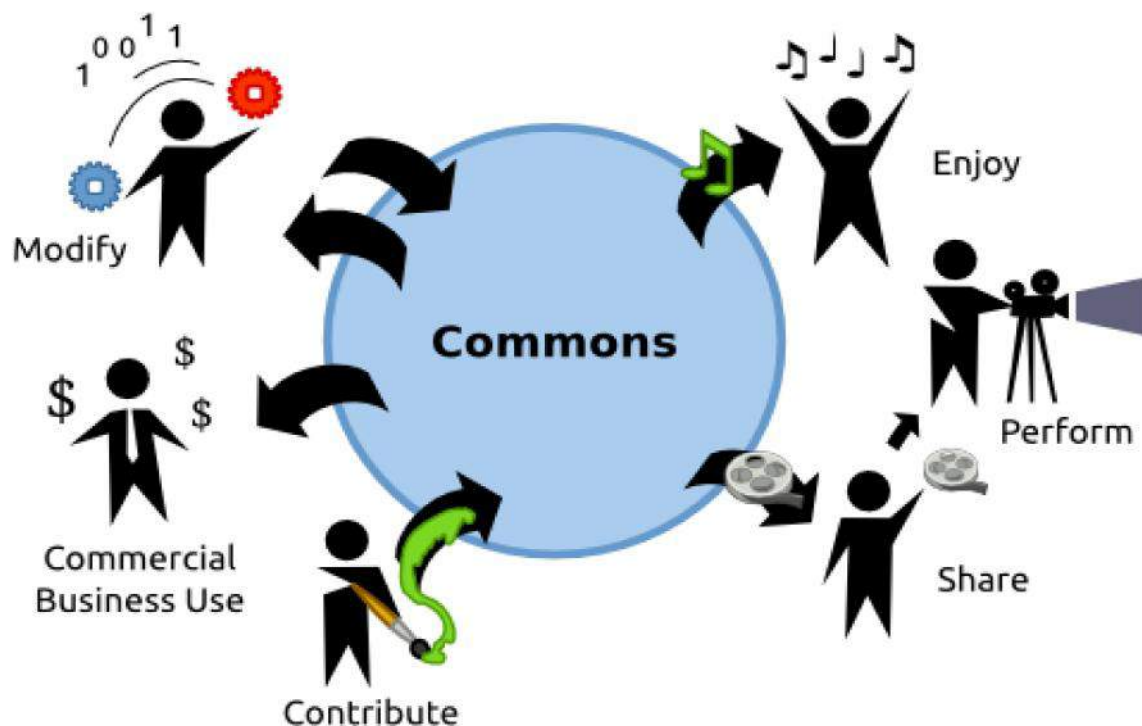CHAPTER 16

Internet and Open source concepts

OBJECTIVES

> ➢ **Definitions and terms used in internet and web sites**
> ➢ **Various web browsers.**
> ➢ **To understand the free ware software.**
> ➢ **how and methods of Computer viruses attacks**

Making Use of Creativity

Not everything on the Internet is in the commons. But the following permissions should all be available for real common resources.

Modify

Enjoy

Perform

Commercial Business Use

Commons

Contribute

Share

16.1 INTRODUCTION

Broadly the term "Open source" software is used to refer to those categories of software/programs whose licenses do not impose much condition. Such software, generally, give users freedom to run/use the software for any purpose to study and modify the program, and to redistribute copies of either the original or modified program.

There are many categories of software that may be referred to as open source software. Following sub section is going to talk about the same.

16.1.2 Free software

Free software means the software is freely accessible and can be freely used, changed, improved, copied and distributed by all who wish to do so. And no payments are needed to be made for free software.

Free software is a matter of liberty, not price. To understand the concept, you should think of "free" as in "free speech", not as in "free beer". Free software is a matter of the users freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the user of the software.

1. The freedom to run the program, for any purpose.
2. The freedom to study how the program works and adapt it to your needs. Access to the source code is a precondition for this.
3. The freedom to redistribute copies so you can help your neighbor.
4. The freedom to improve the program and release your improvements to the public, so that the whole community benefits. Access to the source code is a precondition for this.

