UNIT

III

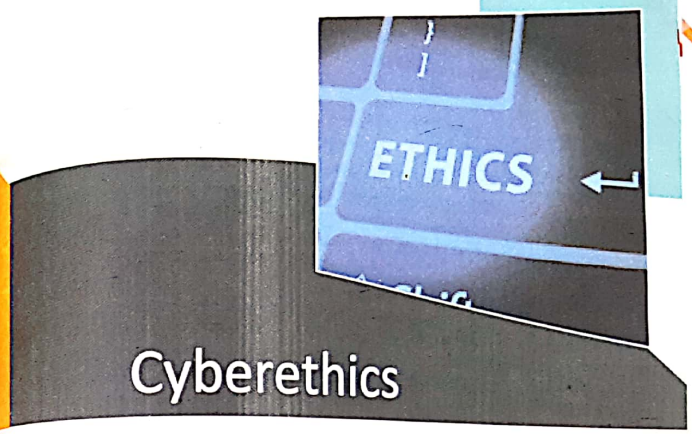
Chapter 6 Cyberethics

1/10/19

CHAPTER

6

IN THIS CHAPTER



Cyberethics

6.1 Introduction

We live in a world at a time which is often called information age where information is freely available from any part of the world. The Internet has revolutionized the world and people are getting used to having access to whatever information they want anytime, anywhere and from a wider and wider range of computing devices.

All this has made available to us an abundance of information, but with it comes responsibility-responsibility of using this information and technologies, ethically. In this chapter, we shall talk about cyberethics related to e-commerce, intellectual and digital properties along with software licences, open source movement and digital divide etc.

6.2 Cyberethics for E-commerce

E-commerce refers to the occurrence of commerce activities online or electronically. So you can say that e-commerce is the buying or selling of goods and services over electronic networks like Internet and making payments or transferring funds over electronic networks like Internet. While buying or selling goods or services over Internet, each stake holder must stick to ethical conduct to ensure that no one is cheated or fooled in any form. Let us talk about the ethics related to e-commerce.

6.2.1 Privacy

In general, privacy means the protection of personal information given online while carrying out some online activity or transaction. In e-commerce especially, it is related to a company's policies on the use of user data.

Ethically, both the buyer and the seller the must provide the correct information to each other, pertaining to the transaction that is taking place. An e-commerce company must clearly state: how it intends to use the customers' data collected this way (such as user location, user's buying history, user's preferences etc.) or whether the customer can restrict the use of personal information.

PRIVACY

Privacy is the protection of personal information given online. In e-commerce especially, it is related to a company's policies on the use of user data.

An important factor of privacy is the **consumer consent** – whether the consumer is given a choice to decide what the information can and cannot be used for. Usually, when the proper security systems are in place, the user will not mind sharing the information necessary for a transaction to take place (needless to say, some information about the user is simply required in e-commerce, such as a delivery address, card details and name and customers are aware of this). But then the consent will relate to whether this information can be further exploited.

How to Safeguard User Privacy ?

To ensure that the user privacy is not compromised, following measures must be taken :

(*i*) The merchant or the seller must clearly state about how the user data will be used, in the terms and conditions of its site.

(*ii*) The merchant or seller must ensure that the user has gone through the terms and conditions given on its site prior to making any transactions.

(*iii*) The merchant must assure the user about data safety by implementing proper data safety and security measures such as *https protocol* and other security mechanism so that users' data is safe from hackers too.

(*iv*) The user must go through the terms and conditions of the seller/merchant site before providing any sensitive information and make sure that the site is a safe site by checking https protocol and padlock etc.

Note

To respect the privacy, the merchant or the seller must clearly state about how the user data will be used in the terms and conditions of its site and implement technical safeguards for the safety of data provided by user.

6.2.2 Fraud

Fraud committed using the Internet is called **Online fraud**. Online fraud may occur in many forms such as :

- Non-delivered goods
- Non-existent companies
- Stealing information
- Fraudulent payments etc.

