves to transistors and then to integrated circuits, which resulted in *miniaturization* and fast speed of computers. However, the lack of thinking power has forced the scientists to work further for Fifth generation computers. The concept of "Artificial Intelligence" is being used in these computers and Japanese call them "Knowledge Processors".
- The fifth generation has three functional requirements :
  1. Easy to use computers with high intelligence and *natural* human input and output mechanism.
  2. Reliable and efficient software development by new languages, new computer architectures and systems software which overcome previous problems.
  3. Improved overall functions and performance aimed at making computers smaller, lighter, faster of greater capacity, more flexible and more reliable.

  These are the objectives which set the main themes for the future of computing, whatever techniques are used to achieve them.

CLASSIFICATION OF COMPUTERS

Computers can be classified according to the following types:

Based on Work

Analog

The analog computers are computer systems that measure variations in quantities such as temperature, voltage, speed, etc. Analog computers are used to measure the data that varies continuously. Common examples of analog computers include Voltmeter and Ammeter.

Digital

Digital computers are the computer systems that count things by manipulation of certain discontinuous numbers and letters through representation of binary digits (also called bits) in contrast to analog computers that measures the variations in quantities. In other words, texts and graphics are treated numerically.

Examples of digital computers are desktop, personal computers, workstations, tablet PC, etc.

Hybrid

Hybrid computers as the name suggests are a good mix of analog as well as digital computers, using an analog computer front-end, which is then fed into a digital computer's repetitive process. Hybrid computers are used for scientific calculations and in defence systems.

Based on Purpose

On the basis of purpose, computers are categorised as following:

General Purpose

These computers are designed to work on different types of applications. In these types of computers the programs are not stored permanently, rather programs are input at the time of their execution. Personal computers, including desktops, notebooks, smartphones and tablets, are all examples of general-purpose computers. Various tasks can be accomplished by using general purpose computers. For example, writing and editing (word processing), manipulating different facts and figures in various databases, tracking manufacturing inventory, making scientific calculations, controlling organization's security system, electricity consumption, building temperature, etc.

Special Purpose

Special-Purpose computers are task specific computers and are designed to solve a particular problem. They are also known as dedicated computers, because these computers are dedicated to perform a single particular task repetitively. Examples of such computer systems include the traffic control system, they are also used in video games, navigational systems in an aircraft, weather forecasting, satellite launch tracking, oil exploration, and in automotive industries, keeping time in a digital watch, or Robot helicopter.

Based on Memory Size and Performance

Computers can be generally classified by size and power as follows –

Micro Computer

A microcomputer is a computer that uses a microprocessor as its central processing unit. Microcomputers are physically smaller

in size as compared to mainframe and minicomputers. Many microcomputers when equipped with a keyboard and screen for input and output respectively can be used as personal computers (in the generic sense). Microcomputers are easier to use and also inexpensive as the memory used by them, i.e., microprocessors and semi conductors have become cheaper in the last few years.

E.g. : The various micro computers widely available are IBM pc's, APPLE, mac, etc., the small types of pc's like the palmtop and handheld are now becoming available.

Minicomputer

It is a midsize computer. In the past few years the difference between large minicomputers and small mainframes has decreased significantly, just like the distinction between small minicomputers and workstations. A minicomputer can support upto 200 users at the same time.

E.g. : The various machines widely available are vax series 8200 and 8300, honeywell (xps-100), icl's series 36 level 20,50,60 galaxy-21, hcl-4, nelco-5000 and others.

Mainframe

Mainframe computers known as the "Big Iron" are computers that are used primarily by corporate and governmental organizations. Modern mainframe design is generally defined by the following features:

- High reliability and security.
- Extensive input-output facilities with the ability to offload to separate engines.
- Strict backward compatibility with older version of software.

Supercomputer

Supercomputer is a term used for one of the fastest computers that exist today. They are developed for specialized applications that require processing of highly critical data and immense amounts of mathematical calculations. **E.g. :-** Weather forecasting requires a supercomputer.

- PARAM is a series of supercomputers designed and developed by the Centre for Development of Advanced Computing (C-DAC) in Pune, India. The latest machine in the series is the PARAM Yuva II.
- China's vast Tianhe-2 is the fastest supercomputer in the world.

Personal Computers

Personal Computers are computers that are designed for an individual user. These computers are small and relatively cheaper. In price, personal computers can range anywhere from a few hundred pounds to over five thousand pounds. Personal Computers use the microprocessor technology as they enable manufacturers to put an entire CPU onto one chip. They serve myriad purposes and can be put to use by various businesses for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications. People across the globe use internet for playing games, surfing net and other online applications at their homes and personal use.

Types of Personal Computers

Personal computers can be classified on the basis of its size .There are two basic types of the traditional designs, i.e., the desktop models and tower models. There are several variations on these two basic types also :

- **Tower model :** This model of personal computer refers to a computer in which the power supply, motherboard, and other mass storage devices are stacked on top of each other in a cabinet.
- **Desktop model :** Desktop model means computer that are designed to fit comfortably on top of a desk, with the monitor sitting on top of the computer. Desktop model computers as compared to the tower model are broad and low, whereas tower model computers are narrow and tall.
- **Notebook computer :** Also called ultra book. These are extremely popular because they are very lightweight and portable. Because of their small size, typically less than 6 pounds or lesser than that, they have become so popular. These flat-panel technologies can produce a lightweight and non-bulky display screen. The quality of notebook display screens also differs considerably. Modern notebook computers are very similar to personal computers in terms of computing power.
- **Laptop computer :** Laptop are now a days also called notebook computers. These are small and portable. You can make them sit on your lap and work on them.
- **Subnotebook computer :** Subnotebook computers are portable computers that are even lighter and smaller than a full-sized notebook computer. They are light weight because they use a small keyboard and screen as compared to a notebook computer.
- **Hand-held computer :** These computers are portable enough to be carried in one's hand. They are extremely convenient for use but due to extremely small size of their keyboards and screens they have still not succeeded in to replacing notebook computers.
- **Palmtop :** These computers as the name suggest fit in your palm. Due to extremely small size their use is limited to phone books and calendars .
- **PDA :** PDA's have electronic pens rather than keyboards for inputs unlike laptop. They also incorporate handwriting recognition features and voice recognition technologies, i.e., can also react to voice input. PDAs are also called palmtops, hand-held computers and pocket computers.
- **Smartphones :** Smartphones are cellular phones that function both as a phone and a small PC. They may use a pen or may have a small keyboard. They can be connected to the internet wirelessly. Apple, Samsung, Sony are some manufacturers of smartphones.

COMPONENTS OF COMPUTERS

Following are the various components of a computer system–

Input Unit

Data and instructions must enter the computer system before any computation can be performed on the supplied data. The input unit that links the external environment with the computer system performs this task. An input unit performs the following functions:

- It accepts (or reads) the list of instructions and data from the outside world.
- It converts these instructions and data in computer acceptable format.
- It supplies the converted instructions and data to the computer system for further processing.

Output Unit

The job of an output unit is just the reverse of that of an input unit. It supplied information and results of computation to the outside world. Thus it links the computer with the external environment. As computers work with binary code, the results produced are also in the binary form. Hence, before supplying the results to the outside world, it must be converted to human acceptable (readable) form. This task is accomplished by units called output interfaces.

Following functions are performed by an output unit:

- It accepts the results produced by the computer which are in coded form and hence cannot be easily understood by us.
- It converts these coded results to human acceptable (readable) form.
- It supplied the converted results to the outside world.

Storage Unit

The data and instructions that are entered into the computer system through input units have to be stored inside the computer before the actual processing starts. Similarly, the results produced by the computer after processing must also be kept somewhere inside the computer system before being passed on to the output units. The Storage Unit or the primary / main storage of a computer system is designed to do all these things. It provides space for storing data and instructions, space for intermediate results and also space for the final results.

The specific functions of the storage unit are to store:

- All the data to be processed and the instruction required for processing (received from input devices).
- Final results of processing before these results are released to an output device.

Central Processing Unit

The main unit inside the computer is the CPU. This unit is responsible for all events inside the computer. It controls all internal and external devices, performs "Arithmetic and Logical operations". The operations a Microprocessor performs are called "instruction set" of this processor. The instruction set is "hard wired" in the CPU and determines the machine language for the CPU. The more complicated the instruction set is, the slower the CPU works. Processors differed from one another by the instruction set. If the same program can run on two different computer brands they are said to be compatible. Programs written for IBM compatible computers will not run on Apple computers because these two architectures are not compatible.

Arithmetic and Logic Unit (ALU)

The arithmetic and logic unit (ALU) of a computer system is the place where the actual execution of the instructions take place during the processing of operations. All calculations are performed and all comparisons (decisions) are made in the ALU. The data and instructions, stored in the primary storage prior to processing are transferred as and when needed to the ALU where processing takes place. No processing is done in the primary storage unit. Intermediate results generated in the ALU are temporarily transferred back to the primary storage until needed at a later time. Data may thus move from primary storage to ALU and back again as storage many times before the processing is over. After the completion of processing, the final results which are stored in the storage unit are released to an output device.

Control Unit

The control unit directs and controls the activities of the internal and external devices. It interprets the instructions fetched into the computer, determines what data, if any, are needed, where it is stored, where to store the results of the operation, and sends the control signals to the devices involved in the execution of the instructions.

INPUT DEVICES

Keyboard

Keyboard is used to input the data to the computer. In traditional times the typewriter was used. The keyboard has the layout similar to that of a typewriter but some additional keys are present that have additional functions. The keys are following :

Table : Keys

Sr. No.	Keys	Description
1	**Typing Keys**	These keys include the letter keys (A-Z) and digits keys (0-9) .
2	**Numeric Keypad**	It is used to enter numeric data or cursor movement. It has a set of 17 keys that are in the same layout as that of calculators.
3	**Function Keys**	There are twelve functions keys present on the keyboard. These are arranged in a row along the top of the keyboard. Each function key has unique meaning and is used for some specific purpose.
4	**Control Keys**	These keys are used to provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down, Control(Ctrl), Alternate(Alt), Escape(Esc).
5	**Special Purpose Keys**	Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.

Mouse

Mouse is a cursor-control device. It is a pointing and drop device. Its size is good enough to fit the palm. It has a palm size box with a round ball at its base. It senses the movement of mouse and sends corresponding signals to CPU on pressing of the buttons. There are two buttons that provide the left click and the right click. A scroll bar is present in the mid. Mouse is only used to control the position of cursor on screen.

Scanner

Scanner is an input device, which works on a similar principle of a photocopy machine. It is used when some information is available on a paper and it is to be transferred to the hard disk of the computer for further manipulation.

Touch Screen

A touch screen is an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen and-or one or more fingers. Some touch screens use an ordinary or specially coated gloves to work while others use a special stylus/pen only.

Magnetic Ink Character Recognition (MICR)

We see in banks, libraries, etc using MICR as an input device. As large number of cheques are processed everyday MICR serves a very useful purpose. A special type of ink that contains particles of magnetic material that is machine readable, is used to read the code number and cheque number that are printed on the cheques in banks. This reading process is called Magnetic Ink Character Recognition (MICR). The main advantage of MICR is that it is highly accurate and fast in reading.

OMR (Optical Mark Recognition)

Optical mark recognition (also called Optical Mark Reading and OMR) is the process of capturing human-marked data from document forms such as surveys and test.

SCR (Smart Card Readers)

A small electronic device about the size of a credit card that contains electronic memory, and possibly an embedded Integrated Circuit (IC). Smart cards containing an IC are sometimes called Integrated Circuit Cards (ICCs).

Bar Code Readers

Bar Code Reader is a device used for reading bar coded data (data in form of light and dark lines). Bar coded data is generally used in labelling goods, numbering the books, etc. Bar Code Reader scans a bar code image by converting it into an alphanumeric values. This value is then fed to the computer to which bar code reader is connected.

Webcam

A webcam is a video camera that feeds or streams its image in real time to or through a computer to computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and email as an attachment. When sent to a remote location, the video stream may be saved, viewed or on sent there. Unlike an IP camera (which connects using Ethernet or Wi-Fi), a webcam is generally connected by a USB cable, or similar cable, or built into computer hardware, such as laptops.

OUTPUT DEVICES

An output device is that component of computer hardware that communicates the results of data that is processed by the computer and converts the digital information into a form easily read and understood by humans. Various Output devices are used in Computers.

Monitors

Monitor or the Visual Display Unit (VDU) is the main output device of a computer. It forms images in the form of tiny dots, known as pixels. The sharpness of the image can be determined by the number of the pixels.

Printers

Printer is among the most common output device, which is used to print information on paper.

There are two types of printers:

(a) Impact Printers: An impact printer makes contact with the paper. It generally forms the image by pressing an inked ribbon against the paper using a hammer or pins. Various types of impact printers are as follows:

- **Dot-Matrix Printers:** The dot-matrix printer uses print heads which contains 9 to 24 pins. These pins produce patterns of dots on the paper to form the individual characters. The general rule is the more pins, the clearer the letters on the paper. Dot-matrix printers are inexpensive and typically print at speeds of 100-600 characters per second.
- **Daisy-Wheel Printers:** It is called daisy-wheel printer because the print mechanism looks like a daisy; at the end of each "Petal" is a fully formed character which produces solid-line print. Its speed is slow typically 25-55 characters per second.
- **Line Printers:** In business functions where a large amount of material are printed, the character-at-a-time printers are too slow; therefore, such users need line-at-a-time printers. Drum, chain, and band printers are line-at-a-time printers:

➢ **Drum Printer:** A drum printer consists of a solid, cylindrical drum that has raised characters in bands on its surface. The number of print positions across the drum equals the number available on the page. This number typically ranges from 80-132 print positions. The drum rotates at a rapid speed. For each possible print position there is a print hammer located behind the paper. These hammers strike the paper, along the ink ribbon, against the proper character on the drum as it passes. One revolution of the drum is required to print each line. Typical speeds of drum printers are in the range of 300 to 2000 lines per minute.

➢ **Chain Printers:** A chain printer uses a chain of print characters wrapped around two pulleys. Like the drum printer, there is one hammer for each print position. The circuit inside the printer detects when the correct character appears at the desired print location on the page. The hammer then strikes the page, pressing the paper against a ribbon and the character located at the desired print position. An impression of the character is left on the page. The chain keeps rotating until all the required print positions on the line have filled. Then the page moves up to print the next line. Speeds of chain printers range from 400 to 2500 characters per minute.

➢ **Band Printers:** A band printer operates similar to chain printer except it uses a band instead of a chain and has fewer hammers. Band printer has a steel band divided into five sections of 48 characters each. The hammers on a band printer are mounted on a cartridge that moves across the paper to the appropriate positions. Characters are rotated into place and struck by the hammers. Font styles can easily be changed by replacing a band or chain.

(b) Non-impact Printers: Non-impact printers do not use a striking device to produce characters on the paper; and since these printers do not hammer against the paper, they are much quieter. Following are some non-impact printers:

- **Ink-jet Printers:** Ink-jet printers work in the same fashion as dot-matrix printers in the form of images or characters with little dots. However, the dots are formed by tiny droplets of ink. Ink-jet printers form characters on paper by spraying ink from tiny nozzles through an electrical field that arranges the charged ink particles into characters at the rate of approximately 250 characters per second. The ink is absorbed into the paper and dries instantly. Various colors of ink can also be used.
- **Laser Printers:** A laser printer works like a photocopy machine. Laser printers produce images on paper by directing a laser beam at a mirror which bounces the beam onto a drum. The drum has a special coating on it to which toner (an ink powder) sticks. Using patterns of small dots, a laser beam conveys information from the computer to a positively charged drum to become neutralized. From all those areas of drum which become neutralized, the toner detaches. As the paper rolls by the drum, the toner is transferred to the paper printing the letters or other graphics on the paper. A hot roller bonds the toner to the paper.

SOFTWARE

Software is a set of programs, which is designed to perform a well defined function. A program is a sequence of instructions written to solve a particular problem.

Software includes the computer operating system and other computer programs which run. Software is written in a High level language (such as Basic, C, Java, or others) by programmers. The High level language is in a text format and can be read by a person although if he/she do not understand the structure and rules of the language. Once a program is written, an operation is performed on it which is called compiling.

Types of Software

There are two types of software:

(a) System Software: The system software is collection of programs designed to operate, control, and extend the processing capabilities of the computer itself. System softwares are generally developed by computer manufacturers. These software products comprise of programs written in low-level languages which interact with the hardware at a very basic level. System software serves as the interface between hardware and the end users.

Some examples of system software are Operating Systems, Compilers, Interpreters, Assemblers, etc.

(b) Application Software: Application software products are developed to satisfy a particular need of a particular environment. All software applications prepared in the computer lab can come under the category of application software.

Application software may consist of a single program, such as a Microsoft's notepad for writing and editing simple text. Examples of application software are Payroll Software, Student Record Software, Inventory Management Software, Income Tax Software, etc.

Microsoft Office: An Introduction

Microsoft Office, also called MS-Office, is an office suite of applications, servers, and services developed by Microsoft. It was first announced by Bill Gates on 1 August 1988, at COMDEX in Las Vegas. Initially a marketing term for a bundled set of applications, the first version of Office contained Microsoft Word, Microsoft Excel, and Microsoft PowerPoint.

The current desktop version is Office 2016 for Windows and OS X, released on 22 September 2015 and 9 July 2015, respectively.

Main Components of MS-Office

The main components of MS-Office which are generally used are as follows:

(a) MS-Word: Word Processing

Microsoft Word is a full-featured word processing program for writing and editing text documents. Word includes tools that let multiple users share information and collaboratively edit documents. Word is included in every edition of Microsoft Office.

(b) MS-Excel: Spreadsheet Analysis

Microsoft Excel is a spreadsheet program used for tasks such as creating budgets, tracking data, and creating charts and graphs. With Excel, you create what Microsoft calls a Workbook, which can contain any number of individual worksheets. Users can copy or export the graphs and charts created in Excel to Word, PowerPoint, or Publisher or OneNote. Excel is included in every edition of Microsoft Office 2007.

(c) MS-PowerPoint: Presentation Software

Microsoft PowerPoint is Microsoft's presentation software, used for creating slide show presentations. Users can import graphs and charts from Excel or text from Word, or use PowerPoint's own tools for creating slide text and graphics. The program also has the capacity to add special effects like fade-ins or fade-outs between slides, as well as audio and video. PowerPoint is included in every edition of Microsoft Office 2007.