16.1.3 Open Source Software

Open Source Software, on the other hand, can be freely used but it does not have to be free of charge. Here the company constructing the business models around open source software may receive the payments concerning support, further development. What is important to know here is that in open source software, the source code is freely available to the customer.

Open source doesn't just mean access to the source code. The distribution terms of open source software must comply with the following criteria.

1. **Free redistribution:** The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

2. **Source Code**: The program must include source code and must allow distribution in source code as well as complied form. Where some form of a product is not distributed with source code, there must be a well publicized means of obtaining the source code for no more than a reasonable reproduction cost preferably,

downloading via the internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a pre processor or translator are not allowed.

3. **Derived works:** The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

4. **No discrimination against persons or groups:** The license must not discriminate against any person or group of persons.

5. **No discrimination against fields of Endeavor**: The license must not restrict anyone from making use of the program in a specific field of endeavor. For example it may not restrict the program from being used in a business or being used for genetic research.

6. **Distribution of license:** The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

7. **License must not be specific to a product:** The rights attached to the program must not depend on the programs being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the programs license, all parties to whom the program is redistributed should have the same rights as those that are guaranteed in conjunction with the original software distribution.

8. **The license must not restrict other software:** The license must not place restrictions on other software that is, distributed alone with the licensed software.

9. **License must be technology neutral:** No provision of the license may be predicated on any individual technology or style of interface.

Software which is free as well as open belongs to category FOSS (Free and Open Source Software). The terms free and open represent a differing emphasis on importance of freedom (free software) or technical progress (Open Source Software).

16.1.4 OSS and FLOSS

OSS refers to Open Source Software, which refers to software whose source code is available to customers and it can be modified and redistributed without any limitations. An OSS may come free of cost or with a payment of nominal charges that its developers may charge in the name of development, support of software.

FLOSS refers to Free Libre and Open Source Software or to Free Livre and Open Source Software. The term FLOSS is used to refer to software which is both free software as well as open source software. Here the words Libre (a Spanish word) and Livre (a Portuguese word) mean freedom.

16.1.5 GNU

GNU refers to GNU's not Unix. GNU project emphasizes on freedom and thus its logo type shows a gnu, an animal living in freedom.

16.1.6 FSF

FSF is Free Software Foundation. FSF is a non-profit organization created for the purpose of supporting free software movement. *Richard Stallman* founded FSF in 1985 to support GNU project and GNU licenses. FSF has founded many software developers to write free software. Now a day, it also works on legal and structural issues for the free software community.

16.2.1 OSI

OSI is Open Source Initiative. It is an organization dedicated to cause of promoting open source software. Bruce Perens and Erics Raymond were the founders of OSI that was founded in February 1998. OSI specifies the criteria for Open Source Software and properly defines the terms and specifications of Open Source Software.

Open Source does not just mean access to the Source code. The distribution terms of Open source software must comply with the open source definition by OSI.

16.2.2 W3C

W3C is acronym for World Wide Web Consortium. W3C is responsible for producing the software standards for World Wide Web. The W3C was created in October 1994, to lead the WWW to its full potential by developing common protocols that promote its evolution and ensure its interoperability.

16.2.3 Proprietary Software

Proprietary Software is the software that is neither open nor freely available. Its use is regulated and further distribution and modification is either forbidden or requires special permission by the supplier or vendor. Source code of Proprietary Software is normally not available.

Freeware

The term **Freeware** has no clear definition, but is generally used for software, which is available free of cost and which allows copying and further distribution, but not modification and whose source code is not available. Freeware should not be mistaken for open software or for free software.

Shareware

Shareware is software, which is made available with the right to redistribute copies, but it is stipulated that if one intends to use the software, often after a certain period of time, then a license fee should be paid.

(i). in shareware the source code is not available

(ii). Modifications to the software are not allowed.

16.2.4 WWW (World Wide Web)

The **WWW (World Wide Web)** is a set protocols that allows you to access any document on the net through a naming system based on URLs. WWW also specifies a way– the Hypertext Transfer Protocol (HTTP) to request and send a document over the internet. Before WWW, Internet was mainly used for obtaining textual information. But post-WWW, the Internet popularity grew tremendously because of graphic intensive nature of WWW. Therefore, we may attribute the explosion in use and popularity of Internet to WWW only.