While the first two types of frauds can be countered by setting up official bodies ensuring the validity of e-commerce companies and promised delivery of goods, the last two types of frauds are more frightening. The examples of such frauds include ***credit card frauds*** and ***identity theft***. In **credit card frauds**, the credit card details of user are stolen from his/her online activities and then some payment frauds are carried out with this stolen information. The **identity theft** is also very scary ; by stealing someone else's online identity (such as his/her social media handle, email-id etc.), fraudulent posts are posted or some other malicious /dangerous activity (such as rumour mongering/riots fueling etc.) is carried out.

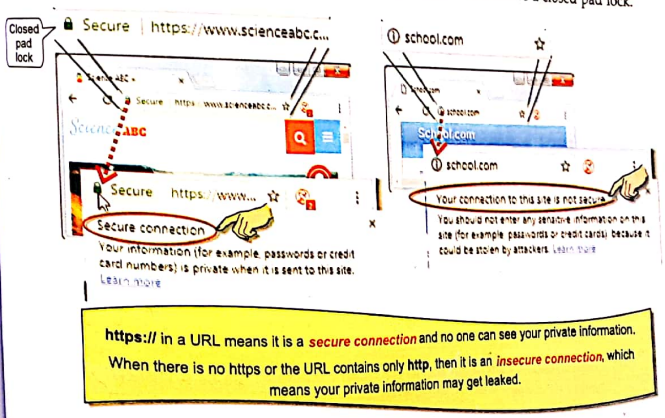
The measures to stop these frauds may include :

- A monitoring official body that ensures the sanctity of E-commerce Company and delivery of goods/services as promised.
- Strong security mechanism by the e-commerce site and payment gateways to prevent stealing of crucial information.
- Official guidelines and safeguards on the selling of users' data to third parties.

Ensure Safe sites while entering crucial information

Sometimes, you have a need to provide your crucial information such as your personal details or bank details etc. For example, you might be applying online to register for an entrance exam through a legitimate site that asks for your personal details. In such case, ensure these things :

- Type the URL of the website in the address bar of the browser on your own . Do not click on a link that takes to this website; or do not cut/copy the link of this website and paste it. TYPE THE URL ON YOUR OWN in the address bar of the web browser.
- **Ensure that the address contains HTTP and a pad lock sign.** When this website gets loaded, before you start typing any information, ensure that the website address. A safe site's URL starts with **https://** and not with **http://**. Also, it shows a closed pad lock.



6.2.3 Secure Data Transmission

Secure data transmission means applying enough technical safeguards so that data travels safely to its target, without being compromised or eavesdropped. To ensure secure data transmission, usually following techniques are applied :

(*i*) **SSL secure data transmission.** *SSL (Secure Sockets Layer)* is a standard security protocol which establishes encrypted links between a web server and a browser in an online communication. The usage of SSL technology ensures that all data transmitted between the web server and browser remains encrypted and hence remains safe.

(*ii*) **Data encryption.** Encrypted data when sent over Internet is hard to steal and hence is safer.

(*iii*) **Use safe protocols** such as for files, use Secure FTP. Wherever possible, one should use safe protocols that use some safety shells such as SSH. It will ensure the safety of data being transferred.

SECURE DATA TRANSMISSION

Secure data transmission means applying enough technical safeguards so that data travels safely to its target, without being compromised or eavesdropped.

6.3 Other Ethical Issues

These days, we can easily say that our society is information society and our era is information era. As we all know that ***information*** *is the means to acquire knowledge*. In other words, we can say that *information forms the intellectual capital* for a person or body. However, there are many ethical issues involved with the usage and availability of information.

Some common ethical issues are :

(*i*) Intellectual property rights
(*ii*) Plagiarism
(*iii*) Digital property rights

6.3.1 Intellectual Property Rights

As mentioned earlier, information makes intellectual property. Any piece of information is produced or created with a lot of efforts and it consumes a lot of time. The cost factor is also involved with the creation or production of information. Though once produced, it becomes very easy to duplicate it or share it with others. But this very thing makes information difficult to safeguard unlike tangible property.