(d) MS-Outlook: Email and Personal Contacts Manager

Microsoft Outlook is Microsoft's e-mail client, and it also includes a calendaring program, address book and contact organizer, and task list. With Outlook, you can manage any number of e-mail addresses and create personal mailing lists.

(e) MS-Publisher: Design

Microsoft Publisher is Microsoft's solution for home and business users who want to create posters, flyers, letterhead, brochures or other marketing materials. Publisher simplifies the design process by including a number of predefined color schemes, page borders, as well as clip art and templates for popular types of publications like bake sale flyers, calendars, and personal stationery.

(f) MS-Access: Database and Form Design

Microsoft Access lets users work with data by creating databases, data entry forms and queries. Access can be used as a standalone database program or to interface with Microsoft SQL Server databases. Access is included with Microsoft Office Professional, Professional Plus, Ultimate and Enterprise.

(g) Specialized Office Components

Some of the improved versions of Microsoft Office include extra programs designed to help customers with specific needs, like small business owners. Some of these programs are - Accounting Express, which is a financial accounting package aimed at small business owners; Groove 2007, a collaboration tool for users who work collaboratively from different physical locations or offline; InfoPath 2007, a forms-creation tool for business users and developers; Communicator 2007, which is a communications client used for Internet-based audio and video conferencing; and, finally, OneNote, which serves as a virtual notebook to store text, graphics, Web links or other information organized by topic, subject or project.

IMPORTANT SHORTCUT KEYS IN MS-WORD

Shortcut	Description
Ctrl + A	Select all contents of the page.
Ctrl + B	Bold highlighted selection.
Ctrl + C	Copy selected text.
Ctrl + D	Open the font preferences window.
Ctrl + E	Aligns the line or selected text to the center of the screen.
Ctrl + F	Open find box.
Ctrl + I	Italic highlighted selection.
Ctrl + J	Aligns the selected text or line to justify the screen.
Ctrl + K	Insert a hyperlink.
Ctrl + L	Aligns the line or selected text to the left of the screen.
Ctrl + M	Indent the paragraph.
Ctrl + N	Opens new, blank document window.
Ctrl + O	Opens the dialog box or page for selecting a file to open.
Ctrl + P	Open the print window.
Ctrl + R	Aligns the line or selected text to the right of the screen.
Ctrl + S	Save the open document. Just like Shift + F12.
Ctrl + T	Create a hanging indent.
Ctrl + U	Underline the selected text.
Ctrl + V	Paste.
Ctrl + W	Close the currently open document.
Ctrl + X	Cut selected text.
Ctrl + Y	Redo the last action performed.
Ctrl + Z	Undo last action.
Ctrl + Shift + L	Quickly create a bullet point.
Ctrl + Shift + F	Change the font.
Ctrl + Shift + >	Increase selected font +1pts up to 12pt and then increase font +2pts.
Ctrl +]	Increase selected font +1pts.
Ctrl + Shift + <	Decrease selected font -1pts if 12pt or lower; if above 12, decreases font by +2pt.
Ctrl + [	Decrease selected font -1pts.
Ctrl + / + c	Insert a cent sign (¢).
Ctrl + ' + <char>	Insert a character with an accent (grave) mark, where <char> is the character you want. For example, if you wanted an accented è you would use Ctrl + ' + e as your shortcut key. To reverse the accent mark use the opposite accent mark, often on the tilde key.
Ctrl + Shift + *	View or hide non printing characters.
Ctrl + <left arrow>	Moves one word to the left.
Ctrl + <right arrow>	Moves one word to the right.
Ctrl + <up arrow>	Moves to the beginning of the line or paragraph.
Ctrl + <down arrow>	Moves to the end of the paragraph.
Ctrl + Del	Deletes word to right of cursor.
Ctrl + Backspace	Deletes word to left of cursor.
Ctrl + End	Moves the cursor to the end of the document.
Ctrl + Home	Moves the cursor to the beginning of the document.
Ctrl + Spacebar	Reset highlighted text to the default font.
Ctrl + 1	Single-space lines.
Ctrl + 2	Double-space lines.
Ctrl + 5	1.5-line spacing.
Ctrl + Alt + 1	Changes text to heading 1.
Ctrl + Alt + 2	Changes text to heading 2.
Ctrl + Alt + 3	Changes text to heading 3.
Alt + Ctrl + F2	Open new document.
Ctrl + F1	Open the Task Pane.
Ctrl + F2	Display the print preview.
Ctrl + Shift + >	Increases the selected text size by one.
Ctrl + Shift + <	Decreases the selected text size by one.
Ctrl + Shift + F6	Switches to another open Microsoft Word document.
Ctrl + Shift + F12	Prints the document.
F1	Open Help.
F4	Repeat the last action performed (Word 2000+)
F5	Open the Find, Replace, and Go To window in Microsoft Word.
F7	Spellcheck and grammar check selected text or document.
F12	Save As.
Shift + F3	Change the text in Microsoft Word from uppercase to lowercase or a capital letter at the beginning of every word.
Shift + F7	Runs a Thesaurus check on the selected word.
Shift + F12	Save the open document. Just like Ctrl + S.
Shift + Enter	Create a soft break instead of a new paragraph.
Shift + Insert	Paste.
Shift + Alt + D	Insert the current date.
Shift + Alt + T	Insert the current time.

IMPORTANT SHORTCUT KEYS IN MS-EXCEL

Shortcut	Description
F2	Edit the selected cell.
F3	After a name has been created, F3 will paste names.
F4	Repeat last action. For example, if user changed the color of text in another cell, pressing F4 will change the text in cell to the same color.
F5	Go to a specific cell. For example, C6.
F7	Spell check selected text or document.
F11	Create chart from selected data.
Ctrl + Shift + ;	Enter the current time.
Ctrl + ;	Enter the current date.
Alt + Shift + F1	Insert New Worksheet.
Alt + Enter	While typing text in a cell, pressing Alt + Enter will move to the next line, allowing for multiple lines of text in one cell.

Shift + F3	Open the Excel formula window.
Shift + F5	Bring up search box.
Ctrl + 1	Open the Format Cells window.
Ctrl + A	Select all contents of the worksheet.
Ctrl + B	Bold highlighted selection.
Ctrl + I	Italic highlighted selection.
Ctrl + K	Insert link.
Ctrl + S	Save the open worksheet.
Ctrl + U	Underline highlighted selection.
Ctrl + P	Bring up the print dialog box to begin the printing process.
Ctrl + Z	Undo last action.
Ctrl + F3	Open Excel Name Manager.
Ctrl + F9	Minimize current window.
Ctrl + F10	Maximize currently selected window.
Ctrl + Page up	Move between work sheets in the same document.
Ctrl + Page down	Move between work sheets in the same document.
Ctrl + Tab	Move between Two or more open Excel files.
Alt + =	Create a formula to sum all of the above cells.
Ctrl + ‘	Insert the value of the above cell into the cell currently selected.
Ctrl + Arrow key	Move to next section of text.
Ctrl + Space	Select entire column.
Shift + Space	Select entire row.
Ctrl + -	Delete the selected column or row.
Ctrl + Shift + =	Insert a new column or row.
Ctrl + Home	Move to cell A1.

MS ACCESS : SHORTCUTS

The following is a list of general shortcuts or hotkeys in Access :

Key Sequence	Description
F1	Display the Microsoft Access Help. This may be context-sensitive help depending on what you are positioned on.
F11	Display the Database window.
F12	Open the Save As dialog box.
CTRL+N	Open a new database.
CTRL+O	Open an existing database.
CTRL+P	Print the current or selected object.
CTRL+S	Save the current database object.
CTRL+W	Close the active window.
ALT+SPACEBAR	Display the Control menu.
ALT+F11	Toggle between the Visual Basic editor and the Access Database window.
SHIFT+F10	Display the shortcut menu (ie: popup menu).

MS– POWER POINT: SHORTCUTS

Shortcut Keys	Description
F5	View the Slide Show
Shift + Ctrl + Home	Selects all text form the cursor to the sart of the active text box
Shift + Ctrl + End	Selects all text form the cursor to the end of the active text box
Spacebar or click the mouse	Moves to next slide or next animation
S	Stop the show press S again to restrat the show
Esc	End the side show
Ctrl + A	Select all items on the page or the active text box
Ctrl + B	Applies bold to the select text
Ctrl + D	Duplicates the selected object
Ctrl + F	Opens the find dialog box
Ctrl + G	Opens the grids and guies dialog box
Ctrl + H	Opens the replace dialog box
Ctrl + I	Applies Italics to the selected text
Ctrl + M	Inserts a new slide
Ctrl + N	Opens a new blank presentations
Ctrl + O	Opens the open dialog box
Ctrl + T	Opens the font dialog box
Ctrl + U	Applies underlining to the selected text Paste
Ctrl + V	Paste
Ctrl + W	Closes the presentation
Ctrl + Y	Repeats the last comand entered
Home	Moves cursor to beginning of current line of text
End	Moves cursor to end of current line of text
Ctrl + Home	Moves cursor in beginning of presentations
Ctrl + End	Moves cursor to end of presentation
Shift + Click each side	Selects more than one slide in a presentation
Shift + F1	Help

HARDWARE

The term 'Computer Hardware' is used for the physical parts or components of a computer, such as the monitor, printers, mouse, keyboard, CD-Drive, Hard Disk Drive (HDD), graphic cards, sound cards, Random Access Memory (RAM), motherboard and so on, all of which are tangible physical objects.

Types of Hardware

Computer hardware can be divided into many different parts. The most important types of computer hardware are motherboard, random access memory, basic input-output system, power supply, video display controller, computer bus and hard disk. Another most important type of computer hardware is Central Processing Unit (CPU). CPU seeks the software commands and interprets and process data. Random access memory is the key component which allows the data to be reached in any form. Next is the basic input-output system, which loads and runs the software. Video display controller helps in the logical conversion of the visual data in order to run a signal to be used by display medium. Computer bus is used to transfer the data within the computer or with other computers. Hard disk is a storage device that stores data on a magnetic surface, placed on hard disk platters.

PROGRAMMING LANGUAGES

A programming language is a set of commands, instructions, and other syntax used to create a software program. Languages that programmers use to write code are called “high-level languages.” This code can be compiled into a “low-level language,” which is recognized directly by the computer hardware.

(a) Low Level Languages : Low level computer languages are machine codes or close to it. Computer cannot understand instructions given in high level languages or in English. It can only understand and execute instructions given in the form of machine language, i.e., language of 0 and 1. There are two types of low level languages:

I. **Machine Language :** The set of instructions executed directly by a computer's Central Processing Unit (CPU) is called Machine code. In machine language each and every instruction performs specific operation. The machine code is in the form a numerical code (i.e., not assembly code) and is the lowest-level representation of a compiled and/or assembled computer program. Machine language is also called as a primitive and hardware-dependent programming language.

II. **Assembly Language :** A personal computer has a microprocessor of its own that manages the computer's arithmetical, logical and control activities. All these operations are managed through a set of instructions by each family of processors. These operations are handled by getting input from keyboard and displaying information on screen and performing various other jobs. These set of instructions are called machine language instructions.

(b) **High-Level Language :** High-level programming languages allowed the specification of writing a program closer to those used by human beings. With the advent of high level languages, programming became far easier, less error-prone and also removed the programmer from having to know the details of the internal structure of a particular computer. Fortran II was one of the first high level language introduced in about 1958.

Table : High Level Languages

Language	Application Area	Developer
COBOL(Common Business Oriented Language)	Business applications	Grace Hopper in 1959
FORTRAN (Formula Translation)	Engineering & Scientific Applications	IBM in 1957
PASCAL	General use and as a teaching tool	Niklaus Wirth in 1972
C & C++	General Purpose - currently most popular	C was developed by Dennis Ritchie in 1972, C++ was developed by Bjarne Stroustrup in 1983.
LISP (List Processing)	Artificial Intelligence	John Mc Carthy in 1958
JAVA	General Purpose - Internet Oriented Programming	James Gosling in 1995

4GL and 5 GL

4GL and 5GL represent the leaps or the "generations" in the evolution of programming languages.

- 1GL or first-generation language was (and still is) the machine language generation. It refers to the level of instructions and data that is fed to the processor of a computer (which in conventional computers is a string of 0s and 1s).
- 2GL or second-generation language is the assembly language generation. An assembler converts the assembler language statements into machine language.
- 3GL or third-generation language is a "high-level" programming language, such as C/C++ or Java.
- A 4GL or fourth generation (programming) language is a grouping of programming languages that attempt to get closer than 3GLs to human language, form of thinking and conceptualisation. 4th generation language, is known as the domain specific language, or a high productivity language.
- 5GL or fifth-generation language is a programming language that has a visual or graphical development interface to develop the source code but compiled with a 3GL or 4GL language compiler. There are several business corporations that make these languages such as the Microsoft, Borland, IBM, etc.

OPERATING SYSTEM

The operating system is the core software component of the computer. It performs many functions and is in very basic terms an interface between your computer and the outside world. A computer can be described as combination of several components including your monitor, keyboard, mouse and other parts. The operating system provides an interface to these parts using what is referred to as "drivers". This is why sometimes when you install a new printer or other piece of hardware, your system will ask you to install more software called a 'driver'.

Types of Operating System

Following are the important types of operating systems which are most commonly used:

(a) **Batch Operating System:** The users of batch operating system do not interact with the computer directly. Each user prepares his job on an off-line device like punch cards and submits it to the computer operator. To speed up processing, jobs with similar needs are batched together and run as a group. Thus, the programmers left their programs with the operator. The operator then sorts programs into batches with similar requirements.

Disadvantages of Batch Systems

- Lack of interaction between the user and job.
- CPU is often idle, because the speed of the mechanical I/O devices is slower than CPU.
- Difficult to provide the desired priority.

(b) **Time-sharing Operating Systems:** Time-sharing is a technique which enables many people located at various terminals to use a particular computer system at the same time. Time-sharing or multitasking is a logical extension of multiprogramming. Processor's time which is shared among multiple users simultaneously is termed as time-sharing. The main difference between Multi-programmed Batch Systems and Time-Sharing Systems is that in case of Multi-programmed batch systems, objective is to maximize processor use, whereas in Time-Sharing Systems objective is to minimize response time.

Multiple jobs are executed by the CPU by switching between them, but the switching occurs so frequently such that the user can receive an immediate response. For example, in a transaction processing, processor executes each user program in a short burst or quantum of computation. That is if n users are present, each user can get time quantum. When the user submits the command, the response time is in few seconds at most.

Operating system uses CPU scheduling and multi-programming to provide each user a small portion of time. Computer systems that were designed primarily as batch systems have been modified to time-sharing systems.

Advantages of Time-Sharing Operating Systems

- Provide quick response.
- Avoids software piracy.
- Reduces CPU idle time.

Disadvantages of Time-sharing Operating Systems

- Problem of reliability.
- Question of security and integrity of user programs and data.
- Problem of data communication.

(c) Distributed Operating Systems: Distributed systems use multiple central processors to serve multiple real time application and multiple users. Data processing jobs are distributed among the processors accordingly to which one can perform each job most efficiently.

The processors communicate with one another through various communication lines (such as high-speed buses or telephone lines). These are referred as loosely coupled systems or distributed systems. Processors in a distributed system may vary in size and function. These processors are referred as sites, nodes, computers and so on.

Advantages of Distributed Systems

- With resource sharing facility user at one site may be able to use the resources available at another site.
- Speedup the exchange of data with one another via electronic mail.
- If one site fails in a distributed system, the remaining sites can potentially continue operating.
- Better service to the customers.
- Reduction of the load on the host computer.
- Reduction of delays in data processing.

(d) Network Operating System: Network Operating System runs on a server and provides server the capability to manage data, users, groups, security, applications, and other networking functions. The primary purpose of the network operating system is to allow shared file and printer access among multiple computers in a network, typically a Local Area Network (LAN), a private network or to other networks. Examples of network operating systems are Microsoft Windows Server 2003, Microsoft Windows Server 2008, UNIX, Linux, Mac OS X, Novell NetWare, and BSD.

Advantages of Network Operating Systems

- Centralized servers are highly stable.
- Security is server managed.
- Upgrades to new technologies and hardware can be easily integrated into the system.
- Remote access to servers is possible from different locations and types of systems.

Disadvantages of Network Operating Systems

- High cost of buying and running a server.
- Dependency on a central location for most operations.
- Regular maintenance and updates are required.

(e) Real Time Operating Systems: Real time system is defined as a data processing system in which the time interval required to process and respond to inputs is so small that it controls the environment. Real time processing is always online whereas online system need not be real time. The time taken by the system to respond to an input and display of required updated information is termed as response time. So in this method response time is very less as compared to the online processing.

Real-time systems are used when there are rigid time requirements on the operation of a processor or the flow of data and real-time systems can be used as a control device in a dedicated application. Real-time operating system has well-defined, fixed time constraints otherwise system will fail. For example, Scientific experiments, medical imaging systems, industrial control systems, weapon systems, robots, and home-appliance controllers, Air traffic control system, etc.

There are two types of real-time operating system:

- **Hard Real-time Systems:** Hard real-time systems guarantee that critical tasks complete on time. In hard real-time systems secondary storage is limited or missing with data stored in ROM. In these systems virtual memory is almost never found.
- **Soft Real-time Systems:** Soft real time systems are less restrictive. Critical real-time task gets priority over other tasks and retains the priority until it completes. Soft real-time systems have limited utility than hard real-time systems. For example, Multimedia, virtual reality, Advanced Scientific Projects like undersea exploration and planetary rovers, etc.

They include from most recent to the oldest:

- **Windows XP Professional Edition:** A version used by many businesses at workstations. It has the ability to become a member of a corporate domain.
- **Windows XP Home Edition:** A lower cost version of Windows XP which is for home use only and should not be used in a business.
- **Windows 2000:** A better version of the Windows NT operating system which works well both at home and as a workstation in a business. It includes technologies which allow hardware to be automatically detected and other enhancements over Windows NT.
- **Windows ME:** An upgraded version from Windows 98 but it has been historically plagued with programming errors which may be frustrating for home users.
- **Windows 98:** This was produced in two main versions. The first Windows 98 version was plagued with programming errors but the Windows 98 Second Edition which came out later was much better with many errors resolved.
- **Windows NT:** A version of Windows made specifically for businesses offering better control over work station capabilities to help network administrators.
- **Windows 95:** The first version of Windows after the older Windows 3.x, versions offering a better interface and better library functions for programs.