16.2.5 Telnet

Telnet is an older Internet Utility that lets you log on to remote computer systems. Basically, a Telnet program gives you a character-based terminal window on another system. You get a login prompt on that system. If you've permitted access, you can work on that system, just as you would if you were sitting next to it. Telnet has been used by people who have logins on remote systems and want to do serious work there. Most notably, you can use Telnet to connect to thousands of catalogs at libraries around the world.

16.2.6 Web Browser

A **Web Browser** is a WWW client that navigates through the World Wide Web and displays web pages. Internet Explorer and Netscape Navigator are two most popular web browsers.

16.2.7 Web Server

Web Server is a WWW server that responds to the requests made by web browsers. Each website has a unique address called **URL (Uniform Resource Locator).**

16.2.8   Web Page

The documents residing on web sites are called Web Pages. The web pages use HTTP.

1. Home Page: It is the top-level web page of a web site. When a web-site is opened, its home page is displayed.

2. Web Portal: It is a web site, which hosts other web sites. In other words, a web portal has hyperlink to many other web sites. By clicking upon these links, the corresponding websites can be opened.

16.3 URL and Domain Names

The Internet structure of the World Wide Web is built on a set of rules called Hypertext Transfer Protocol (HTTP) and a page description language called Hypertext Markup Language (HTML). HTTP uses internet addresses in a special format called a Uniform Resource Locator or URL, URLs look like this:

type://address/path

Where type: specifies the type of the server in which the file is located, address is the address of server, and path tells the location of file on the server. For example, in the following URL

http://encycle.msn.com/getinfo/styles.asp

http: specifies the type of server, encycle.msn.com is the address of server and getinfo/styles.asp is the path of the file style.asp.

Syntax Elements of URLs

URL is an address of a file on Internet. The components or syntax elements of URLs and a file's Internet address, or URL, is determined by the following:

1. The type of server or protocol
2. The name or address of the server on the Internet
3. The location of the file on the server

The intelligent browsers like Netscape Navigator or Microsoft Internet Explorer can display files in just about any format available on any of the common types of servers.

In any typical URL, the "http" identifies both the protocol and server. According to standard URL syntax, a colon (:) and two forward slashes (//) follow the protocol/server.

The next component of the address is the name of the server; in this case, server names have multiple components. Commonly a Web server's name will begin "www" for World Wide Web.

Internet Servers and What They Provide

Server Protocol Information It Provides : ftp gopher, httpmail news, File Transfer ProtocolTransfer Control Protocol/Internet Protocol (TCP/IP)Hypertext Transfer ProtocolPost Office Protocol (POP) Version 3 and Simple Mail Transfer Protocol (SMTP)Network News Transfer Protocol (NNTP) Text and binary files that are organized in a hierarchical structure, much like a family tree.Text and binary files that are organized in a menu structure.Hypertext/hypermedia files Messages sent via electronic mail.Newsgroups that are organized in a hierarchical structure.

Domain Name : Domain name are used to identify one or more ip addressess. Domain names are used in URLs to identify particular web page/web pages.

Some Most Common Domains

In addition to it, a two letter abbreviation indicating the country name may be used e.g.,http://www.pue.kar.nic.in. Here the last in suggests that it is based in India (.in) and pue.kar.nic.in is the domain name. Similarly, the URL http://www.clearnet.nz suggests that it is based in New Zealand (.nz).

Sl.No.	Domain ID	Affiliation	Remarks
1	com	Commercial	For commercial firms
2	edu	Education	For educational firms
3	gov	Government	For Government Organizations/bodies
4	mil	Military	For Military
5	net	Network resources	For ISPs/networks
6	org	Usually non-profit organizations	For NGOs and other no-profit
7	co	Company	For listed companies
8	biz	Business	For business
9	tv	Television	For television companies and channels

Some country abbreviations are listed below:

au   Australia
dk   Denmark
in   India
nz   New Zealand
uk   United Kingdom

16.4 Electronic Commerce

Electronic commerce is sophisticated combination of tecnologies and consumer-based services integrated to form a new paradigm in business transaction processing..