Note

Intellectual property rights are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed. Also it gives the owner a right to decide the price for doing (exchanging / sharing/distributing) so.

The creator/producer of the information is the real owner of the information. And the owner has every right to protect his/her intellectual property. To protect one's intellectual property rights one can get information copyrighted or patented or use trademarks.

The ethical issue involved with it is that information must not be exchanged without the consent of its owner.

The intellectual property rights must be protected for it :

- encourages individuals and businesses to create new software and new software applications, as well as improving existing applications,
- ensures new ideas and technologies are widely distributed,
- promotes investment in the national economy.

6.3.2 Plagiarism

Simply put, *Plagiarism* means *stealing*. Surprised? If you look into an English dictionary to find the meaning of word plagiarism, it will give somewhat like "the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work."

PLAGIARISM

Plagiarism is stealing someone else's intellectual work and representing it as your own work without citing the source of information.

Thus, **Plagiarism** is stealing someone else's intellectual work (can be an idea, literary work or academic work etc.) and representing it as your own work without giving credit to creator or without citing the source of information.

Any of the following acts would be termed as Plagiarism :

- Using some other author's work without giving credit to author.
- Using someone else's work in incorrect form than intended originally by the author/creator.
- Modifying/lifting someone's production such as music-composition etc. without attributing it to the creator of the work.
- Giving incorrect or incorrect source of information *i.e.*, wrongful citation.
- Failure in giving credit or acknowledging the contribution of others in a collaborative effort, to which you are also part of.

How not to Plagiarize ?

As most universities[1] put in their student-handbook. 'To avoid plagiarism :

You must give credit whenever you use

- another person's idea, opinion, or theory;
- quotations of another person's actual spoken or written words ; or
- Paraphrase of another person's spoken or written words.

Plagiarism is Offence

'If plagiarism involves copying not only ideas but also a substantial portion of a copyrighted work without attribution and without permission, it would amount to both copyright infringement and the violation of the 'special right' of the author to be credited.

Copyright infringement and the violation of an author's right to be credited are both civil wrongs and criminal offences. A civil suit may be instituted, and criminal charges may also be filed'[2].

Both civil suit and criminal charges are punishable offences and amount to fine and penalties.

1. Found in most universities' guidelines for students/ student-handbooks
2. www.mxmindia.com (interview of *Nandita Saikia*)

6.3.3 Digital Property Rights

Digital property (or **digital assets**) refers to any information about you or created by you that exists in digital form, either online or on an electronic storage device. All of your digital property comprises what is known as your ***digital estate***.

Examples of digital property include : *any online personal accounts, such as email and communications accounts, social media accounts, shopping accounts, photo and video sharing accounts, video gaming accounts, online storage accounts, and websites and blogs that you may manage ; domain names registered in your name ; intellectual property, including copyrighted materials, trademarks, patents and any software or code (such as software tools created by you or games or apps created by you) you may have written and own etc.*

DIGITAL PROPERTY

Digital property (or **digital assets**) refers to any information about you or created by you that exists in digital form, either online or on an electronic storage device.

Digital property rights lie with the owner. Legally a person who has created it or the owner who has got it developed by paying legally is the legal owner of a digital property. Only the owner can use and decide who all and in what form can his/her digital asset may be used by other whether by making payments or by buying it or by obtaining its license or usage rights etc. But this is not the case generally; there are many threats to digital properties.

Threats to Digital Properties

Let us briefly talk about common threats to digital properties :

1. **Digital software penetration tools.** Although one needs to buy usage rights or license to use a digital property, there are many software penetration tools such as *cracks* and *keygens*, tools created by hackers to penetrate your software's registration system and enable unauthorized users to freely access your software without actually paying for it.
2. **Stealing and plagiarizing codes of your digital properties.** Sometimes other developers somehow get hold of your software's source code and then create plagiarized versions of your code and use it in their own software. In other words, they steal your software's source code and use it to build their own versions of it, and then sell it under their own company name.