There are other worthwhile types of operating systems not made by Microsoft. The greatest problem with these operating systems lies in the fact that not as many application programs are written for them. However, if you can get the type of application programs you are looking for, one of the systems listed below may be a good choice.

- **Unix:** A system that has been around for many years and it is very stable. It is primarily used as a server rather than a workstation and should not be used by anyone who does not understand the system. It can be difficult to learn, Unix must normally run on a computer made by the same company that produces the software.
- **Linux:** Linux is similar to Unix in operation but it is free. It also should not be used by anyone who does not understand the system and can be difficult to learn.
- **Apple Macintosh :** Most recent versions are based on Unix but it has a good graphical interface so it is both stable (does not crash often or have as many to learn). One drawback to this system is that it can only be run on Apple produced hardware.

- **Windows XP:** An operating system, sometimes called an "OS", is the main program the computer used to function properly. Operating systems act as a link between you, the user, and the programs you use on a computer. Different types of computers use different types of operating systems. The majority of computers used either run Microsoft Windows or MacOS. While files can be shared between these two types of systems. they are generally incompatible.
- **Embedded Operating System :** An embedded system is a computer that is part of a different kind of machine. Examples include computers in cars, traffic lights, digital televisions, ATMs, airplane controls, Point of Sale (POS) terminals, digital cameras, GPS navigation systems, elevators, digital media receivers and smart meters, among many other possibilities.

COMPUTER NETWORKS

A computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users.

Types of Computer Networks

- **Personal Area Network (PAN) :** A Personal Area Network or simply PAN, is smallest network which is very personal to a user. This may include Bluetooth enabled devices or infra-red enabled devices. PAN has connectivity range up to 10 meters.
- **Local Area Network (LAN) :** A computer network spanned inside a building and operated under single administrative system is generally termed as Local Area Network. Usually, Local Area Network covers an organization such as offices, schools, college/universities, etc. Number of systems may vary from as least as two to as much as 16 million. LAN provides a useful way of sharing resources between end users. Resources like Printers, File Servers, Scanners and internet is easy sharable among computers.
- **Metropolitan Area Network (MAN) :** MAN, generally expands throughout a city such as cable TV network. It can be in form of Ethernet, Token-ring, ATM or FDDI. Metro Ethernet is a service which is provided by ISPs. This service enables its users to expand their Local Area Networks. For example, MAN can help an organization to connect all of its offices in a City. Backbone of MAN is high-capacity and high-speed fiber optics.
- **Wide Area Network (WAN) :** As name suggests, this network covers a wide area which may span across provinces and even a whole country. Generally, telecommunication networks are Wide Area Network. These networks provides connectivity to MANs and LANs. Equipped with very high speed backbone, WAN uses very expensive network equipment.
- **Virtual Private Network (VPN) :** VPN is a network that is constructed by using public wires usually the Internet to connect to a private network, such as a company›s internal network.
- **Internetwork :** A network of networks is called internetwork, or simply Internet. It is the largest network in existence on this planet. Internet hugely connects all WANs and it can have connection to LANs and Home networks. Internet uses TCP/IP protocol suite and uses IP as its addressing protocol. Present day, Internet is widely implemented using IPv4. Because of shortage of address spaces, it is gradually migrating from IPv4 to IPv6.
  - **Computer Network Topologies :** Topology can be referred as the physical arrangement of a computer system. Each computer system in a topology is known as node. In a fully connected network with n nodes, there are n(n-1)/2 direct links.
  - **Bus Topology :** In contrast to point-to-point, in bus topology all device share single communication line or cable. All devices are connected to this shared line. Ethernet is commonly known protocol in networks connected in bus topology.
- **Ring Topology :** In ring topology, each host machine connects to exactly two other machines, creating a circular network structure. This topology uses the token ring protocol for controlling access. Each workstation is connected to two other components on either side, and it communicates with these two adjacent neighbours. Data travels around the network, in one direction. Sending and receiving of data takes place by the help of TOKEN.
- **Star Topology :** In Star topology, all the components of network are connected to the central device called “hub” which may be, a router or a switch. All the data on the star topology passes through the central device before reaching the intended destination. Hub acts as a junction to connect different nodes present in Star Network, and at the same time it manages and controls whole of the network. Depending on which central device is used, “hub” can act as repeater or signal booster.
- **Mesh Topology :** In this type of topology, a host is connected to one or two or more than two hosts. This topology may have hosts having point-to-point connection to every other hosts or may also have hosts which are having point to point connection to few hosts only.
- **Tree Topology :** Also known as Hierarchical Topology is the most common form of network topology in use present day. This topology imitates as extended Star Topology and inherits properties of Bus topology.
- **Hybrid Topology :** A network structure whose design contains more than one topology is said to be Hybrid Topology. Hybrid topology inherits merits and demerits of all the incorporating topologies.

DATABASE MANAGEMENT SYSTEM (DBMS)

Database Management Systems (DBMS) are specially designed software which is used to create and maintain a database. It acts as an interface between users and a database or multiple databases. DBMS is comprised of tables that made up of rows called records and columns called fields.

Some of the Database Management system are

(1) **Microsoft Access :** This is the database management system developed by Microsoft. It stores data in its own format based on the Access Jet Database Engine. It also has the facilities like importing or linking directly to data stored in other databases and applications.

(2) **MySQL :** MySQL is open source database management system, one of the most popular dbms on the web. It is reliable, fast and flexible also.

(3) **Oracle :** Developed by Oracle corporation. It is object relational database management system. The original version of Oracle software was developed by Software Development Laboratories (SDL). Oracle is regarded to be one of the safest DBMS.

(4) **Microsoft SQL Server :** Microsoft developed this relational database server. The primary function of this software is to store and retrieve the data as requested by other applications, whether those applications are on the same computer or running on other computers across the network (including internet).

Components of Database System

The database system can be divided into four components:

- **Users :** Users may be of various type such as Database Administrator, System developer and End users.
- **Database application :** Database application may be Personal, Departmental,Enterprise and internal.
- **DBMS :** Software that allow users to define, create and manages databaseaccess. Ex : Mysql, Oracle, etc.
- **Database :** Collection of logical data.

Database Model

A Database model defines the logical design of data. The model describes the relationships between different parts of the data. In history of database design, three models have been in use.

(i) **Hierarchical Model :** In this model, each entity has only one parent but can have several children. At the top of hierarchy there is only one entity which is called Root.

(ii) **Network Model :** In the network model, entities are organised in a graph, in which some entities can be accessed through several path.

(iii) **Relational Model :** In this model, data is organised in two-dimensional tables called relations. The tables or relation are related to each other.

Entity Relationship Model

E-R model is a very popular conceptual data model which is used to develop conceptual design of databases. This data model describes or perceives the real world data in form of entities.

The E-R Model: The enterprise is viewed as set of

- Entities
- Relationships among entities

Symbols used in E-R Diagram

- Entity – rectangle
- Attribute – oval
- Relationship – diamond
- Link - line

ENTITY : It is a basic unit of E-R model which is an object or a thing in real world having independent existence. An entity may be concrete and a physical existence (e.g., person, place) or it can be abstractor conceptual existence like loan, course. Entity is an object that is involved in the enterprise and that be distinguished from other objects.

- Can be person, place, event, object, concept in the real world
- Can be physical object or abstraction
- Ex: "John", "CSE305"

ENTITY SET : It is a collection of entities of a particular entity type at any point of time. For example, a firm is having many employees, these are defined as entities(e1, e2, e3, ...en) and all these entities are having same attributes under entity type employee. The set of students (e1, e2, e3……) is entity set.

Value Set or Domain Values : A set of possible values that can be assigned to a given attribute in individual entity. For example, the attribute employee name in employee entity type can have character data and integer value. Hence the values in this attribute will be a non-integer domain.

Entity Type : It is the set of similar objects or a category of entities; they are well defined.

- A rectangle represents an entity set.
- For example : ***students***, ***courses.***
- We often just say "entity" and mean "entity type".

Attribute : It describes one aspect of an entity type; usually [and best when] single valued and indivisible (atomic)

- Represented by oval on E-R diagram.
- For example, *name, maximum enrollment*
- May be **multi-valued** – use double oval on E-R diagram.
- May be **composite** – attribute has further structure; also use oval for composite attribute, with ovals for components connected to it by lines.
- May be **derived** – a virtual attribute, one that is computable from existing data in the database, use dashed oval. This helps reduce redundancy.

Functions of DBMS

- Provides data independence.
- Concurrency Control.
- Provides Recovery services.
- Provides Utility services.
- Provides a clear and logical view of the process that manipulates data.

Advantages of DBMS

- Segregation of application program.
- Minimal data duplicacy.
- Easy retrieval of data
- Reduced development time and maintenance need.

Disadvantages of DBMS

- Complexity.
- Costly.
- Large in size.

Relational Database Management System (RDBMS)

RDBMSs have become a predominant choice for the storage of information in new databases used for financial records, manufacturing and logistical information, personnel data, and much more since the 1980s. Relational databases have often replaced legacy of hierarchical databases and network databases because they are easier to understand and use. However, relational databases have been challenged by object databases, which were introduced in an attempt to address the object-relational impedance mismatch in relational database, and XML databases.

ABBREVIATIONS

AAC : Advanced Audio Coding (audio compression format defined by the MPEG-2 standard)
ABI : Application Binary Interface
ABR : Area Border Router
ABR : Available Bit Rate
AD : Active Directory
ADC : Analog to Digital Converter
ADC : Apple Display Connector (DVI variant)
AH : Active Hub
AHA : Accelerated Hub Architecture
Ajax : Asynchronous Java Script and XML
AL : Active Link
ALGOL : Algorithmic Language
ALU : Arithmetic and Logical Unit
AM : Active Monitor
AMD : Advanced Micro Devices
AMR : Audio Modem Riser
AoE : ATA over Ethernet
APCI : Application Layer Protocol Control Information
API : Application Programming Interface
APIPA : Automatic Private IP Addressing
ASCII : American Standard Code for Information Interchange
ASG : Abstract Semantic Graph
ASP : Application Service Provider
AST : Abstract Syntax Tree
ATA : Advanced Technology Attachment
ATM : Asynchronous Transfer Mode
AVC : Advanced Video Interleaved
AWT : Abstract Windowing Toolkit
BASIC : Beginner's All-Purpose Symbolic Instruction Code
BCD : Binary Coded Decimal
BEEP : Blocks Extensible Exchange Protocol
BER : Bit Error Rate
BFD : Binary File Descriptor
BGP : Border Gateway Protocol
bin : binary
BINAC : Binary Automatic Computer
BIOS : Basic Input Output System
Blog : Web Log
BMP : Basic Multilingual Plane
BOOTP : Bootstrap Protocol
BPEL : Business Process Execution Language
bps : bits per second
CAD : Computer-Aided Design
CAE : Computer-Aided Engineering
CAI : Computer-Aided Instruction
CAM : Computer-Aided Manufacturing
CAT : Computer-Aided Translation
CAQ : Computer-Aided Quality Assurance
CD : Compact Disc
CD-R : CD-Recordable
CD-ROM : CD-Read Only Memory
CD-RW : CD Rewritable
CG : Computer Graphics
CGA : Colour Graphics Array
CGI : Common Gateway Interface
CGI : Common Generated Imagery
CIFS : Common Internet File System
CLI : Command Line Interface
CLR : Common Language Runtime
CNC : Computer Numerical Control
COBOL : Common Business-Oriented Language
CPU : Central Processing Unit
CRT : Cathode Ray Tube
CSI : Common System Interface
CT : Computerised Tomography
CTCP : Client to Client Protocol
CTL : Computational Tree Logic
CTS : Clear To Send
CUA : Common User Access
DAC : Digital-To-Analog Converter
DAP : Directory Access Protocol
DBA : Database Administrator
DBMS : Database Management System
DCC : Direct Client-to-Client
DDR : Double Data Rate
DES : Data Encryption Standard
DFD : Data Flow Diagram
DFS : Distributed File System
DHTML : Dynamic HTML
DIVX : Digital Video Express
DLL : Dynamic Link Library
DLP : Digital Light Processing
DMA : Direct Memory Access
DOS : Disk Operating System
DPI : Dots Per Inch
DPMI : DOS Protected Mode Interface
DSL : Digital Subscriber Line
DSL : Domain- Specific Language
DSN : Database Source Name
DTE : Data Terminal Equipment
DTR : Data Terminal Ready
DVD : Digital Versatile Disc
DVD : Digital Video Disc
DVD-R : DVD- Rewritable
DVI : Digital Visual Interface
DVR : Digital Video Recorder
EAP : Extensible Authentication Protocol
EBCDIC : Extended Binary Coded Decimal Interchange Code
EDO : Extended Data Out
EEPROM : Electronically-Erasable Programmable Read-Only Memory
EFF : Electronic Frontier Foundation
EFI : Extensible Firmware Interface

EGA : Enhanced Graphics Array
EGP : Exterior Gateway Protocol
eID : electronic ID
EIGRP : Enhanced Interior Gateway Routing Protocol
ELF : Executable and Linkable Format
ELM : Electronic Mail
EOM : End of Messa ge
EPROM : Erasable Programmable Read-Only Memory
EUC : Extended Unix Code
EXE : EXEcutable
FAP : FORTRAN Assembly Program
FAT : File Allocation Table
FIFO : First In First Out
FHS : File System Hierarchy Standard
FCS : Frame Check Sequence
FPU : Floating Point Unit
FS : File System
FSB : Front Side Bus
FTP : File Transfer Protocol
FXP : File eXchange Protocol
Gb : Gigabit
GB : Gigabyte
GCR : Group Code Recording
GDI : Graphics Device Interface
GIF : Graphics Interchange Format
GIGO : Garbage In, Garbage Out
GPU : Graphics Processing Unit
GUI : Graphical User Interface
HAL : Hardware Abstraction Layer
HDD : Hard Disk Drive
HD DVD : High Definition DVD
HDL : Hardware Description Language
HHD : Hybrid Hard Drive
HIG : Human Interface Guidelines
HPFS : High Performance File System
HSM : Hierarchical Storage Management
HTM : Hierarchical Temporal Memory
HTML : Hypertext Markup Language
HTTP : Hypertext Transfer Protocol
HVD : Holographic Versatile Disc
IBM : International Business Machines
ICMP : Internet Control Message Protocol
ICP : Internet Cache Protocol
IDL : Interface Definition Language
IE : Internet Explorer
IGMP : Internet Group Management Protocol
IGRP : Interior Gateway Routing Protocol
IHV : Independent Hardware Vendor
IIOP : Internet Inter-Orb Protocol
IIS : Internet Information Services
IM : Instant Messaging
IMAP : Internet Message Access Protocol
I/O : Input/Output
IP : Internet Protocol
IPC : Inter-Process Communication
IPP : Internet Printing Protocol
Ipsec : Internet Protocol Security
IPTV : Internet Protocol Television
IRC : Internet Relay Chat
IRP : I/O Request Packet
IRQ : Interrupt Request
ISC : Internet Storm Center
ISO : International Organisation for Standardisation
ISOC : Internet Society
ISP : Internet Service Provider
ISR : Interrupt Service Routine
ISV : Independent Software Vendor
IT : Information Technology
ITU : International Telecommunication Union
J2CE : Java 2 Cryptographic Edition
JDS : Java Desktop System
JMX : Java Management Extensions
JMS : Java Message Service
JNDI : Java Naming and Directory Interface
JNI : Java Native Interface
JPEG : Joint Photographic Experts Group
JS : Java Script
JSON : Java Script Object Notation
JSP : Java Server Pages
JUG : Java Users Group
Kb : Kilobit
KB : Kilobyte
kHz : Kilohertz
LAN : Local Area Network
LIFO : Last In First Out
LSB : Least Significant Bit
MAN : Metropolitan Area Network
MANET : Mobile Ad-Hoc Network
Mb : Megabit
MB : Megabyte
MBCS : Multi Byte Character Set
MBR : Master Boot Record
MDI : Multiple Document Interface
MICR : Magnetic Ink Character Recognition
MIMO : Multiple-Input Multiple-Output
MIPS : Million Instructions Per Second
MIME : Multipurpose Internet Mail Extensions
MMX : Multimedia Extensions
MNG : Multiple-Image Network Graphics
MPEG : Motion Pictures (Coding) Experts Group
MSB : Most Significant Bit
MS-DOS : Microsoft DOS
MVS : Multiple Virtual Storage
NFS : Network File System
NIO : New I/O
NMI : Non-Maskable Interrupt
NNTP : Network News Transfer Protocol
NOP : No Operation
NOS : Network Operating System
NTP : Network Time Protocol
OOP : Object-Oriented Programming
OPML : Outline Processor Markup Language
OS : Operating System
OSS : Open-Source Software
P2P : Peer-To-Peer
PAN : Personal Area Network
PAP : Password Authentication Protocol
PATA : Parallel ATA