Business activities such as marketing,sales, sales promotion; sub contracts,supply; financing and insurance, commerical contracts,supply; financing and insurance commecial transactions:Ording,delivery,payment; product service and maintence;use of private and public services business-to-administrations(permissions,tax,customers, etc); banking,trannsport and logistics; public procurement(results can be seen of internet); automatic trading of digital goods and accounting.

Definition : E-commerce is the trade of goods and services with the help of telecommunication and computers.

E-commerce involves the automation of a variety of business to consumer(B2B,B2C,C2B,C2C) transaction through reliable and secure connections.

Some of the technologies and services used in e-commerce are

1. Electronic Data interchange(EDI) is the electronic interchange of business information using a standardized format. In other words, EDI is a process which allows one company to send information to another company electronically rather than with paper. Business entities which conduct business electronically are called trading partners.
2. e-mail
3. Electronic Funds transfer(EFT)
4. Electronic Benefits transfer(EBT),
5. Electronic forms(online admissions forms for college and other registrations)
6. Digital cash(DC)
7. Interoperable database access
8. Bulletin Boards(BBs)
9. Electronic Banking(EB)
10.Bar-coding-2D,Imaging,voice recognition,
11 security services such as firewalls, encryption, gateways etc.

How does eCommerce work?

Step 1: The merchant submits a credit card transaction to the NMAPAY Payment gateway on behalf of a customer via secure Web site connection, retail store, MOTO center or wireless device.
Step 2: NMAPAY receives the secure transaction information and passes it via a secure connection to the Merchant Bank's Processor.
Step 3: National Merchants Association submits the transaction to the Credit Card Network (a system of financial entities that communicate to manage the processing, clearing, and settlement of credit card transactions).

Step 4: The Credit Card Network routes the transaction to the Customer's Credit Card Issuing Bank.

Step 5: The Customer's Credit Card Issuing Bank approves or declines the transaction based on the customer's available funds and passes the transaction results back to the Credit Card Network.

Step 6: The Credit Card Network relays the transaction results to National Merchants Association

Step 7: National Merchants Association relays the transaction results through NMAPAY(website)

Step 8: NMAPAY stores the transaction results and sends them to the customer and/or the merchant. This step completes the authorization process - all in about three seconds or less!

Step 9: National Merchants Association sends the appropriate funds for the transaction to the Credit Card Network, which passes the funds to the Merchant's Bank. The bank then deposits the funds into the merchant's bank account. This step is known as the settlement process and typically the transaction funds are deposited into your primary bank account within 24 to 48 hours.

16.4.1 Types of e-commerce applications:

1. Business-to-Business(B2B)

2.Business-to Consumer(B2C)

3. Consumer-to-Business(C2B)

4.Consumer-to-Consumer(C2C)

1. Business-to-Business(B2B): The exchange of services, information and/or products from one business to another Business partners.Ex Ebay.com

2. Business-to-Consumer(B2C): The exchange of services, information and/or product from a business to a consumer.

3. Consumer-toBusiness(C2B): Customer directly contact with business vendors by posting their project work with set budge online so that the needy companies review it and contact the customer directly with bid. The consumer reviews all the bids and selects the company for further processing. Ex. guru.com, freelancer.com.

4. Consumer-to-consumer: Electronic commerce is an internet facilitated form of business(commerce).

16.4.2 Advantages of electronic commerce application and implementation:

1.Easier entry into new markets, especially geographically remote markets, for companies of all sizes and locations.

2. Creates a new markets through the ability to easily and economical rate potential for customers.

3. Global participation

4. Optimization of resource.

5. Reduce time to complete business transaction, particularly from delivery to payment.

6. Buyer makes a buying decision, creates the purchase order but does not print it.

7.Improved market intelligence and strategic planning.

8. EDI software creates an electronic version of the purchase order and transmits it automatically to the supplier.

9. Supplier's order entry system receives the purchase order and updates the system immediately on receipt.

10.Supplier's order entry system creates an acknowledgment an transmits it back to confirm receipt.

16.5 IPR –issues Intellectual Property Rights(IPR) in India

Does the nature of the technology require us to change the legal understanding or status of copyright as it stands now? What rights should be associated with Web content? How should the rights be expressed, and should the expression of the rights be used for notification, enforcement, or payment negotiation? We expect the answer to these questions does not lie solely in technology nor policy, but the rational combination of both.