Digital Property Rights Protection

As there are multiple types of threats to digital properties, there are many ways you can ensure protection of your digital properties. Let us talk about these protective measures :

1. **Anti-Temper Solutions.** There are many anti-tamper solution available today which ensure that your digital property is tamper proof. These anti-temper solutions use a host of advanced technologies to prevent hackers from hacking, reverse-engineering or manipulating your digital properties such as *utility tools, software, apps, video games* etc.
2. **Legal Clauses.** Add legal clause in the clauses of use of your software/digital properties. You must include a transparent clause in your software's Terms of Service that prohibits the scraping of your software's source code for reuse. This is a sound legal backup for you.
3. **Limit the sharing of software code.** You should share your software code only with trusted individuals who are part of development team. You should also use a Digital Rights Management (DRM) solution to protect your software from being scraped for source code using decompilers etc.

6.4 Open Source Philosophy and Software Licences

Broadly the term *'open source software'* is used to refer to those categories of software / programs whose licenses do not impose much conditions. 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 (without having to pay royalties to previous developers).

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

6.4.1 Terminology

Before we talk about various terms and definitions pertaining to '**Open**' world, you must be clear about *two* terms which are often misunderstood or misinterpreted.

These terms are :

- Free software and
- Open source software

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**.

The definition of **Free Software** is published by *Richard Stallman's Free Software Foundation*. Here is the key text[3] of that definition :

"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 users of the software :

- *The freedom to run the program, for any purpose (freedom 0).*
- *The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this.*
- *The freedom to redistribute copies so you can help your neighbor (freedom 2).*
- *The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.*

A program is free software if users have all of these freedoms.

Open Source Software

Open Source Software, on the other hand, can be **freely used** (in terms of making modifications, constructing business models around the software and so on) but it ***does not have to be free of charge***. Here the company constructing the business models around *open source software* may receive 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.

3. Excerpt courtesy *Free Software Foundation*. This keytext is available at *www.gnu.org/philosophy/free-sw.html*.

6.4.2 Philosophy of Open Source

Open source software is officially defined by the **open source definition** at *http://www.opensource.org/docs/definition_plain.html*.

It states that :

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

Free Redistribution	No restriction on the re-distribution of the software whether as a whole or in part.
Source Code	The program must include source code, and must allow distribution in source code as well as compiled form.
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.
Integrity of the Author's Source Code	The integrity of the author'source code must be maintained. Any additions / modifications should carry a different name or version number from the original software.
No Discrimination Against Persons or Groups	The license must not discriminate against any person or group of persons.
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 from being used for genetic research.
Distribution of License	The rights attached to the program must apply to all to whom the program is redistributed.
License must not be Specific to a Product	There must not be any restriction on the rights attached to the program, *i.e.*, there should not a condition on the program's being part of a particular software distribution.
The License must not Restrict other Software	The license must not place restrictions on other software that is distributed along with the licensed software *For example*, the license must not insist that all other programs distributed on the same medium must be open-source software.
Licence must be Technology Neutral	No provision of the license may be predicated on any individual technology or style of interface.

A software which is **free** as well as **open** belongs to category **FOSS** (*Free and Open Source Software*).

Note

The terms Free and Open represent a differing emphasis on importance of ***freedom*** (*free software*) or ***technical progress*** (open source software).

6.4.3 Definitions

After understanding the difference between the terms free and **open**, let us now proceed to our discussion on terminology and definitions pertaining to open source software.

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 limitation. 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 a 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***.

GNU

GNU[4] refers to ***GNU's Not Unix***. GNU Project emphasizes on freedom. The GNU project was initiated by *Richard M. Stallman* with an objective to create an operating system. With time, GNU project expanded and now it is not limited to only an operating system. Now, it offers a wide range of software, including applications apart from operating system.