PC : Personal Computer
PCI : Peripheral Component Interconnect
PCLe : PCI Express
PCL : Printer Command Language
PGA : Pin Grid Array
PIC : Peripheral Interface Controller
PIC : Programmable Interrupt Controller
PINE : Program for Internet News & Email
PIO : Programmed Input/Output
PoE : Power over Ethernet
PPC : Power PC
PPI : Pixels Per Inch
PPP : Point-to-Point Protocol
PPPoA : PPP over ATM
PPTP : Point-to-Point Tunneling Protocol
PSU : Power Supply Unit
QDR : Quad Data Rate
QFP : Quoted For Permanence
QoS : Quality of Service
RADIUS : Remote Authentication Dial In User Service
RAID : Redundant Array of Independent Disks
RAM : Random Access Memory
RARP : Reverse Address Resolution Protocol
RDBMS : Relational Database Management System
RDF : Resource Description Framework
REFAL : REcursive Functions Algorithmic Language
RIP : Routing Information Protocol
ROM : Read Only Memory
ROMB : Read-Out Motherboard
RTOS : Real Time Operating System
SaaS : Software as a Service
SAN : Storage Area Network
SATA : Serial Advanced Technology Attachment
SAX : Simple API for XML
SBP-2 : Serial Bus Protocol 2
SBU : Standard Build Unit
SCSI : Small Computer System Interface
SDL : Simple Direct Media Layer
SDN : Service Delivery Network
SDR : Software-Defined Radio
SDRAM : Synchronous Dynamic Random Access Memory
SMBIOS : System Management BIOS
SMTP : Simple Mail Transfer Protocol
SPI : Serial Peripheral Interface
SQML : Structured Query Language
SUS : Single UNIX Specification
SVD : Structured VLSI Design
TCP : Transmission Control Protocol
TCP/IP : Transmission Control Protocol/Internet Protocol
TTA : True Tap-Audio
TTF : True Type Font
TTS : Text-to-Speech
TTY : Teletype
UAC : User Account Control
UART : Universal Asynchronous Receiver Transmitter
UEFI : Unified Extensible Firmware Interface
UI : User Interface
UPS : Uninterruptible Power Supply
URI : Uniform Resource Identifier
URN : Uniform Resource Name
USB : Universal Serial Bus
Var : Variable
VB : Visual Basic
VBA : Visual Basic for Applications
VBS : Visual Basic Script
VFAT : Virtual FAT
VFS : Virtual File System
VGA : Video Graphics Array
VGCT : Video Graphics Character Table
VLAN : Virtual Local Area Network
VM : Virtual Memory
VOD : Video On Demand
VoIP : Voice over IP
VPN : Virtual Private Network
WAFS : Wide Area File Services
WAIS : Wide Area Information Server
WAN : Wide Area Network
WAP : Wireless Application Protocol
Wi-Fi : Wireless Fidelity
WiMAX : Worldwide Interoperability for Microwave Access
WInFS : Windows Future Storage
WINS : Windows Internet Naming Service
WLAN : Wireless Local Area Network
WMA : Windows Media Audio
WMV : Windows Media Video
WOL : Wake-on-LAN
WOM : Wake-on-Modem
WPA : Wi-Fi Protected Access
WSDL : Web Services Description Language
WWID : World Wide Identifier
WWW : World Wide Web
XAML : eXtensible Application Markup Language
XHTML : eXtensible Hypertext Markup Language
XML : eXtensible Markup Language
XMMS : X Multimedia System
XNS : Xerox Network Services
XSL : eXtensible Stylesheet Language
XSL-FO : eXtensible Stylesheet Language Formatting Objects
XSLT : eXtensible Stylesheet Language Transformations
XUL : XML User Interface Language
ZIFS : Zero Insertion Force Socket
ZISC : Zero Instruction Set Computer
ZMA : Zone Multicast Address

GLOSSARY

- **Access Time:** Access time is the time from the start of one storage device to the time when the next access can be started.
- **Accessory:** An Accessory is a device attached to a host computer, but not a part of it, and is more or less dependent on the host. It expands the host's capabilities, but does not form part of the core computer architecture.
  Examples are printers, image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras.
- **Active Cell:** The cell that contains the value being used or modified in a spreadsheet program, and that is highlighted by the cell pointer. Also known as current cell.

- **Active Window :** The window in Microsoft Windows with which the user may interact.
- **Accumulator:** The computer register in which the result of an arithmetic or logic operation is performed (related to arithmetic and logic unit).
- **Algorithm:** A standard method for computing something; essentially, a mathematical recipe.
- **Analog:** A continuous waveform signal that can be used to represent things such as sound, temperature, and velocity.
- **Analog Computer:** A computer in which numerical data are represented by measurable physical variables, such as electrical pulses.
- **Antivirus:** Antivirus refers to a software program that can protect your computer from unwanted viruses and remove any, that penetrate your computer's security.
- **Arithmatic Logic Unit (ALU):** An Arithmetic Logic Unit (ALU) is the part of a computer's processor (CPU) that carries out arithmetic and logic operations on the operands in computer instruction words.
- **Artificial Intelligence:** Artificial Intelligence (AI) is the capability of machines to simulate human behaviour and the branch of computer science that aims to create it. In textbooks it is the field of "study and design of intelligent agents" where an intelligent agent is a system that perceives the environment and takes actions that maximize its chances of success.
- **ASCII (American Standard Code for Information Interchange): ASCII** is a code for information exchange between computers made by different companies; a string of 7 binary digits represents each character; used in most microcomputers.
- **Assembly Language:** A programming language that is once removed from a computer's machine language. Machine languages consist entirely of numbers and are almost impossible for humans to read and write. Assembly languages have the same structure and set of commands as machine languages, but they enable a programmer to use names instead of numbers.
- **Auxilliary Memory:** A high-speed memory bank used in mainframes and supercomputers. It is not directly addressable by the CPU; rather, it functions like a disk. Data are transferred from auxiliary memory to main memory over a high-bandwidth channel.
- **Backup:** A backup or the process of backingup is making copies of data which may be used to restore the original after a data loss event.
- **Band Width:** In computer networking and computer science, bandwidth, network bandwidth, data bandwidth or digital bandwidth is a bit rate measure of available or consumed data communication resources expressed in bits/second or multiples of it (kilobit/s, megabit/s, etc.).
- **BIOS:** BIOS stands for Basic Input Output System. This is the basic set of instructions that tells the computer how to act. Most computers have these instructions built into a chip that plugs into the motherboard.
- **Bar Code:** A bar code (often seen as a single word, barcode) is the small image of lines (bars) and spaces that is affixed to retail store items, identification cards, and postal mail to identify a particular product number, person, or location.
- **Binary:** Computers are based on the binary numbering system, which consists of just two unique numbers, 0 and 1.
- **Biometric Device:** Biometrics (or biometric authentication) consists of methods for uniquely recognizing humans based upon one or more intrinsic physical or behavioural traits.
- **Bitmap:** In computer graphics, a bitmap or pixmap is a type of memory organization or image file format used to store digital images.
- **Bluetooth:** Bluetooth is a proprietary open wireless technology standard for exchanging data over short distances (using short wavelength radio transmissions in the ISM band from 2400-2480 MHz) from fixed and mobile devices, creating Personal Area Networks (PANs) with high levels of security.
- **Booting:** To boot (as a verb; also "to boot up") a computer is to load an operating system into the computer's main memory or Random Access Memory (RAM).
- **Browse:** In database systems, browse means to view data. Many database systems support a special browse mode, in which you can flip through fields and records quickly. Usually, you cannot modify data while you are in browse mode.
- **Bug:** A software bug is the common term used to describe an error, flaw, mistake, failure, or fault in a computer program or system that produces an incorrect or unexpected result, or causes it to behave in unintended ways.
- **Byte:** Byte is a unit of digital information in computing and telecommunications that most commonly consists of eight bits.
- **CD-ROM (Compact Disk-Read Only Memory):** A type of optical disk capable of storing large amounts of data -- up to 1GB, although the most common size is 650MB (megabytes).
- **CD-R/W (Compact Disk-Recordable):** A type of CD disk that enables you to write onto it in multiple sessions. One of the problems with CD-R disks is that you can only write to them once.
- **Central Processing Unit (CPU):** The CPU is the computer's control center. Think of it as the brain that does all the thinking (computation), thus it is called the Central Processing Unit. The actual CPU is about 1.5 inches square, yet it is the most critical part of the computer. Having a fast CPU (measured in MegaHertz) greatly improves the overall speed of your computer.
- **CMOS:** Acronym of "Complimentary Metal Oxide Semiconductor". A CMOS computer ciruit consumes very little power and is used in computers to keep track of the system setup information, data, time, type of disk and hard drives, etc., that a computer has installed.
- **Compressed File:** Computer files that have been reduced in size by a compression program. Such programs are available for all computer systems.
- **Central Processing Unit (CPU):** The Central Processing Unit (CPU) is an electronic component that interprets and carries out the instructions of any application that run on a computer. It is a place where all the computing is done.
- **Data:** Representations of facts. The raw material of information. (Plural of datum.)
- **Database:** The integrated data resource for a computer-based information system.
- **DDR:** This is a new type of RAM called Double Data Rate RAM. It is used in some of the newer video cards such as the Nvidia GeForce cards.
- **Desktop:** The screen in Windows upon which icons, windows, a background, and so on are displayed.

- **Desktop Publishing (DTP):** Software that allows users to produce near-typeset-quality copy for newsletters, advertisements, and many other printing needs, all from the confines of a microcomputer.
- **Dial up :** A dial-up Internet account allows you to use a computer with a modem and appropriate software to connect to the Internet by an Internet Service Provider (ISP). The software "dials" the ISP's access numbers and you can then send e-mail, browse the World Wide Web or engage in other Internet activities.
- **Digital:** Terms used to describe any information that has been translated into a corresponding series of 1's and 0's; any information text, sound, image, colour, may be digitized.
- **Digital Computer:** A reference to any system based on discrete data, such as the binary nature of computers.
- **Digital Video/Versatile Disk (DVD):** The successor technology to the CD-ROM that can store up to 10 Gigabytes.
- **Disk:** A magnetically encoded storage medium in the form of a plate (also called a platter).
- **Disk Operating System (DOS):** A disk operating system manages disks and other system resources. Sort of a subset of OSes, sort of an archaic term for the same. MS-DOS is the most popular program currently calling itself a DOS. CP/M was the most popular prior to MS-DOS.
- **Domain Names:** A name given to a host computer on the Internet, E-mail names are good examples of domain names (for example, bijendra@aiets.com).
- **Downloading:** Retrieving a file or group of files from the Internet so that they can be stored on a local hard drive.
- **Electronic Mail:** When a message is sent, electronically through internet, it is called electronic mail. The message is sent first to the SMTP server, which acts as an "outbox" for users. The message is then relayed to the appropriate mail server, which can be found listed after the @ symbol in the recipient's address. The message then waits on that server until the recipient accesses the message and then deletes it.
- **Ethernet:** A transport method (protocol) used to connect computers to a LAN (Local Area Network) and exchange data.
- **File:** (1) A collection of related records. (2) A named area on a disk-storage device that contains a program or digitized information (text, image, sound, and so on). (3) A component of an overall program or application.
- **Font:** In a simplistic sense, a font can be thought of as the physical description of a character set. While the character set will define what sets of bits map to what letters, numbers, and other symbols, the font will define what each letter, number, and other symbol looks like.
- **Format:** Formatting is a process of preparing a data storage device such as a hard disk drive, solid state drive, or USB flash drive for initial use. (1) The logical or physical arrangement of the tracks and sectors on a floppy diskette or a hard disk. To be usable, a disk must be formatted so that the tracks and sectors are laid out in a manner compatible with the operating system in use. (2) To prepare a disk or diskette, dividing it into sectors so that it is ready to receive data.
- **Gigahertz:** One gigahertz is equivalent to 1000 megahertz, or 1,000,000,000 hertz.
- **Hacker:** An individual with vast experience with security protocols who attempts to illegally access secure servers in an attempt to download private information, damage systems, or act in some other way to "free information".
- **Hard Copy:** A readable printed copy of computer output.
- **Hard Disk:** Hard disk (internal) is a permanent file and data storage device housed in a computer case.
- **Hardware:** Collective term for any computer-related object that can be kicked or battered.
- **Hexadecimal Number System:** A numeric notation system with a base of 16 decimal frequently used to specify addresses in computer memory. In hexadecimal notation, the decimal numbers 0 through 15 are represented by the decimal digits 0 through 9 and the alphabetic "digits" A through F (A = decimal 10, B = decimal 11, etc.) can be formed as two 4-bit binary numbers from an 8-bit binary number split into two parts.
- **Home Page:** The web page which is the starting point for accessing information at a site or in a particular area.
- **Host:** A computer, attached to a network which provides services to another computer beyond simply storing and forwarding information.
- **Hyper Text Markup Language (HTML):** This is the code by which web pages are created so they can be graphically organized in various ways. The web browser downloads the text of the HTML file, and then decodes the text into what can see seen.
- **HTTP:** Acronym of "Hypertext Transfer protocol". The protocol that forms the basis of World Wide Web technology. HTTP is the set of rules governing the software that transports hyperlinked files along the Internet.
- **Information Technology (IT):** Including ICT (Information and Communication Technology) is the application of appropriate (enabling) technologies to information processing.
- **Input/Output (I/O):** A generic reference to input and/or output to a computer.
- **IP:** Acronym of "Internet Protocol". The standard protocol used by systems communicating across the Internet.
- **IP Address:** A digital code that precisely locates a computer connected to the Internet.
- **MAC:** Short form of "Macintosh"; the other type of personal computer, manufactured by Apple Computers.
- **Inkjet Printer:** A non-impact printer in which the print head contains independently controlled injection chambers that squirt ink droplets on the paper to form letters and images.
- **Integrated Services Digital Network (ISDN):** A digital telecommunications standard for data delivery over twisted-pair lines with transmission speeds up to 128 Kbps (two 64 Kbps line pairs).
- **InterFace:** (1) A specific hardware or software connection. (2) Making two devices capable of communication. Used most often to refer the design of hardware and software that allows connection of network components and transfer of information.
- **Internet:** Internet is the largest wide area network in the world which links millions of computers. Through internet information can be shared, business can be conducted and research can be done.
- **IP Address (Internet Protocol Address) :** A unique numeric Internet address identifying any piece of equipment hooked up to the Internet.
- **Intranet:** An Internet-like network whose scope is restricted to the networks within a particular organization.

- **Java:** Java is a programming language and has a "sandboxed" code interpreter which permits programs to be downloaded to PC's from the Web, but isolates these applications from access to other applications running on the PC.
- **JPEG (Joint Photographic Experts Group):** A bitmapped file format that compresses image size.
- **Jukebox:** A storage device for multiple sets of CD-ROMs, tape cartridges, or disk modules enabling ready access to vast amounts of online data.
- **Keyboard:** It is one of computer components which used to input data to a computer. It is an input device.
- **Laptop:** Laptop is small and lightweight computer in which all the main parts fitted into single unit. It is designed to carry it around. Particularly, it is ideal for travelers, journalists, commentators and professionals who want to work both at the office and home.
- **LCD:** Acronym of "Liquid Crystal Display" is the technology used for displays in notebook and other smaller computers.
- **Linux:** An open source spin-off of the UNIX operating system that runs on a number of hardware platforms and is made available for free over the Internet.
- **Local Area Network:** Many multiple-computer homes have found ways to link their computers through a central device called a "hub". This way, each computer can share information directly, without the need to transfer data via a portable storage device, like a floppy disk. A properly set up LAN can also permit the connected computers to access the Internet through a single Internet account.
- **Log-on & Log-off:** Each server that is accessed must have some way to ensure security of their sensitive information. Thus, servers restrict access by forcing users to "log-on" with either personal access codes or anonymously. Anonymous access usually requires the individual's e-mail address, and the user's IP address is also logged. Once the desired information has been obtained, the user can "log-off", disconnecting access to the server.
- **Machine Language:** Machine language consists of the raw numbers that can be directly understood by a particular processor. Each processor's machine language will be different from other processors' machine language. Although called "machine language", it is not usually what people think of when talking about computer languages. Machine language dressed up with mnemonics to make it a bit more human-readable is called assembly language.
- **Mainframe Computer:** A large computer that can service many users simultaneously in support of enterprise-wide applications.
- **Memory:** One of the essential components of a computer's central processing unit. Memory is the area where information and programs are actively processed.
- **Micro Computer:** A microcomputer is a small relatively inexpensive computer with a microprocessor as its central processing unit (CPU).
- **Microprocessor:** A computer on a single chip. The central processing component of a microcomputer.
- **Modem:** Modem is a telecommunication device that converts digital signals to analog and vice versa. It is used in dial-up internet connection to connect telephone line to a computer.
- **Monitor:** The high-resolution TV-like tube that displays your computer's output. Today's monitors have much better quality displays than any TV is capable of producing.
- **Motherboard:** Motherboard is the core of a computer system. It is the circuit board where all other parts connect. It communicates and controls the overall system.
- **MP3 :** This stands for "MPEG-I Audio Layer-3" and is a Digital Compressed music file (these files always end with an extension mp3). MP3 files are often downloaded or exchanged between people online.
- **MPEG:** Acronym of "Motion Picture Experts Group". A video file compression system used on the web.
- **Mouse:** A small, handheld device attached to a computer; when moved across any flat surface (such on the computer screen called a cursor) includes one or more buttons that allow the user to select graphics or text onscreen.
- **Multimedia Applications:** Computer applications that involve the integration of text, sound, graphics, motion video, and animation.
- **Multitasking:** The concurrent execution of more than one program at a time.
- **Offline:** Pertaining to data that are not accessible by, or hardware devices that are not connected to a networked computer system.
- **Online:** Pertaining to data and/or hardware devices accessible to and under the control of a networked computer system.
- **Operating Systems or Platform:** These terms refer to the software that your computer uses to operate (otherwise known as your OS) and not to a manufacturer or company. Windows 2000, Windows XP, and OSX (Mac) are common platforms.
- **Password:** Password is a series of characters used to protect resources in a computer from unauthorized access. It is one of the ways to secure computer information from unauthorized users.
- **Peripherals:** A physical device (such as a printer, scanner, or disk subsystem) that is externally attached to a workstation or to the network.
- **Plugin:** A helper application that works within a browser. It adds more functionality to a browser commonly associated with the Netscape Navigator browser software.
- **Personal Computer:** A small computer designed to use by an individual.
- **Processor:** The logical component of a computer system that interprets and executes program instructions.
- **Program:** (1) Computer instructions structured and ordered in a manner that, when executed, causes a computer to perform a particular function. (2) The act of producing computer software to perform some application.
- **Programming:** The act of writing a computer program.
- **Programming Language:** The language programmers use to communicate instructions to a computer is called programming Language.
- **RAM:** Acronym of "Random Access Memory". The computer's "short-term" memory used whenever an action is performed by a program. It is also called the "active memory". RAM is what the computer used to run all applications. RAM is usually specified in Megabytes or MB.
- **ROM:** Acronym of "Read Only Memory" in which information is saved once and can never be altered. For example, CD-ROM drives read information saved on Compact Disks (CD's). A CD-ROM drive can read that information, but cannot make changes to it. For that you need a CD-RW drive. Some ROM is built into your computer to help it get started when you turn it on.