Copyright has been the focus of protecting intellectual property on the Internet. As such, there have been both technological (IPR/encryption wrappers) and legislative efforts to continue incentives for authors to create useful works. Recent initiatives have been at the international level include at the OECD, and a conference (Dec. 96) hosted by the World Intellectual Property Organization (WIPO).

IPR-related issues in India like patents, trademarks, copyrights, designs and geographical indications are governed by the Patents Act 1970 and Patent Rules 2003, Trademarks Act 1999 and the Trademarks Rules 2002, Indian Copyrights Act, 1957, Design Act 2000 and Rules 2001, and The Geographical

Indications of Goods (Registration & Protection) Act, 1999 and The Geographical Indications of Goods (Registration & Protection) Rules 2002, respectively.

IPR plays a key role in almost every sector and has become a crucial factor for investment decisions by many companies. All the above Acts and regulations are at par with international standards. India is now TRIPS-compliant. This is an international agreement administered by the World Trade Organization (WTO), which sets down minimum standards for many forms of intellectual property (IP) regulations as applied to the nationals of other WTO Members. The very well-balanced IPR regime in India acts as an incentive for foreign players to protect their Intellectual Property in India.

This can be established by the very fact that approximately 80% of patent filings in India are from the MNCs.

While the IPR regime in India consists of robust IP laws, it lacks effective enforcement, for which "least priority given to adjudication of IP matters" is often quoted as a reason. The key challenge is to sensitize the enforcement officials and the Judiciary to take up IP matters, at par with other economic offences, by bringing them under their policy radar. Further, it is imperative that there be established a 'Think Tank' or a group, which can bring the varied sets of stakeholders on to a common platform, leading to extensive/exhaustive and an all inclusive debate/discussion, facilitating well-informed policy decisions in accordance with India's socio-economic-political needs. The challenges also lie in having an IP fund, which can be utilized for further developing the IP culture in the country. There is also the need to have a National IP Policy for India, which will help in working towards realizing the vision of India in the realm of IP. This will facilitate the creation of a strong socio-economic foundation and deep international trust.

FICCIs efforts emphasize the enhancing of the working of the Indian Patent Office, thereby, bringing greater transparency in its working, and facilitating the Government in developing a policy for India.
The IPR division tries to provide proactive business solutions through research, interactions at the highest political level while facilitating global networking. Further, since the IPR provides exclusive rights over assets, it is a major challenge for the country to balance the interests of the innovators and the interests of the society at large.

In today's highly competitive global economy, IPRs are giving companies the cutting edge and increasing their competitiveness. With recent changes in IP laws, various IP related issues have sprung up, which are highly complex in nature. FICCI envisions itself as the 'thought' leader in the field of IPR. FICCI

also views itself as being capable enough to assist the government and the industry captains in all IP related matters.

Showcasing its unparalleled capabilities in this sphere, FICCI's IPR division organizes the World IP Day on April 26th every year. In fact, on World IP Day 2010, FICCI prepared and submitted a discussion paper on the National IP Policy to the Government of India. In 2011 as well, FICCI submitted a brief report to the Government of India, with a view to safeguarding India's interests in the fields of traditional knowledge and traditional cultural expressions, at the International Governmental Committee meeting at WIPO.

Review questions

One mark questions:
1. What is open source software?
2. What are free software?
3. What is OSS and FLOSS
4. What is Proprietary software?
5. What is Freeware?
6. What are Browsers
7. What are URL?
8. What are Telnet?
9. What is domain name?
10. Define e-commerce?
11. Expand IPR.

Two marks questions:
1. List the OSS and Floss.
2. What is FSF.
3. What are OSI and W3C?
4. What is URL and HTTP?
5. Name the different protocols used?
6. List the services of e-commerce?
7. Write a note on WIPO.

Three marks questions:
1. What is Open source?
2. Write the advantages of www?
3. What is Telnet?
4. Write the web servers?
5. Write a note on open source?
6. Explain free software?
7. Explain URLs?
8. How ecommerce works?
9. Explain types of e-commerce?
10. Explain the IPR in india.