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 licences. Now a days, it also works on legal and structural issues for the free software community.

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 doesn't just mean access to the source code. The distribution terms of open source software must comply with the *Open Source Definition* by OSI.

Freeware

The term freeware 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. Freeware is distributed in binary form (ready to run) without any licensing fee. In some instances the right to use the software is limited to certain types of users, for instance, for private and non-commercial purposes. One example is Microsoft Internet Explorer, which is made available as freeware.

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 world wide web to its full potential by developing common protocols that promote its evolution and ensure its interoperability.

The World Wide Web Consortium (W3C) describes itself as follows :

> The World Wide Web Consortium exists to realize the full potential of the Web.
>
> The W3C is an industry consortium that seeks to promote standards for the evolution of the Web and interoperability between WWW products by producing specifications and reference software. Although industrial members fund W3C, it is vendor-neutral, and its products are freely available to all.

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.

4. GNU is recrusive acronym for GNU's Not Unix. A recursive acronym is the one that uses its abbreviation in full form *e.g.*, VISA is also recursive acronym – VISA International Service Association.

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. Shareware is not the same thing as *free and open source software* (FOSS) for *two* main reasons : (*i*) the source code is not available and, (*ii*) modifications to the software are not allowed. The objective of shareware is to make the software available to try for as many users as possible. This is done in order to increase prospective users' will to pay for the software. The software is distributed in binary form and often includes a built-in timed mechanism, which usually limits functionality after a trial period of usually one to three months.
Copylefted Software	Copylefted software is free software whose distribution terms ensure that all copies of all versions carry more or less the same distribution terms. This means, for instance, that copyleft licenses generally disallow others to add additional requirements to the software) and require making source code available. This shields the program, and its modified versions, from some of the common ways of making a program proprietary.

6.4.4 Licenses and Domains of Open Source Technology

As per Open Source Initiative, "*Open source licenses are licenses that comply with the Open Source Definition — in brief, they allow software to be freely used, modified, and shared.*"

Open-source licenses make it easy for others to contribute to a project without having to seek special permission. It also protects you as the original creator, making sure you at least get some credit for your contributions. It also helps to prevent others from claiming your work as their own.

Broadly used open source licences are being given below for your reference :

1. GNU General Public License (GPL)

The GNU General Public Licence (GPL) is probably one of the most commonly used licenses for open-source projects. The GPL grants and guarantees a wide range of rights to developers who work on open-source projects. Basically, it allows users to legally copy, distribute and modify software.

This means, with GPL, a user can :

Copy the software	Copy the software as many times as needed. There's no limit to the number of copies one can make.
Distribute the software however you want	There is no restriction of distribution methods and styles – can be in copied form or printed form or web-link form.
Charge a fee to distribute the software	After modifying the software, you can even charge for your software, explaining why you are charging them but the software should still be under GNU GPL.
Make whatever modifications to the software you want	You are free to make any kind of modifications to the GNU GPL software. The only catch is that the other project must also be released under the GPL.

2. GNU Lesser General Public License (LGPL)

There is another GNU license : the **Lesser General Public Licence(LGPL)**. It offers lesser rights to a work than the standard GPL licence. The LGPL is used to license *free software* so that it can be incorporated into both *free software* and *proprietary software*. The LGPL and GPL licenses differ with one major exception ; with LGPL the requirement that you have to release software extensions in open GPL has been removed.

Mostly, LGPL is used by libraries. LGPL is also called GNU libraries and formally called the Library GPL.

3. BSD License

BSD licenses represent a family of permissive free software licenses that have fewer restrictions on distribution compared to other free software licenses such as the *GNU General Public License*. There are *two* important versions of BSD licence :

the New BSD License/Modified BSD License	The New BSD License ("3-clause license") allows unlimited redistribution for any purpose as long as its copyright notices and the license's disclaimers of warranty are maintained. The license also contains a clause restricting use of the names of contributors for endorsement of a derived work without specific permission.
the Simplified BSD License / FreeBSD License	The Simplified BSD license is different from New BSD License in the sense that the latter omits the non-endorsement clause.