- **Scanner:** A scanner is a piece of hardware that will examine a picture and produce a computer file that represents what it sees. A digital camera is a related device. Each has its own limitations.
- **Search Engine:** A tool used which matches keywords you enter with titles and description on the Internet. It then displays the matches allowing you to easily locate a subject. Similar to a card catalog, but not as efficient. Common search engines are Webcrawler, Yahoo, Alta Vista, Infoseek, and Lycos.
- **Server:** A computer or its software that "serves" other computers by administering network files and network operations. Three types of Internet servers are Web servers, e-mail servers, and Gopher servers.
- **Software:** Software is a set of instructions developed by programming language which tells a computer what to do.
- **System Software:** System Software controls the overall operation of a computer. Some of the activities include managing system memory, controlling system resources, executing computer hardware functions and interfacing a user with computer hardware and applications.
- **Unix:** UNIX is a family of OSes, each being made by a different company or organization but all offering a very similar look and feel.
- **Upload:** The process of transferring information from one computer to another, generally from a client to a server is called uploading.
- **USB:** Acronym of "Universal Serial Bus" (the plug is very flant and has no pins or pronga). This is a style of port connection that is used by many peripheral devices such as Palm Pilots, phones, scanners, printers, etc. This type of connection is much faster than more traditional kind of connections such as serial and parallel ports.
- **UPS:** Acronym of "Uninterrupted Power Supply". An Uninterrupted Power Supply (UPS) is a device that allows your computer to keep running for at least a short time when the primary power source is lost.
- **Virus:** It is an acronym of 'Vital Information Resource Under Seize'. A virus is a program that will seek to duplicate itself in memory and on disks, but in a subtle way that will not immediately be noticed. A computer on the same network as an infected computer or that uses an infected disk (even a floppy) or that downloads and runs an infected program can itself become infected.
- **WAN:** Acronym of "Wide Area Network". A larger computer network that is geographically dispersed, such as one that stretched across a university campus.
- **Web Page:** A single screen (document) on a Website.
- **Webcasting:** "Webcasting" is a term that describes the ability to use the Web to deliver or delayed versions of sound or video broadcasts.
- **Website:** The location of published hypertext content Physically, a Website can occupy an entire Web server or a part of a server; or it can be spread out among different servers as long as its sections are all linked, directly, to the same home page.
- **WLAN:** Acronym of "Wireless Local Area Network". In a Wireless Local Area Network (WLAN), an access point is a station that transmits and receives data (sometimes referred to as a transceiver).
- **World Wide Web or WWW:** The World Wide Web is so named because each page in the WWW has links to other pages, which have links to other pages, and so on, creating what could visually be seen as a web-like network of links.
- **Desktop:** The desktop is the area you see when the computer is not running applications. It consists of the icons on top of it as well as the Start button and other features. The desktop can be used to temporary store information or to move around documents and windows.
- **Icon:** Icons are little pictures that represent different programs or saved items. Double-clicking on the Icon accesses the information represent.
- **Window:** Each application opened will appear in its own window or its own little section of the screen. Windows can be moved and resized so that you can operate many different applications at the same time.
- **Dialogue Box:** When you ask the computer to act on certain commands, as to save your work, the computer will need more information from you and this will appear in a dialogue box. These boxes contain options and commands for computers to execute.
- **Start Menu:** In the lower left- hand corner of the Windows screen is the Start button. When you click on the button, a menu will appear, which we will call the Start menu. This menu gives you access to all the different parts and functions of the computer.
- **Task Bar:** At the very bottom of the screen there is a horizontal bar called the task bar. This bar contains (From left to right) the Start button, shortcuts to various programs, minimized programs, and another section of shortcuts that includes sound, volume, printers and the time.
- **The Internet:** The World Wide Web, or the Web are all names used to describe the vast network of information in cyberspace, available to anyone who has access to a computer, a browser (software), and a connection to an Internet service provider through a modem (or other connection such as DSL, ISDN, LAN, etc.). Many people use the terms Internet and World Wide Web (a.k.a. the Web) interchangeably, but in fact the two terms **are not synonymous.** The Internet and the Web are two separate but related things.

  The Internet is a massive network of networks, i.e., a networking infrastructure. It connects millions of computers together globally, forming a network in which any computer can communicate with any other computer as long as they both are connected to the Internet.
- **Blog :** A Blog, short for weblog, is usually a personal, time stamped, online journal that appears on a website. It can be periodically updated by the owner, sometimes called a blogger. Many sites offer free software to create blogs on personal websites.
- **Downloading:** When you take a file from someone else's computer and put it on your own then it is called downloading. A file can be anything from a pretty picture to the enitre text of the Declaration of Independence.
- **E-mail:** E-mail is the more common abbreviation for Electronic mail. It allows computer users locally and worldwide to exchange messages. Each user of e-mail has a mailbox address to which messages are sent.

- **Internet Service Provider (ISP):** It connects you to the Internet.
- **Search Engines/Search Directories:** A search engine is a searchable database of Internet files collected by a computer program (this program is sometimes called a wanderer, crawler, robot, worm, spider, etc.). An index is created for the collected files, e.g., title, full text, size, URL, etc. There is often no selection criteria for these collection of files, except a ranking of "best fit" results.
- **URL:** URL stands for Uniform Resource Locator. The URL specifies the internet address of a file stored on a host computer connected to the Internet. Every file on the Internet, no matter what its accessing protocol, has a unique URL. Each web site must have its own specific address, similar to the way, each home must have a unique address in order to receive mail delivery service.
- **Web Browser:** A web browser is a software, installed on your computer, that allows you to navigate. Internet Netscape Navigator and Microsoft Internet Explorer are two of the most commonly used web browsers.
- **Web Site:** Contains all the information offered by a particular organization, individual, or company and will sometimes include links to other sites as well. Each web site generally starts with a home page and then links to other pages within the site containing various types of information and/ or services/products. A website can be made up of a single webpage document or hundreds/thousands, limited only by the size restrictions of the webserver it is housed in.
- **Menu Bar:** Contains menu items that open up dropdown lists for related options. Among the items options are for printing, customizing IE, copying and pasting text, managing Favourites, and accessing Help.
- **Navigation Toolbar:** Contains icons for a variety of features including navigating among Web pages. Searching the Web using a selection of search tools, accessing and managing Favourites, viewing a History of visited pages, printing, and accessing email and newsgroups.
- **Address Bar:** This is not really a toolbar, but this is where you type in the URL, (Web address) of the page. When you press the Enter key, it will take you to this address.
- **Home:** The home icon takes you back to the page that was on the screen when you first started IE, You can customize your seletion.
- **Search:** The search button opens up a function that uses one or more Web search tools. You can choose the search tool(s) you want as default.
- **History:** The history function allows you to view and select Web pages you have recently visited. You can sort your items by clicking on the black triangle to the right of the word View. You can sort by size, date the number of times visited, and the order you have visited today.
- **Mail:** You can read e-mail from this window. Choose the e-mail software you wish to use by going back to the Menu Bar and choosing Tools/Internet Options/Programs.

POINTS TO REMEMBER

- A computer is a data processing machine having two main parts: Hardware and Software.
- Hardware comprises of the physical units of a computer system while software is a set of programs.
- Hardware and software together makes a computer system functional.
- Data are raw facts and figures.
- An operating system is an interface between the user and the computer hardware and it manages computer resources.
- An operating system performs different functions and is responsible for process management, file management, etc.
- There are many kinds of operating system. Some popular names are:- DOS, UNIX, Windows, Linux, Mac OS, etc.
- The Windows Explorer program is more efficient for viewing folders in Windows.
- Windows Explorer is divided vertically into two parts of two panes. The left side pane displays disk drives and folders in a hierarchical order, while the right pane displays the content of the folder drive that is selected on left side pane.
- The process of linking text values in a series within a formula is called 'concatenation'.
- A computer is a data processing machine. Data processing involves some activities like data capturing, data manipulation and information management.
- Collection of interrelated data is called a database.
- Computers are very useful for maintaining databases.
- A relational database is a collection of data items arranged as a set of formally described tables from which data can be accessed or reassembled in many different ways without having reorganization of the database tables.
- MS Access is a powerful program to create and manage the databases.
- Collection of data about a specific topic is called a table.
- A form is a graphical representation of a table.
- A report is a Presentation of data in a printed form.
- We can create mailing labels for your database using MS Access.
- Internet is the network of computer networks with million of computers connected to it.
- Website are files in servers, which are powerful computers.
- Website contain pages to be known as Web Pages.
- The collection of all websites is known as World Wide Web (WWW).
- Ted Nelson, in 1960s, first coined the term 'Hyper Text'.
- HTML is used to create Web Pages. It uses commands which are known as Tags.
- To compose HTML documents, text editors are used. HTML documents are viewed in Web browser.
- The tools are grouped by type in the Photoshop toolbox.
- Some of the tool icons have a tiny black triangle in the lower-right corner of their icons. This means that there are more tools of the same general kind available on a pop-up menu.

EXERCISE

1. What is called as the main folder on a storage device?
   (a) Platform (b) Interface
   (c) Root Directory (d) Home Page
   (e) None of the above
2. RAM is _____ and _____
   (a) Volatile, temporary
   (b) Non-volatile, permanent
   (c) Non-volatile, temporary
   (d) Volatile, permanent
   (e) None of the above
3. Which is not an item of hardware?
   (a) An MP3 file (b) A keyboard
   (c) A monitor (d) A mouse
   (e) None of the above
4. The box that contains the central electronic components of the computer is the _____
   (a) Motherboard (b) System unit
   (c) Peripheral (d) Input device
   (e) None of the above
5. Which type of device is computer monitor?
   (a) Input (b) Output
   (c) Processing (d) Software
   (e) None of the above
6. Which menu is selected to cut, copy, and paste?
   (a) File (b) Edit
   (c) Tools (d) Table
   (e) None of the above
7. Storage device, inside the computer is
   (a) CD-ROM (b) Zip Disk
   (c) Super Disk (d) Hard Disk
   (e) None of the above
8. If you are going to a site you use often, instead of having to type in the address every time, you should _____
   (a) Save it as a file (b) Make a copy of it
   (c) Bookmark it (d) Delete it
   (e) None of the above
9. Which of these keys is not on the number keypad?
   (a) Ctrl (b) Delete
   (c) Enter (d) Num Lock
   (e) None of the above
10. A program that converts a high-level language source file into a machine-language file is called a _____
    (a) Translator (b) Assembler
    (c) Compiler (d) Linker
    (e) None of the above
11. A CD-ROM disk
    (a) cannot be erased and rewritten
    (b) has more storage capacity than a CD-R
    (c) holds less data than a floppy disk
    (d) can be written to only once
    (e) None of the above
12. The smallest unit of information, a computer can understand and process is known as a _____
    (a) digit (b) kilobyte
    (c) bit (d) byte
    (e) None of the above
13. For creating a document, you use _____ command at File Menu.
    (a) Open (b) Close
    (c) New (d) Save
    (e) None of the above
14. Applications are often referred to as _____
    (a) Data files (b) executable files
    (c) system software (d) the operating system
    (e) None of the above
15. A directory within a directory is called _____
    (a) Mini Directory (b) Junior Directory
    (c) Part Directory (d) Sub Directory
    (e) None of the above
16. Compatibility in regard to computers refers to _____
    (a) the software doing the right job for the user
    (b) it being versatile enough to handle the job
    (c) the software being able to run on the computer
    (d) software running with other previously installed software
    (e) None of the above
17. What is a file?
    (a) A file is a section of main storage used to store data
    (b) A file is a collection of information that has been given a name and is stored in secondary memory
    (c) A file is the part of a program that is used to describe what the program should do
    (d) A file is another name for floppy disk
    (e) None of the above
18. The _____ key and the _____ key can be used in combination with other keys to perform shortcuts and special tasks.
    (a) Control, Alt (b) Function, toggle
    (c) Delete, Insert (d) Caps Lock, Num Lock
    (e) None of the above
19. The primary output device for computers is a _____
    (a) video monitor (b) printer
    (c) keyboard (d) mouse
    (e) None of the above
20. The name of the location of a particular piece of data is its _____
    (a) address (b) memory name
    (c) storage site (d) data location
    (e) None of the above
21. Two different files can have the same name if _____
    (a) they are in different folders
    (b) they are on different drives
    (c) they are on the same drive
    (d) they are in same folder
    (e) both (a) and (b)

22. A device that is connected to the motherboard is _____
(a) called an external device
(b) called an adjunct device
(c) called a peripheral device
(d) must connect using ribbon cable
(e) None of the above

23. The first computers were programmed using _____
(a) assembly language (b) machine language
(c) spaghetti code (d) source code
(e) None of the above

24. Documentation of computer programs is important so that _____
(a) users can learn how to use the program
(b) other programmers can know how to maintain the program
(c) the programmer can see why the code is written that way while searching for source of error
(d) All of the above
(e) None of the above

25. Provide the means to move the pointer on the screen and give information to the computer by clicking its buttons _____
(a) scanner (b) mouse
(c) keyboard (d) program
(e) None of the above

26. When you cut or copy information it gets place in the _____
(a) Clipart (b) Clipboard
(c) Internet (d) Motherboard
(e) None of the above

27. Secondary storage _____
(a) does not require constant power
(b) does not use magnetic media
(c) consists of four main types of devices
(d) does not store information for later retrieval
(e) None of the above

28. A device that provides emergency power to your computer, conditions the voltage, and protects against powers surges is called a _____
(a) PSU = Power Supply Unit
(b) USP = Universal Surge Protector
(c) UPPS = Universal Power Protection and Supply
(d) UPS = Uninterrupted Power Supply
(e) None of the above

29. Output which is made up of pictures, sounds, and video is called _____
(a) COM (b) hard copy
(c) graphics (d) multimedia
(e) None of the above

30. Several computers linked to a server to share programs and storage space _____
(a) Network (b) grouping
(c) library (d) integrated system
(e) None of the above

31. A prescribed set of well-defined instructions for solving mathematical problems is called _____
(a) a compiler (b) a code
(c) a description (d) an algorithm
(e) None of the above

32. LAN stands for _____
(a) Local Access Network (b) Local Area Network
(c) Logical access network (d) Logical Area Network
(e) None of the above

33. A Field is a related group of _____
(a) Records (b) Files
(c) Characters (d) Cables
(e) None of the above

34. Meaningful filename helps in easy file _____
(a) Storing (b) Accessing
(c) Identification (d) Printing
(e) None of the above

35. To restart the computer _____ key is used.
(a) Del + Ctrl (b) Backspace + Ctrl
(c) Ctrl + Alt + Del (d) Reset
(e) None of the above

36. Housing all hardware, software, storage, and processing in one site location is called _____
(a) time-sharing (b) a distributed system
(c) centralized processing (d) A host computer
(e) None of the above

37. A computer works on a _____ number system.
(a) binary (b) octal
(c) decimal (d) hexadecimal
(e) None of the above

38. A record is related to a file, as a statement is related to a _____
(a) procedure (b) file
(c) program (d) data
(e) None of the above

39. Soft copy refers to _____
(a) printed output (b) music sounds
(c) screen output (d) digitizing
(e) None of the above

40. WWW stands for _____
(a) World Work Web (b) Wide Work Web
(c) Wide World Web (d) World Wide Web
(e) None of the above

41. The physical components of a computer system is _____
(a) Software (b) Hardware
(c) ALU (d) Control Unit
(e) None of the above

42. Which is a graphical representation of an application?
(a) Windows 95 (b) Windows Explorer
(c) Icon (d) Taskbar
(e) None of the above

43. OCR stands for _____
(a) Optical Character Recognition
(b) Optical CPU Recognition
(c) Optimal Character Rendering
(d) Other Character Restoration
(e) None of these

44. If a new device is attached to a computer, such as a printer or scanner, its _____ must be installed before the device can be used.
(a) buffer (b) driver
(c) pager (d) server
(e) None of these

45. The software that allows users to surf the Internet is called a/an _____ .
(a) Search engine
(b) Internet Service Provider (ISP)
(c) Multimedia application
(d) Browser
(e) None of these

46. The method of file organization in which data records in a file are arranged in a specified order according to a key field is known as the _____ .
(a) Direct access method (b) Queuing method
(c) Predetermined method (d) Sequential access method
(e) None of these

47. In Excel _____ contains one or more worksheets.
(a) Template (b) Workbook
(c) Active cell (d) Label
(e) None of these

48. Which of the following is a popular programming language for developing multimedia web pages, websites, and web-based applications?
(a) COBOL (b) Java
(c) BASIC (d) Assembler
(e) None of these

49. A CD-RW disk _____ .
(a) has a faster access than an internal disk
(b) is a form of optical disk, so it can only be written once
(c) holds less data than a floppy disk
(d) can be erased and rewritten
(e) None of these

50. The first page of a Web site is called the _____ .
(a) Homepage (b) Index
(c) Java Script (d) Book mark
(e) None of those

51. A word in a web page that, when clicked, opens another document _____ .
(a) anchor (b) URL
(c) hyperlink (d) reference
(e) None of these

52. The _____ manual tells you how to use a software program.
(a) documentation (b) programming
(c) technical (d) user
(e) None of these

53. What disk is used to cold boot a PC?
(a) Setup disk (b) System disk
(c) Diagnostic disk (d) Program disk
(e) None of these

54. The _____ tells the computer how to use its components.
(a) utility (b) network
(c) operating system (d) application program
(e) None of these

55. A _____ contains buttons and menus that provide quick access to commonly used commands.
(a) menu bar (b) toolbar
(c) window (d) action bar
(e) None of these

56. Numbers in table columns are usually _____.
(a) right-aligned (b) left-aligned
(c) justified (d) centered
(e) None of these

57. To access a mainframe or supercomputer, users often use a _____ .
(a) terminal (b) node
(c) desktop (d) handheld
(e) None of these

58. By default, your documents print in _____ mode.
(a) Landscape (b) Portrait
(c) Page Setup (d) Print View
(e) None of these

59. What characteristic of Read-Only Memory (ROM) makes it useful?
(a) ROM information can be easily updated
(b) ROM provides very large amounts of inexpensive data storage
(c) Data in ROM is nonvolatile, that is, it remains there even without electrical power
(d) ROM chips are easily swapped between different brands of computers
(e) None of these

60. What are bas, doc, and htm examples of?
(a) extensions (b) domains
(c) protocols (d) databases
(e) None of these

61. ctrl, shift and alt are called _____ keys.
(a) adjustment (b) function
(c) modifier (d) alphanumeric
(e) None of these

62. Which type of file is created by word processing programs?
(a) database file (b) storage file
(c) worksheet file (d) document file
(e) graphical file

63. Personal computers can be connected together to form a _____
(a) server (b) supercomputer
(c) network (d) enterprise
(e) None of these

64. A modem _____ .
(a) translates analog signals from a computer into digital signals that can travel along conventional telephone lines.
(b) translates digital signals from a computer into analog signals that can travel along conventional telephone lines.
(c) demodulates digital signals from a computer.
(d) modulates signals from an analog telephone line.
(e) None of these

65. Which of the following menu types is also called a drop-down menu?
(a) fly-out (b) cascading
(c) pop-up (d) pull-down
(e) None of these

66. Data (information) is stored in computer as _____.
(a) files (b) directories
(c) floppies (d) matter
(e) None of these

67. The central processing unit contains which of the following as a component?
(a) Memory Regulation Unit
(b) Flow Control Unit
(c) Arithmetic Logic Unit
(d) Instruction Manipulation Unit
(e) None of these

68. Memory unit is a part of _____ .
(a) Control unit (b) Central Processing Unit
(c) Input device (d) Output device
(e) None of these

69. The process of writing out computer instructions is known as _____.
(a) assembling (b) compiling
(c) executing (d) coding
(e) None of these

70. A Web site address is a unique name that identifies a specific _____ on the Web.
(a) Web browser (b) PDA
(c) Website (d) link
(e) None of these

71. An example of a telecommunications device is a _____.
(a) keyboard (b) mouse
(c) printer (d) modem
(e) None of these

72. _____ is a procedure that requires users to enter an identification code and a matching password.
(a) Paging (b) Logging on
(c) Time-sharing (d) Multitasking
(e) None of these

73. Which device is used as the standard pointing device in a Graphical User Environment?
(a) Keyboard (b) Mouse
(c) joystick (d) Track ball
(e) None of these

74. The simultaneous execution of two or more instructions is called _____.
(a) sequential access
(b) reduced instruction set computing
(c) multiprocessing
(d) disk mirroring
(e) None of these

75. Multiprogramming systems _____.
(a) Are easier to develop than single programming systems.
(b) Execute each job faster .
(c) Execute more jobs in the same time period.
(d) Use only one large mainframe computer.
(e) None of these.