4. MIT License

The MIT License is the shortest and probably broadest of all the popular open-source licenses. Its terms are very loose and more permissive than most other licenses.

The basic provisions of the license are :

- You can use, copy and modify the software however you want. No one can prevent you from using it on any project, from copying it however many times you want and in whatever format you like, or from changing it however you want.
- You can give the software away for free or sell it. You have no restrictions on how to distribute it.
- The only restriction is that it be accompanied by the license agreement. It basically says that anyone can do whatever they want with the licensed material, as long as it's accompanied by the license.

> **Note**
> The MIT License is the least restrictive open source license.

5. Apache License

The Apache License, grants a number of rights to users. These rights can be applied to both *copyrights* and *patents*.

The Apache License offers :

Rights are perpetual	Once granted, you can continue to use them forever.
Rights are worldwide	If the rights are granted in one country, then they're granted in all countries.

Rights are granted for no fee or royalty.	There is up-front usage fee, no per-usage fee or any other basis either.
Rights are non-exclusive.	You are not the sole-licensee; other can also use the licensed work.
Rights are irrevocable	No one can take these rights away once they're granted.

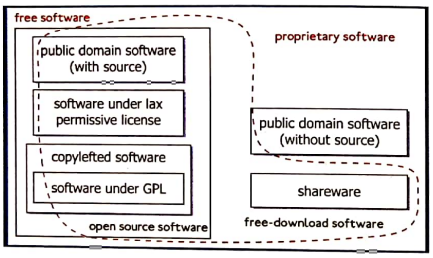
Redistributing code requires giving proper credit to contributors to the code and the same license (Apache) would remain with the software extension.

Public Domain Software vs. Proprietary Software

Public-domain software is free and can be used without restrictions. The term public-domain software is often used incorrectly to include freeware, free software that is nevertheless copyrighted. *Public domain software* is, by its very nature, outside the scope of copyright and licensing.

On the contrary, there is *Proprietary software*, which is neither free nor available for public. There is a proper license attached to it. User has to buy the licence in order to use it.

Consider the diagram (Fig. 6.1) originally made by *Chao-Kuei*[5] that describes the categories of software.



Figre 6.1 Categories and domains of software

6.5 Freedom of Information and Digital Divide

Freedom of Information refers to right to access information available on public platforms. Although Internet is a free entity and our government does not exert any control over it, the information available on Internet is not equally accessible to all parts of India. As Wikipedia puts it, "A *digital divide* is an economic and social inequality with regard to access to, use of, or impact of information and communication technologies (ICT)."

Note

Freedom of Information refers to right to access information available on public platforms.

In India too, we see digital divide across states and between urban and rural areas. The number of Internet users in India

5. and available under GNU GPL v2.

is reported to be around 500 million in June 2018. However Internet penetration in *urban areas is around 65%* but is *around 21% in rural areas* – a clear cut example of digital divide in India. There have been multiple reasons contributing to it.

Two major reasons of this digital divide are :

(*i*) **Technology Reach.** Even after 71 years of freedom, there are many rural areas that have yet to witness the development especially technological development. Although reach of mobiles have eased it a lot, yet the installation of power lines, mobile towers and proper telecommunication technologies (3g/4g/5g) are the prominent reasons behind the digital divide in India.

With the reach of latest technologies in rural areas, the digital divide will surely lesson the gap between urban and rural areas.

(*ii*) **Digital Literacy.** Even in areas with technology reach, not all people are able to take benefit of this. Prominent reason being the digital illiteracy. The rate of digital literacy is far less in rural areas as compared to urban areas.

With the digital literacy, there would be increase in the number of users and hence better rates in digital divide.

DIGITAL DIVIDE

A **digital divide** is an economic and social inequality with regard to access to, use of, or impact of information and communication technologies (ICT).