76. Which of the following is not an output device?
(a) Plotter (b) Printer
(c) Monitor (d) Touch Screen
(e) None of these

77. Every component of your computer is either _____.
(a) software or CPU/RAM
(b) input devices or output devices
(c) application software or system software
(d) hardware or software
(e) None of these

78. A collection of interrelated records is called a _____.
(a) management information system
(b) spread sheet (c) database
(d) text file (e) None of these

79. Codes consisting of bars or lines of varying widths or lengths that are computer-readable are known as _____.
(a) a bar code (b) an ASCII code
(c) a magnetic tape (d) a light pen
(e) None of these

80. A _____ contains specific rules and words that express the logical steps of an algorithm.
(a) programming language (b) programming structure
(c) syntax (d) logic chart
(e) None of these

81. _____ is a set of keywords, Symbols and a system of rules for constructing statements by which humans can communicate the instructions to be executed by a computer.
(a) A computer program (b) A programming language
(c) An assembler (d) Syntax
(e) None of these

82. The general term "peripheral equipment" is used for _____
(a) any device that is attached to a computer system
(b) large-scale computer systems
(c) a program collection
(d) other office equipment not associated with a desktop computer
(e) None of these

83. _____ is the process of finding errors in software code.
(a) Compiling (b) Assembling
(c) Interpreting (d) Debugging
(e) None of these

84. Which of the following converts all the statements in a program in a single batch and the resulting collection of instructions is placed in a new file?
(a) compiler (b) interpreter
(c) converter (d) instruction
(e) None of these

85. Digital photos and scanned images are typically stored as _____ graphics with extensions such as. bmp, .png, .jpg, .tif, or .gif.
(a) vector (b) bitmap
(c) either vector or bitmap (d) neither vector nor bitmap
(e) None of these

86. _____ is one reason for problems of data integrity
(a) Data availability constraints
(b) Data inconsistency
(c) Security constraints
(d) Unauthorized access of data
(e) Data redundancy

87. When you install a new program on your computer, it is typically added to the _____ menu.
(a) All Programs (b) Select Programs
(c) Start Programs (d) Desktop Programs
(e) None of these

88. After a user has saved and deleted many files, many scattered areas of stored data remained that are too small to be used efficiently, causing _____.
(a) disorder (b) turmoil
(c) disarray (d) fragmentation
(e) None of these

89. Which of the following is the communications protocol that sets the standard used by every computer that accesses Web-based information?
(a) XML (b) DML
(c) HTTP (d) HTML
(e) None of these

90. A _____ is a computer attached to the Internet that runs a special Web server software and can send Web pages out to other computers over the Internet.
(a) web client (b) web system
(c) web page (d) web server
(e) None of these

91. _____ are a type of inexpensive digital camera that remains tethered to a computer and used for videoconferencing, video chatting, and live Web broadcast.
(a) Webcams (b) Webpics
(c) Browsercams (d) Browserpics
(e) None of these

92. Which one of the following is a key function of a firewall?
(a) Monitoring (b) Deleting
(c) Copying (d) Moving
(e) None of these

93. The standard protocol of the Internet is _____
(a) TCP/IP (b) Java
(c) HTML (d) Flash
(e) None of these

94. A program that generally has more user-friendly interface than a DBMS is called a _____
(a) front end (b) repository
(c) back end (d) form
(e) None of these

95. Computers connected to LAN can _____
(a) run faster
(b) Share-information and/or share peripheral equipment
(c) e-mail
(d) go online
(e) None of these

96. Input, output, and processing devices grouped together to represent a(n) _____
(a) mobile device
(b) information processing cycle
(c) circuit board
(d) computer system
(e) None of these

97. Which of the following system components is the brain of the computer?
(a) Circuit board (b) CPU
(c) Memory (d) Network card
(e) None of these

98. The abbreviation ISP stands for
(a) International Spy Project
(b) Indian Social Planning
(c) Internet Solution Provider
(d) Internet Service Provider
(e) None of these

99. This component is required to process data into information and consists of integrated circuits
(a) Hard disk (b) RAM
(c) CPU (d) ROM
(e) None of these

100. Computers manipulate data in many ways, and this manipulation is called _____
(a) utilizing (b) batching
(c) upgrading (d) processing
(e) None of these

101. A file extension is separated from the main file name with a(n) _____ but no spaces.
(a) question mark (b) exclamation mark
(c) underscore (d) period
(e) None of these

102. An adhoc query is a _____
(a) pre-planned question
(b) pre-scheduled question
(c) spur-of-the-moment question
(d) question that will not return any results
(e) None of these

103. A Web _____ consists of one or more Web pages located on a Web server.
(a) hub (b) site
(c) story (d) template
(e) None of these

104. A computer _____ is a set of program instructions that can attach itself to a file, reproduce itself, and spread to other files.
(a) worm (b) virus
(c) trojan horse (d) phishing scam
(e) None of these

105. The desktop contains small graphics called _____
(a) windows (b) logos
(c) icons (d) pictures
(e) None of these

106. C, BASIC, COBOL, and Java are examples of _____ languages.
(a) low-level (b) computer
(c) system programming (d) high-level
(e) None of these

107. A(n) _____ camera is a peripheral device used to capture still images in a digital format that can be easily transferred into a computer and manipulated using graphics software.
(a) digital (b) analog
(c) classic (d) film
(e) None of these

108. _____ makes it possible for shoppers to make purchases using their computers.
(a) E-world (b) E-commerce
(c) E-spend (d) E-business
(e) None of these

109. Networks are monitored by security personnel and supervised by _____ who set(s) up accounts and passwords for authorized network users.
(a) IT managers (b) the government
(c) network administrators (d) password administrators
(e) None of these

110. Application software is designed to accomplish .....
(a) real-world tasks (b) computer-centric tasks
(c) gaming tasks (d) operating system tasks
(e) None of these

111. The human-readable version of a program is called .....
(a) source code (b) program code
(c) human code (d) system code
(e) None of these

112. A _____ computer (also referred to as a laptop), is a small, lightweight personal computer that incorporates the screen, the keyboard, storage, and processing components into a single portable unit.
(a) notebook (b) journal
(c) diary (d) briefcase
(e) None of these

113. Programs such as Internet Explorer that serve as navigable windows into the Web are called _____.
(a) Hypertext (b) Networks
(c) Internet (d) Web browsers
(e) None of these

114. A computer-intensive problem runs on a_____.
(a) server (b) mainframe
(c) supercomputer (d) super PC
(e) None of these

115. Approximately how many bytes make one Megabyte?
(a) One Thousand (b) Ten Thousand
(c) One Hundred (d) One Million
(e) None of these

116. All the deleted files go to _____.
(a) Recycle Bin (b) Task Bar
(c) Tool Bar (d) My Computer
(e) None of these

117. _____ this is the act of copying or downloading a program from a network and making multiple copies of it.
(a) Network piracy (b) Plagiarism
(c) Software piracy (d) Site-license piracy
(e) None of these

118. Which is the best definition of a software package?
(a) An add-on for your computer such as additional memory
(b) A set of computer programs used for a certain function such as word processing
(c) A protection you can buy for a computer
(d) The box, manual and license agreement that accompany commercial software
(e) None of these

119. In MICR, C stands for _____.
(a) Code (b) Colour
(c) Computer (d) Character
(e) None of these

120. Fax machines and imaging systems are examples of _____.
(a) bar-code readers (b) imaging systems
(c) scanning devices (d) pen-based systems
(e) None of these

121. When writing a document, you can use the _____ feature to find an appropriate word or an alternative word if you find yourself stuck for the right word.
(a) dictionary (b) word finder
(c) encyclopedia (d) thesaurus
(e) None of these

122. In an information system, alphanumeric data normally takes the form of _____.
(a) Sentences and paragraphs
(b) Numbers and alphabetical characters
(c) Graphic shapes and figures
(d) Human voice and other sounds
(e) None of these

123. When installing _____, the user must copy and usually decompress program files from a CD -ROM or other medium to the hard disk.
(a) programming software (b) system hardware
(c) applications hardware (d) applications software
(e) None of these

124. A collection of interrelated files in a computer is a _____.
(a) file manager (b) field
(c) record (d) database
(e) None of these

125. A _____ computer is a large and expensive computer capable of simultaneously processing data for hundreds or thousands of users.
(a) server (b) mainframe
(c) desktop (d) tablet
(e) None of these

126. The trend in computer systems is toward the use of Graphical User Interfaces (GUIs). In these operating systems, a trackball is described as
(a) a roller ball which moves the cursor _____
(b) a pen-shaped device which allows data to be entered through the CRT screen
(c) a figure which resembles a familiar office device
(d) an outdated input device
(e) None of these

127. What is usually used for displaying information at public places ?
(a) Monitors
(b) Overhead Projections
(c) Monitors and Overhead Projection
(d) Touch Screen Kiosks
(e) None of these

128. The real business and competitive value of information technology lies in _____.
(a) The software applications that are used by many companies.
(b) The capabilities of the software and value of the information a business acquires and uses.
(c) The infrastructure of hardware, networks, and other IT facilities that are commonly used by most companies.
(d) The capabilities of the hardware and the speed at which it processes information.
(e) None of these.

129. Companies use which of the following vendors to provide access to software and services rather than purchasing the applications and maintaining the applications themselves ?
(a) Open source vendors
(b) Alliances
(c) Application service providers
(d) All of the above
(e) None of these

130. Which one of the following would be considered as a way that a computer virus can enter in a computer system ?
(a) Opening an application previously installed on the computer
(b) Borrowed copies of software
(c) Viewing a website without causing any additional transactions
(d) Running antivirus programs
(e) None of these

131. Collecting personal information and effectively posing as another individual is known as the crime of _____.
(a) spooling (b) identity theft
(c) spoofing (d) hacking
(e) None of these

132. The first step in the transaction processing cycle is _____.
(a) database operations (b) audit
(c) data entry (d) use inquiry
(e) None of these

133. In the information systems concept, the output function involves _____.
(a) Capturing and assembling elements that enter the system to be processed.
(b) Transformation processes that convert input into output.
(c) Transferring elements that have been produced by a transformation process to their ultimate destination.
(d) Monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal.
(e) None of these

134. When a computer runs a program, the _____ processes through the program's sequence of instructions.
(a) AMD (b) ASCII
(c) CPU (d) transistor
(e) None of these

135. Bytes combined to represent a named collection of instructions or data stored in the computer or digital device is a(n) _____.
(a) digitalization (b) kilobyte
(c) record (d) file
(e) None of these

136. _____ is a type of high-speed memory that a processor can access more rapidly than RAM.
(a) Cache memory
(b) Magnetic-storage
(c) Read-Only Memory (ROM)
(d) Solid state storage
(e) None of these

137. The trend of digital electronic devices becoming smaller and increasingly powerful has fully supported the move to an increasingly _____ workforce.
(a) desktop (b) intelligent
(c) server (d) mobile
(e) None of these

138. _____ hard drives are permanently located inside the system unit and are not designed to be removed, unless they need to be repaired or replaced.
(a) Static (b) Internal
(c) External (d) Remove
(e) None of these

139. A barcode is _____ code that represents data with bars of varying widths or heights.
(a) read/write (b) magnetic
(c) optical (d) laser
(e) None of these

140. The Internet allows you to _____
(a) send electronic mail
(b) view Web pages
(c) connect to servers all around the world
(d) All of the above
(e) None of these

141. The name that the User gives to a document is referred to as _____
(a) name given (b) document given
(c) file name (d) document identity
(e) none of these

142. Editing a document consists of reading through the document you've created, then _____ .
(a) correcting your errors (b) printing it
(c) saving it (d) deleting it
(e) None of these

143. Which of the following controls the manner of interaction between the user and the operating system ?
(a) User interface (b) Language translator
(c) Platform (d) Screen saver
(e) None of these

144. What type of software is most useful for the creation of brochures, posters, and newsletters?
(a) Spreadsheet software
(b) Web authoring software
(c) Multimedia authoring software
(d) Desktop publishing software
(e) None of these

145. The quickest and easiest way in MS-Word, to locate a particular word or phrase in a document is to use the _____ command.
(a) Replace (b) Find
(c) Lookup (d) Search
(e) None of these

146. One or more defects or problems that prevent the software from working as intended or working at all is a(n).
(a) bug (b) bot
(c) programming language (d) fuzzy logic
(e) None of these

147. _____ shows the files, folders, and drives on your computer, making it easy to navigate from one location to another within the file hierarchy.
(a) Microsoft Internet Explorer
(b) Windows Explorer
(c) My Computer
(d) Folders Manager
(e) None of these

148. A(n) _____ provides commands for writing software that is translated to the detailed step-by-step instructions executed by the processor to achieve an objective or solve a problem.
(a) programming language (b) software patch
(c) presentation language (d) All language
(e) None of these

149. A program written in a high level language is referred to as
(a) source code (b) object code
(c) machine code (d) assembly code
(e) none of these

150. In order to save an existing document with a different name you need to _____
(a) Retype the document and give it a different name.
(b) Use the Save as command.
(c) Copy and paste the original document to a new document and then save.
(d) Use Windows Explorer to copy the document to a different location and then rename it.
(e) None of these

151. File extensions are used in order to _____.
(a) name the file
(b) ensure the filename is not lost
(c) identify the file
(d) identify the file type
(e) None of these

152. Passwords enable users to _____.
(a) get into the system quickly
(b) make efficient use of time
(c) retain confidentiality of files
(d) simplify file structures
(e) None of these

153. In page preview mode _____.
(a) You can see all pages of your document
(b) You can only see the page you are currently working on
(c) You can only see pages that do not contain graphics
(d) You can only see the title page of your document
(e) None of these

154. To navigate to a new Web page for which you know the URL, type that URL in the browser's _____ and press Enter.
(a) Address bar (b) Domain bar
(c) Address button (d) Name button
(e) None of these

155. The CPU, also called the _____ when talking about PCs, does the vast majority of the processing for a computer.
(a) macroprocessor (b) RAM
(c) Memory System (d) microprocessor
(e) None of these

156. A computer's type, processor, and operating system define its _____
(a) brand (b) size
(c) platform (d) speed
(e) None of these

157. A kiosk _____
(a) is data organized and presented in a manner that has additional value beyond the value of the data itself.
(b) combines microscopic electronic components on a single integrated circuit that processes bits according to software instructions.
(c) is a computer station that provides the public with specific and useful information and services.
(d) describes a computer's type, processor, and operating system
(e) None of these

158. The part of the CPU that accesses and decodes program instructions, and coordinates the flow of data among various system components is the _____
(a) ALU (b) Control unit
(c) Megahertz (d) Motherboard
(e) None of these

159. Computer programs are written in a high-level programming language; however, the human-readable version of a program is called—
(a) cache (b) instruction set
(c) source code (d) word size
(e) None of these

160. What is the difference between a CD-ROM and a CD-RW ?
(a) They are the same-just two different terms used by different manufacturers
(b) A CD-ROM can be written to and a CD-RW cannot
(c) A CD-RW can be written too, but a CD-ROM can only be read from
(d) A CD-ROM holds more information than a CD-RW
(e) None of these

161. The process of a computer receiving information from a server on the Internet is known as –
(a) Pulling (b) Pushing
(c) Downloading (d) Transferring
(e) None of these

162. When sending an e-mail, the _____ line describes the contents of the message
(a) Subject (b) To
(c) Contents (d) cc
(e) None of these

163. You organize files by storing them in _____
(a) archives (b) folders
(c) indexes (d) lists
(e) None of these

164. _____ are specially designed computer chips that reside inside other devices, such as your car or your electronic thermostate.
(a) Servers (b) Embedded computers
(c) Robotic computers (d) Mainframes
(e) None of these

165. Which of the following places the common data elements in order from smallest to largest ?
(a) Character, file, record, field, database.
(b) Character, record, field, file, database.
(c) Character, field, record, file, database
(d) Bit, byte, character, record, field, file, database
(e) None of these

166. Which of the following statements is false concerning file names?
(a) Files may share the same name or the same extension but not both
(b) Every file in the same folder must have a unique name
(c) File extension is another name for file type.
(d) The file extension comes before the dot (.) followed by the file name
(e) None of these

167. Distributed processing involves _____.
(a) solving computer component problems from a different computer
(b) solving computing problems by breaking them into smaller parts that are separately processed by different computers.
(c) allowing users to share files on a network.
(d) allowing users to access network resources away from the office
(e) None of these

168. The operating system determines the manner in which all of the following occurs except _____
(a) user creation of a document
(b) user interaction with the processor
(c) printer output
(d) data displayed on the monitor
(e) None of these

169. Office LANs that are spread geographically apart on a large scale can be connected using a corporate _____.
(a) CAN (b) LAN
(c) DAN (d) WAN
(e) TAN

170. The taskbar is located _____.
(a) on the Start menu
(b) at the bottom of the screen
(c) on the Quick Launch toolbar
(d) at the top of the screen
(e) None of these

171. Generally, you access the Recycle Bin through an icon located _____.
(a) on the desktop
(b) on the hard drive
(c) on the shortcut menu
(d) in the Properties dialog box
(e) None of these

172. The physical arrangement of elements on a page is referred to as a document's _____.
(a) features (b) format
(c) pagination (d) grid
(e) None of these

173. Where is data saved permanently?
(a) Memory (b) Storage
(c) CPU (d) Printer
(e) None of these

174. Which of the following is not true about computer files?
(a) They are collections of data saved to a storage medium
(b) Every file has a filename.
(c) A file extension is established by the user to indicate the file's contents.
(d) Files usually contain data.
(e) None of these.

175. Which is not a basic function of a computer ?
(a) Copy text (b) Accept input
(c) Process data (d) Store data
(e) None of these

176. The _____ is the box that houses the most important parts of a computer system.
(a) software (b) hardware
(c) input device (d) system unit
(e) None of these

177. Which of the following are computers that can be carried around easily ?
(a) Minicomputers (b) Supercomputers
(c) PCs (d) Laptops
(e) None of these

178. The basic goal of computer process is to convert data into
(a) files (b) tables
(c) information (d) graphs
(e) None of these

179. Which of the following refers to the fastest, biggest and most expensive computers ?
(a) Personal Computers (b) Supercomputers
(c) Laptops (d) Notebooks
(e) None of these

180. A central computer that holds collections of data and programs for many PCs, workstations and other computers is a(n) _____.
(a) supercomputer (b) minicomputer
(c) laptop (d) server
(e) None of these

181. A _____ is an electronic device that process data, converting it into information.
(a) computer (b) processor
(c) case (d) stylus
(e) None of these

182. A personal computer is designed to meet the computing needs of a(n)
(a) individual (b) department
(c) company (d) city
(e) None of these

183. Super computer developed by Indian scientists
(a) Param (b) Super30l
(c) Compaq Presario (d) Cray YMP
(e) Blue Gene

184. A computer used at supermarkets, departmental stores and restaurant etc. is called _____ terminal
(a) P-O-S (b) Dumb
(c) Intelligent (d) Smart
(e) calculating

185. Supercomputers _____
(a) are smaller in size and processing capability than mainframe computers
(b) are common in majority of households
(c) contain thousands of microprocessors
(d) are rarely used by researchers due to their lack of computing capacity
(e) are of the same size as laptops

186. The name of the computer's brain is
(a) monitor (b) hardware
(c) CPU (d) byte
(e) None of these

187. The output devices make it possible to
(a) view or print data (b) store data
(c) scan data (d) input data
(e) None of these

188. The most common method of entering text and numerical data into a computer system is through the use of a
(a) keyboard (b) scanner
(c) printer (d) plotter
(e) None of these

189. Which of the following groups consist of only input devices?
(a) Mouse, Keyboard, Monitor
(b) Mouse, Keyboard, Printer
(c) Mouse, Keyboard, Plotter
(d) Mouse, Keyboard, Scanner
(e) None of these

190. Which of the following groups consist of only output devices?
(a) Scanner, Printer, Monitor
(b) Keyboard, Printer, Monitor
(c) Mouse, Printer, Monitor
(d) Plotter, Printer, Monitor
(e) None of these

191. A series of instructions that tells a computer what to do and how to do it is called a
(a) program (b) command
(c) user response (d) processor
(e) None of these

192. Which part of the computer displays the work done ?
(a) RAM (b) Printer
(c) Monitor (d) ROM
(e) None of these

193. Any data or instruction entered into the memory of a computer is considered as
(a) storage (b) output
(c) input (d) information
(e) None of these

194. A scanner scans _____
(a) Pictures
(b) Text
(c) Both Pictures and Text
(d) Neither Pictures nor Text
(e) None of the above

195. Back up of the data files will help to prevent _____
(a) loss of confidentiality
(b) duplication of data
(c) virus infection
(d) loss of data
(e) None of the above

196. To access properties of an object, the mouse technique to use is_____.
(a) right-clicking (b) shift-clicking
(c) dragging (d) dropping
(e) None of these

197. A _____ can make it easier to play games.
(a) mouse (b) joystick
(c) keyboard (d) pen
(e) None of these

198. Which keys enable the input of numbers quickly?
(a) Ctrl, Shift and Alt (b) function keys
(c) the numeric keypad (d) arrow keys
(e) None of these

199. Why is the Caps Lock key referred to as a toggle key?
(a) Because its function goes back and forth every time it is pressed
(b) Because it cannot be used for entering numbers
(c) Because it cannot be used to delete
(d) Because it cannot be used to insert
(e) None of these

200. Using output devices one can
(a) input data (b) store data
(c) scan data (d) view or print data
(e) None of these

201. Which of the following categories would include a keyboard?
(a) Printing Device (b) Output Device
(c) Pointing Device (d) Storage Device
(e) Input Device

202. What type of keys are 'Ctrl' and 'Shift'?
(a) adjustment (b) function
(c) modifier (d) alphanumeric
(e) None of these

203. The term _____ refers to data storage systems that make it possible for a computer or electronic device to store and retrieve data.
(a) retrieval technology (b) input technology
(c) output technology (d) storage technology
(e) None of these

204. The term _____ refers to any computer component that is required to perform work.
(a) bootstrap (b) kernel
(c) resource (d) source code
(e) None of these

205. The _____ is responsible for performing calculations and contains decision-making mechanisms.
(a) Central Processing Unit
(b) Memory Unit
(c) Arithmetic and Logic Unit
(d) Output Unit
(e) None of these

206. Computer _____ is whatever is typed, submitted, or transmitted to a computer system.
(a) input (b) output
(c) data (d) circuitry
(e) None of these

207. Which process checks to ensure the components of the computer are operating and connected properly?
(a) Booting (b) Processing
(c) Saving (d) Editing
(e) None of these

208. All the characters that a device can use is called its ?
(a) Skill Set (b) Character Alphabet
(c) Character Codes (d) Keyboard Characters
(e) Character Set

209. Which unit controls the movement of signals between CPU and I/O ?
(a) ALU (b) Control Unit
(c) Memory Unit (d) Secondary Storage
(e) None of these

210. The three main parts of the processor are _____.
(a) ALU, Control Unit and Registers
(b) ALU, Control Unit and RAM
(c) Cache, Control Unit and Registers
(d) Control Unit, Registers and RAM
(e) RAM, ROM and CD-ROM

211. Which of the following does not relate to Input Unit ?
(a) If accepts data from the outside world.
(b) It converts data into binary code that is understandable by the computer.
(c) It converts binary data into the human readable form that is understandable to the users.
(d) It sends data in binary form to the computer for further processing.
(e) None of these.

212. Video controller
(a) Controls the resolution of images on screen.
(b) Controls the signals to be sent and received from processor for display.
(c) Handles the entire electronic work behind the formation of images on the screen.
(d) Is responsible for allocating pixels for formation of images.
(e) None of these.

213. Decreasing the amount of space required to store data and programs is accomplished by _____.
(a) pressing (b) disk caching
(c) RAID (d) crashing
(e) file compression

214. A means of capturing an image (drawing or photo) so that it can be stored on a computer is
(a) Modem (b) Software
(c) Scanner (d) Keyboard
(e) Mouse

215. Access control based on a person's fingerprints is an example of
(a) biometric identification
(b) characteristic identification
(c) fingerprint security
(d) logistics
(e) None of these

216. Codes consisting of bars or lines of varying widths or lengths that are computer-readable are known as _____.
(a) an ASCII code (b) a magnetic tape
(c) an OCR scanner (d) a bar code
(e) None of these

217. Which of the following functions is not performed by the CPU?
(a) Graphical display of data
(b) Arithmetic calculations
(c) Managing memory
(d) Managing input and output
(e) None of these

218. The part of the CPU that accesses and decodes program instructions, and coordinates the flow of data among various system components is the
(a) ALU (b) control unit
(c) megahertz (d) motherboard
(e) None of these

219. The name that the user gives to a document is referred to as
(a) document-name (b) file-name
(c) name-given (d) document-identity
(e) None of these

220. A disk's content that is recorded at the time of manufacture and that cannot be changed or erased by the user is _____.
(a) memory-only (b) write-only
(c) read-only (d) run-only
(e) None of these

221. Reusable optical storage will typically have the acronym _____.
(a) CD (b) DVD
(c) ROM (d) RW
(e) None of these

222. The most common type of storage devices are _____
(a) persistent (b) optical
(c) magnetic (d) flash
(e) None of these

223. How many megabytes make a gigabyte?
(a) 1024 (b) 128
(c) 256 (d) 512
(e) 64

224. The time for the actual data transfer after receiving the request for data from secondary storage is referred to as the disk's
(a) transfer time (b) movement time
(c) access time (d) data input time
(e) None of these

225. What happens when we try to delete the files on the floppy?
(a) The files get moved to the Recycle Bin
(b) Files on a floppy cannot be deleted
(c) The files get deleted and can be restored again from Recycle Bin.
(d) The files get deleted and cannot be restored again
(e) The file gets copied on the Hard disk

226. The following computer's memory is characterised by low cost per bit stored
(a) Primary (b) Secondary
(c) Hard Disk (d) All of these
(e) None of these

227. Which of the following is not an example of hardware?
(a) Scanner (b) Printer
(c) Monitor (d) Mouse
(e) Interpreter

228. _____is the maximum amount of data that can be stored on a storage medium.
(a) Magnetic storage (b) Optical storage
(c) Solid-state storage (d) Storage capacity
(e) None of these

229. For opening and closing of the file in Excel, you can use which bar ?
(a) Formatting (b) Standard
(c) Title (d) Formatting or Title
(e) None of these

230. _____ acts as temporary high-speed holding area between the memory and the CPU thereby improving processing capabilities
(a) ROM (b) RAM
(c) Temporary memory (d) Cache memory
(e) Flash memory

231. The background of any word document _____
(a) is always white colour
(b) is the colour you preset under the Options menu
(c) is always the same for the entire document
(d) can have any colour you choose
(e) None of the above

232. Which of the following memory chip is faster ?
(a) There is no certainty
(b) DRAM
(c) SRAM
(d) DRAM is faster for larger chips
(e) None of these

233. Which of the following is the second largest measurement of RAM ?
(a) Terabyte (b) Megabyte
(c) Byte (d) Gigabyte
(e) Mega Hertz

234. A group of 8 bits is known as a –
(a) byte (b) kilobyte
(c) binary digit (d) megabit
(e) None of these

235. The storage element for a Static RAM is the _____.
(a) diode (b) resistor
(c) capacitor (d) flip-flop
(e) None of these

236. Which of the following is the largest unit of storage?
(a) GB (b) KB
(c) MB (d) TB
(e) None of these

237. _____ is the process of dividing the disk into tracks and sectors.
(a) Tracking (b) Formatting
(c) Crashing (d) Allotting
(e) None of these

238. Memory, also called random access memory, or RAM, _____.
(a) contains the electronic circuits that cause processing to occur.
(b) makes the information resulting from processing available for use.
(c) allots data, programs, commands, and user responses to be entered into a computer.
(d) consists of electronic components that store data.
(e) None of these.

239. A 32-bit-word computer can access _____ byte at a time.
(a) 4 (b) 8
(c) 16 (d) 32
(e) 30

240. The main memory of a computer must be large enough to contain the active parts of _____.
(a) the operating system
(b) the applications
(c) input/output storage & working storage
(d) All of these
(e) None of these

241. Which of the following types of memory improves processing by acting as a temporary high-speed holding area between the memory and the CPU?
(a) RAM (b) ROM
(c) Cache memory (d) Flash memory
(e) EPROM

242. Thick, rigid metal platters that are capable of storing and retrieving information at a high rate of speed are known as
(a) hard disks (b) soft disks
(c) flash memory (d) SAN
(e) None of these

243. A DVD is an example of a(n) _____.
(a) hard disk
(b) optical disk
(c) output device
(d) solid-state storage device
(e) None of these

244. Decreasing the amount of space required to store data and programs is accomplished by _____.
(a) pressing (b) disk caching
(c) RAID (d) crashing
(e) file compression

245. Which of the following is a secondary storage device?
(a) Optical disks (b) RAM
(b) Microprocessor (d) All of these
(e) None of these

246. A tape drive offers _____ access to data.
(a) timely (b) sporadic
(c) random (d) sequential
(e) disastrous

247. This is not a function category in Excel
(a) Logical (b) Data Series
(c) Financial (d) Text
(e) None of these

248. What is the major disadvantage of RAM ?
(a) Its access speed is too slow.
(b) Its matrix size is too big.
(c) It is volatile.
(d) High power consumption
(e) None of these

249. What disk is used to cold-boot a PC?
(a) Setup disk (b) System disk
(c) Diagnostic disk (d) Program disk
(e) None of these

250. A disk's content that is recorded at the time of manufacture and that cannot be changed or erased by the user is _____.
(a) memory-only (b) write-only
(c) read-only (d) run-only
(e) None of these

251. Even if a disk drive fails, the computer application running and using it can continue processing. This application is said to have been designed with this feature called
(a) 100 percent up-time (b) Fault tolerance
(c) High reliability (d) All of these
(e) None of these

252. Which media has the ability to have data/information stored (written) on them by users more than once?
(a) CD-R disks
(b) CD-RW disks
(c) Zip disks
(d) Opti-Disks
(e) Both CD-RW disks and Zip disks

253. Storage media such as a CD read and write information using _____.
(a) a laser beam of red light
(b) magnetic dots
(c) magnetic strips
(d) All of these
(e) None of these

254. The main memory of a computer can also be called
(a) Primary storage (b) Internal memory
(c) Primary memory (d) All of these
(e) None of these

255. The life span of a CD-ROM is
(a) approximately one year
(b) approximately two years
(c) approximately five years
(d) approximately twenty-five years
(e) almost unlimited

256. The signal which shows that a computer is waiting for a command from the user is
(a) prompt (b) event
(c) time slice (d) interrupt
(e) None of these

257. _____ increase the accuracy of a search by fine-tuning the keywords in the search.
(a) Indexes (b) Italics
(c) Compounds (d) Links
(e) Operators

258. The fastest component for accessing stored data/information is/are
(a) cache (b) DVDs
(c) hard disks (d) main memory
(e) tape

259. A standard CD player accesses data/information using which method?
(a) Sequential access (b) Random access
(c) Multivariate access (d) All of these
(e) None of these

260. _____ is a set of keywords, symbols, and a system of rules for constructing statements by which humans can communicate the instructions to be executed by a computer.
(a) A computer program (b) A programming language
(c) An assemble (d) Syntax
(e) None of these

261. This can be another word for program
(a) software (b) disk
(c) floppy (d) hardware
(e) None of these

262. The secret code that restricts entry to some programs is
(a) password (b) passport
(c) entry-code (d) access-code
(e) None of these

263. The person who writes and tests computer programs is called a
(a) programmer (b) computer scientist
(c) software engineer (d) project developer
(e) None of these

264. _____ is the process of carrying out commands.
(a) Fetching (b) Storing
(c) Executing (d) Decoding
(e) None of these

265. Processing involves
(a) inputting data into a computer system
(b) transforming input into output
(c) displaying relevant answers
(d) providing relevant answers
(e) None of these

266. Which of the following controls the manner of interaction between the user and the operating system?
(a) user interface (b) language translator
(c) platform (d) screensaver
(e) None of these

267. Computer language used on the Internet is _____
(a) BASIC (b) COBOL
(c) Java (d) Pascal
(e) None of these

268. What is correcting error in a program called?
(a) Compiling (b) Debugging
(c) Grinding (d) Interpreting
(e) None of these

269. The _____ of a system includes the programs or instructions.
(a) hardware (b) icon
(c) information (d) software
(e) None of these

270. The primary purpose of software is to turn data into _____
(a) Websites (b) information
(c) programs (d) objects
(e) None of these

271. A _____ contains specific rules and words that express the logical steps of an algorithm.
(a) programming language (b) syntax
(c) programming structure (d) logic chart
(e) None of the above

272. A (n) _____ is a program that makes the computer easier to use.
(a) utility (b) application
(c) operating system (d) network
(e) None of these

273. Linux is a type of _____ software.
(a) Shareware (b) Commercial
(c) Proprietary (d) Open Source
(e) Hidden type

274. A data warehouse
(a) Contains numerous naming conventions and formats
(b) Is organized around important subject areas
(c) Contains only current data
(d) Can be updated by end users
(e) Explains some observed event or condition

275. The operating system, that is self-contained in a device and resident in the ROM is
(a) Batch Operating System
(b) Real-time Operating System
(c) Embedded Operating System
(d) Mutli-Processor Operating System
(e) None of these

276. Information that comes from an external source and fed into computer software is called
(a) Output (b) Input
(c) Throughput (d) Reports
(e) None of these

277. To be able to "boot", the computer must have a(n)
(a) Compiler (b) Loader
(c) Operating System (d) Assembler
(e) None of these

278. _____ is a feature for scheduling and multiprogramming to provide an economical interactive system of two or more users
(a) Time sharing (b) Multitasking
(c) Time tracing (d) Multiprocessing
(e) None of these

279. A programming language having a (n) _____ is slow in execution
(a) Interpreter (b) Compiler
(c) Assembler (d) Linker
(e) none of these

280. The word processor used by DOS to write the programs or instructions
(a) WordStar (b) WordPad
(c) Notepad (d) MS-Word
(e) EDIT

281. Decimal equivalent of $(1111)_2$
(a) 11 (b) 10
(c) 1 (d) 15
(e) 13

282. System proposal is prepared in _____ phase of SDLC
(a) Conception (b) Initiation
(c) Analysis (d) Design
(e) construction

283. The errors that can be find out by a compiler are
(a) Logical errors (b) Internal errors
(c) Semantic errors (d) Syntax errors
(e) Execution errors

284. The process that deals with the technical and management issues of software development is _____
(a) Delivery process (b) Control process
(c) Software process (d) Testing process
(e) Monitoring process

285. Android is _____
(a) Operating system (b) Application
(c) Interface (d) Software
(e) A collection of all these

286. Devices that enter information and let you communicate with the computer are called _____.
(a) Software (b) Output devices
(c) Hardware (d) Input devices
(e) Input/Output devices

287. By firmware we understand _____.
(a) physical equipment used in a computer system.
(b) a set of instructions that causes a computer to perform one or more tasks.
(c) the people involved in the computing process.
(d) a set of programs that is pre-installed into the read only memory of a computer during the time of manufacturing.
(e) None of these

288. The basic computer processing cycle consists of _____
(a) input, processing and output
(b) systems and application
(c) data, information and applications
(d) hardware, software and storage
(e) None of these

289. Restarting a computer that is already on is referred to as
(a) shut down (b) cold booting
(c) warm booting (d) logging off
(e) None of these

290. A complete electronic circuit with transistors and other electronic components on a small silicon chip is called a (n)–
(a) workstation (b) CPU
(c) magnetic disk (d) integrated circuit
(e) None of these

291. Which of the following is hardware and not software ?
(a) Excel (b) Printer driver
(c) Operating System (d) Power Point
(e) CPU

292. Where is the disk put in a computer?
(a) in the modem (b) in the hard drive
(c) into the CPU (d) in the disk drive
(e) None of these

293. The disks stores information in
(a) Tables (b) Rows and columns
(c) Blocks (d) Tracks and sectors
(e) All of these

294. What resides on the motherboard and connects the CPU to other components on the motherboard ?
(a) Input Unit (b) System Bus
(c) ALU (d) Primary Memory
(e) None of these

295. The cost of a given amount of computing power has _____ dramatically with the progress of computer technology.
(a) stayed the same
(b) changed proportionally with the economy
(c) increased
(d) fluctuated
(e) decreased

296. The indentations on CDs and DVDs are called:
(a) pits (b) clusters
(c) tracks (d) lands
(e) None of these

297. The _____ directory is mandatory for every disk.
(a) Root (b) Base
(c) Sub (d) Case
(e) None of these

298. Permanent instructions that the computer uses when it is turned on and that cannot be changed by other instructions are contained in _____.
(a) ROM (b) RAM
(c) ALU (d) REM
(e) None of these

299. Where is the disk put to enable the computer to read it?
(a) Disk drive (b) Memory
(c) CPU (d) ALU
(e) None of these

300. When you save the following the data would remain intact even after turning off computer?
(a) RAM
(b) Motherboard
(c) Secondary and Storage Device
(d) Primary Storage Device
(e) None of these

301. The term used to define all input and output devices in a computer system is _____
(a) Monitor (b) Software
(c) Shared resources (d) Hardware
(e) None of these

302. The clock rate of a processor is measured in
(a) milliseconds
(b) microhertz
(c) megabytes or gigabytes
(d) nanoseconds
(e) megahertz or gigahertz

303. If a processor has a word size of 32 bits, compared to a processor with a word size of 16 bits, it can process _____ at a time.
(a) thrice as much (b) half as much
(c) a fourth as much (d) the same amount
(e) twice as much

304. Which of the following is an example of connectivity?
(a) CD (b) Floppy disk
(c) Power cord (d) Data
(e) Internet

305. The new _____ integrates the function of a processor, memory and video on a single chip
(a) micro processor (b) power processor
(c) system on a chip (d) multimedia processor
(e) chip processor

306. Fax machines and imaging systems are examples of
(a) barcode readers (b) imaging systems
(c) scanning devices (d) pen-based systems
(e) None of these

307. A device that is connected to the motherboard is _____.
(a) called an external device
(b) called an adjunct device
(c) called a peripheral device
(d) must connect using ribbon cable
(e) None of these

308. Storage and memory differ with respect to which of the following characteristics?
(a) Price (b) Reliability
(c) Speed (d) All of the above
(e) None of these

309. The process of copying software programs from secondary storage media to the hard disks called
(a) Configuration (b) Download
(c) Storage (d) Upload
(e) Installation

310. Which of the following will you require to hear music on your computer?
(a) Video Card (b) Tape Recorder
(c) Mouse (d) Joy Stick
(e) Sound Card

311. For viewing video CDs, you would use
(a) CD Player
(b) Windows Media Player
(c) Windows Video Player
(d) Windows Movie Player
(e) None of these

312. A CPU-chip developed by Intel for wireless laptops is called the
(a) Celeron (b) Pentium-M
(c) Xen (d) Itanium
(e) None of these

313. The processor is a _____ chip plugged onto the motherboard in a computer system.
(a) LSI (b) VLSI
(c) ULSI (d) XLSI
(e) WLSI

314. The other name of a motherboard is
(a) Mouse (b) Computer Board
(c) System Device (d) Central Board
(e) System Board

315. When a computer is switched on, the booting process performs
(a) Integrity Test
(b) Power-On-Self-Test
(c) Correct Functioning Test
(d) Reliability Test
(e) Shut-down

316. ROLLBACK in a database is _____ statement
(a) TCL (b) DCL
(c) DML (d) DDL
(e) SDL

317. _____ provides total solutions to reduce data redundancy, inconsistency, dependence and unauthorized access of data
(a) DBMS (b) Tables
(c) Database (d) Protection passwords
(e) Centralization of data

318. ROLLBACK in a database is _____ statement
(a) TCL (b) DCL
(c) DML (d) DDL
(e) SDL

319. Dr. E.F. Codd represented _____ rules that a database must obey if it has to be considered truly relational
(a) 10 (b) 8
(c) 12 (d) 6
(e) 5

320. A data warehouse
(a) Contains numerous naming conventions and formats
(b) Is organized around important subject areas
(c) Contains only current data
(d) Can be updated by end users
(e) Explains some observed event or condition

321. Which of these is considered intelligent CASE tool?
(a) Toolkit
(b) Methodology companion
(c) Workbench
(d) Upper CASE
(e) Lower CASE

322. A collection of conceptual tools for describing data, relationships, semantics and constraints is referred to as
(a) ER model (b) Database
(c) Data Model (d) DBMS
(e) None of these

323. _____ search method is conducted for a specific title, domain, URL, or host
(a) Keyword (b) Field
(c) Boolean (d) Miscellaneous
(e) Logical

324. A field that uniquely identifies which person, thing, or event the record describes is a _____.
(a) file (b) data
(c) field (d) key
(e) None of these

325. The ability to find an individual item in a file immediately -
(a) sequential access (b) file allocation table
(c) direct access (d) directory
(e) None of these

326. A collection of unprocessed items is _____.
(a) information (b) data
(c) memory (d) reports
(e) None of these

327. Example of non-numeric data is
(a) Employee address (b) Examination score
(c) Bank balance (d) All of these
(e) None of these

328. _____ increase the accuracy of a search by fine-tuning the keywords in the search.
(a) Indexes (b) Italics
(c) Compounds (d) Links
(e) Operators

329. The DBMS that is most difficult to use is _____ .
(a) Microsoft's SQL Server
(b) Microsoft's Access
(c) IBM's DB2
(d) Oracle Corporation's Oracle
(e) None of these

330. The simultaneous execution of two or more instructions is called
(a) sequential access
(b) reduced instruction set computing
(c) multiprocessing
(d) disk mirroring
(e) None of these

331. A Field is a related group of _____.
(a) Records (b) Files
(c) Characters (d) Cables
(e) None of the above

332. Meaningful filename helps in easy file _____.
(a) Storing (b) Accessing
(c) Identification (d) Printing
(e) None of the above

333. Distributed processing involves
(a) solving computer component problems from a different computer.
(b) solving computing problems by breaking them into smaller parts that are seperately processed by different computers.
(c) allowing users to share files on a network.
(d) allowing users to access network resources away from the office.
(e) None of these.

334. When data changes in multiple lists and all lists are not updated, this causes
(a) data redundancy (b) information overload
(c) duplicate data (d) data inconsistency
(e) data repetition

335. Participants can see and hear each other in a/an
(a) electronic mail system (b) message system
(c) teleconference (d) bulletin board
(e) None of these

336. How do businesses protect their databases?
(a) Security guards are hired to watch the databases at all times.
(b) Databases are protected by file swapping.
(c) Databases are naturally protected.
(d) Databases are kept physically and electronically secure.
(e) The computer room is kept locked after office hours.

337. The main purpose(s) of a database management program is to
(a) allow users to retrieve and analyze stored records.
(b) provide a way to store information about specified entities.
(c) make it possible for users to store information as interrelated records.
(d) translate hard-to-read data into more legible formats.
(e) a, b, and c above

338. Which of the following contains permanent data and gets updated during the processing of transactions?
(a) Operating System File (b) Transaction file
(c) Software File (d) Master file
(e) None of these

339. The database administrator is, in effect, the coordinator between the _____ and the _____.
(a) DBMS; database
(b) application program; database
(c) database, users
(d) application programs; users
(e) None of these

340. A DBMS that combines a DBMS and an application generator is _____ .
(a) Microsoft's SQL Server
(b) Microsoft's Access
(c) IBM's DB2
(d) Oracle Corporation's Oracle
(e) None of these

341. If you want to move an icon on your desktop, this is called _____.
(a) double clicking (b) highlighting
(c) dragging (d) pointing
(e) None of these

342. A symbol or question on the screen that prompts you to take action and tells the computer what to do next _____.
(a) scanner
(b) questionnaire
(c) prompts and dialog box
(d) information seeker
(e) None of these

343. Data independency in DBMS is known as
(a) Data modeling (b) Data hiding
(c) Data capturing (d) Data consistency
(e) None of these

344. A data dictionary doesn't provide information about
(a) where data is located
(b) the size of the disk storage disk
(c) who owns or is responsible for the data
(d) how the data is used
(e) None of these

345. What does the data dictionary identify?
(a) Field names (b) Field types
(c) Field formates (d) All of the above
(e) None of these

346. Which key is used in combination with another key to perform a specific task?
(a) Function (b) Control
(c) Arrow (d) Space bar
(e) None of these

347. What is a modem connected to?
(a) processor (b) motherboard
(c) printer (d) phone line
(e) None of these

348. Computers connected to a LAN can
(a) run faster
(b) go on line
(c) share information and/or share peripheral equipment
(d) E-mail
(e) None of these

349. A device that connects to a network without the use of cables is said to be
(a) distributed (b) centralised
(c) open source (d) wireless
(e) None of these

350. Codec refers to
(a) Coder-decoder (b) Co-declaration
(c) Command declaration (d) Command decoding
(e) None of these

351. To connect networks of similar protocols _____ are used
(a) Routers (b) Bridges
(c) Gateways (d) Dial-up routers
(e) None of these

352. Telnet is a _____ based computer protocol
(a) Sound (b) Text
(c) Image (d) Animation
(e) Digits

353. P2P is a _____ application architecture
(a) Client/ server (b) Distributed
(c) Centralized (d) 1- tier
(e) None of these

354. Which of the following terms is just the collection of networks that can be joined together ?
(a) virtual private network (b) LAN
(c) intranet (d) extranet
(e) internet

355. Which device is used to access your computer by other computer or for talk over phone?
(a) RAM (b) CD ROM Drive
(c) Modem (d) Hard Disk
(e) None of these

356. An example of a telecommunications device is a
(a) keyboard (b) mouse
(c) printer (d) modem
(e) None of these

357. Several computers linked to a server to share programs and storage space.
(a) Network (b) grouping
(c) library (d) integrated system
(e) None of the above

358. A device which can be connected to a network without using cable is called
(a) Distributed device (b) Centralised device
(c) Open-source device (d) Wireless device
(e) Without code device

359. The connection between your computer at home and your local ISP is called _____.
(a) the last mile (b) the home stretch
(c) the home page (d) the backbone
(e) the vital mile

360. If you wish to extend the length of the network without having the signal degrade, you would use a
(a) resonance (b) router
(c) gateway (d) switch
(e) repeater

361. A term related to sending data to a satellite is
(a) downlink (b) modulate
(c) demodulate (d) uplink
(e) inter-relate

362. Bluetooth is an example of _____.
(a) Personal area network (b) Local area network
(c) Virtual private network (d) Wide area network
(e) None of these

363. Which of the following device is used to connect two systems, especially if the systems use different protocols?
(a) hub (b) bridge
(c) gateway (d) repeater
(e) None of these

364. The slowest transmission speeds are those of
(a) twisted-pair wire (b) coaxial cable
(c) fiber-optic cable (d) microwaves
(e) None of these

365. Which of the following types of channels moves data relatively slowly?
(a) wideband channel (b) voiceband channel
(c) narrowband channel (d) broadband channel
(e) None of these

366. Which of the following communications modes support two-way traffic but in only one direction of a time?
(a) simplex (b) half-duplex
(c) three-quarters duplex (d) All of the above
(e) None of these

367. A chat is
(a) an internet standard that allows users to upload and download files.
(b) a typed conversation that takes place on a computer.
(c) an online area in which users conduct written discussions about a particular subject.
(d) the transmission of messages and files via a computer network.
(e) None of these.

368. Sending an e-mail is similar to
(a) picturing an event (b) narrating a story
(c) writing a letter (d) creating a drawing
(e) None of these

369. The process of a computer receiving information from a server on the internet is known as
(a) pulling (b) pushing
(c) downloading (d) transferring
(e) None of these

370. Digital Banking can be resorted through
(a) Mobile phones (b) Internet
(c) Telephones (d) All of these
(e) None of these

371. In a web site, the 'home' page refers to-
(a) the best page (b) the last page
(c) the first page (d) the most recent page
(e) the oldest page

372. Which of the following is used by the browser to connect to the location of the Internet resources?
(a) Linkers (b) Protocol
(c) Cable (d) URL
(e) None of these

373. Which of the following is not a term pertaining to the Internet?
(a) Keyboard (b) Link
(c) Browser (d) Search Engine
(e) Hyperlink

374. An educational institution would generally have the following in its domain name
(a) .org (b) .edu
(c) .inst (d) .com
(e) .sch

375. The process of trading goods over the Internet is known as
(a) e-selling-n-buying (b) e-trading
(c) e-finance (d) e-salesmanship
(e) e-commerce

376. A _____ is a software program used to view Web pages.
(a) site (b) host
(c) link (d) browser
(e) None of these

377. _____ allows voice conversations to travel over the Internet.
(a) Internet telephony (b) Instant messaging
(c) E-mail (d) E-commerce
(e) None of these

378. Which of the following is not true concerning user IDs and passwords?
(a) When you enter your user ID and password the computer knows it is you.
(b) If your computer asks for a user ID and password, you can create your own.
(c) Sometimes you are assigned a user ID and password, for security reasons.
(d) You should share your user ID and password with at least one other person.
(e) None of these.

379. Unsolicited commercial email is commonly known as
(a) spam (b) junk
(c) hoaxes (d) hypertext
(e) None of these

380. Microsoft's operating system Windows
(a) is designed for multiple concurrent users.
(b) has a graphical user interface.
(c) can perform multitasking.
(d) All of these
(e) Both (b) and (c) above

381. Most mail programs automatically complete the following two parts in an e-mail
(a) From : and Body : (b) From : and Date :
(c) From : and To : (d) From : and Subject :
(e) None of these

382. An e-mail address typically consists of a user ID followed by the_____ sign and the name of the e-mail server that manages the user's electronic post office box.
(a) @ (b) #
(c) & (d) «
(e) None of these

383. Origin of internet can be tracked from
(a) ARPA net (b) Radio networks
(c) Satellite networks (d) Indian army networks
(e) Air Force networks

384. _____ search engine sends request for information to several search engines simultaneously and compiles the results
(a) Meta (b) Individual
(c) Directory (d) Subject directory
(e) None of these

385. To access a website or web content from a web server, the client sends a(n) _____
(a) Information (b) Message
(c) Request (d) Response
(e) Interrupt

386. An http request contains_____ parts.
(a) 2 (b) 5
(c) 3 (d) 4
(e) 1

387. Through _____ an administrator or another user can access someone else's computer remotely.
(a) Administrator (b) Web server
(c) Web application (d) HTTP
(e) Telnet

388. What utility to you use to transfer files and exchange messages ?
(a) Web browsers (b) WWW
(c) Email (d) Hypertext
(e) Search engines

389. Which is the slowest internet connection service?
(a) Digital Subscriber Line
(b) TI
(c) Cable modem
(d) Leased Line
(e) Dial-up Service

390. Which of the following is not true about passwords?
(a) A password should be a combination of mixed case alphanumeric characters.
(b) Password should be maximum 6 characters in length.
(c) A password that can be memorized easily should be used, so that it need not be noted down.
(d) A password that can be typed quickly without much effort should be used.
(e) None of these.

391. A _____ shares hardware, software and data among authorized users.
(a) network (b) protocol
(c) hyperlink (d) transmitter
(e) None of these

392. What is Windows Explorer?
(a) A drive (b) A personal computer
(c) A Web browser (d) A network
(e) A file manager

393. Documents on the Web are called _____.
(a) Web pages (b) Web sites
(c) Web communities (d) Web tags
(e) Home pages

394. You can have a live conversation with another connected user via _____.
(a) e-mail (b) instant messaging
(c) e-commerce (d) distance learning
(e) Word package

395. With _____, the computer's modem uses a standard telephone line to connect to the Internet.
(a) DSL
(b) dial-up access
(c) ISDN
(d) cable television Internet services
(e) satellite

396. _____ is a procedure that requires users to enter an identification code and a matching password.
(a) Paging (b) Logging on
(c) Time-sharing (d) Multitasking
(e) None of these

397. A _____ is the term used when a search engine returns a Web page that matches the search criteria.
(a) blog (b) hit
(c) link (d) view
(e) success