Let Us Revise

- *Privacy is the protection of personal information given online. In e-commerce especially, it is related to a company's policies on the use of user data.*
- *Fraud committed using the Internet is called Online fraud.*
- *Online fraud may include fraudulent payments, stealing financial information and identity theft etc.*
- *Secure data transmission means applying enough technical safeguards so that data travels safely to its target, without being compromised or eavesdropped.*
- ***Intellectual property rights** are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed. Also it gives the owner a right to decide the price for doing (exchanging/sharing/distributing) so.*
- ***Plagiarism** is stealing someone else's intellectual work and representing it as your own work without citing the source of information.*
- *Digital property (or digital assets) refers to any information about you or created by you that exists in digital form, either online or on an electronic storage device.*
- *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 limitation. 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 a 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.***
- *Freedom of Information refers to right to access information available on public platforms.*
- *A digital divide is an economic and social inequality with regard to access to, use of, or impact of information and communication technologies (ICT).*

Assisted Practice

SECTION A : Objective Type Questions

1. Policies of companies related to protection of personal information of users online are meant to safeguard _____ of users.
   (*a*) Safety (*b*) Security
   (*c*) Privacy (*d*) Well being
2. Credit card fraud may include :
   (*a*) Stealing of credit card
   (*b*) Unauthorized and illegal use of credit card
   (*c*) Both of the above (*d*) Neither
3. Using someone else's twitter handle to post something, will be termed as :
   (*a*) Fraud (*b*) Identity theft
   (*c*) Online stealing (*d*) Violation
4. Standard security protocol that establishes encrypted links between a web server and a browser is called _____ .
   (*a*) Online safety technology
   (*b*) SDT technology
   (*c*) Web encryption technology
   (*d*) Secure sockets layer technology
5. Things like these, *e.g.*, online email account, social media account or handle, online shopping account, online photo sharing account, trademarks, patents, own registered domain name etc. are collectively called _____ .
   (*a*) Online identity (*b*) Online estate
   (*c*) Digital identity (*d*) Digital property
6. A _____ is an economic and social inequality with regard to access to, use of, or impact of ICT.
   (*a*) Digital inequality
   (*b*) Difference of services
   (*c*) Digital divide (*d*) Differential divide

SECTION B : Theoretical Questions

1 *What is privacy in e-commerce ? Why is it important ?*

Ans. Privacy is the protection of personal information given online. In e-commerce especially, it is related to a company's policies on the use of user data. The privacy of users must be respected by ensuring that the data collected this way must not be used in public domain or sold to irresponsible parties. To respect the privacy, the merchant or the seller must clearly state about how the user data will be used in the terms and conditions of its site and implement technical safeguards for the safety of data provided by user.

2. *What is Online fraud ?*

Ans. Fraud committed using the Internet is called **Online fraud**. Online fraud may occur in many forms such as :

- non-delivered goods
- non-existent companies
- Stealing information
- Fraudulent payments etc.

3. *What is secure data transmission ? What technical ways are used to ensure the secure data transmission ?*

Ans. Secure data transmission means applying enough technical safeguards so that data travels safely to its target, without being compromised or eavesdropped.

To ensure secure data transmission, majorly following techniques are applied :

(*i*) ***SSL secure data transmission.*** SSL (Secure Sockets Layer) is a standard security protocol which ensures data security by establishing encrypted online links between a web server and a browser.

(*ii*) **Data encryption.** Encrypted data when sent over Internet is hard to steal and hence is safer.

(*iii*) **Using Safe protocols** such as for files, secure FTP protocol.

4. *What are intellectual property rights ?*

Ans. **Intellectual property rights** are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed. Also it gives the owner a right to decide the price for doing (exchanging/sharing/ distributing) so.

5. *Why should intellectual property rights be protected ?*

Ans. The intellectual property rights must be protected because protecting them

- encourages individuals and businesses to create new software and new software applications, as well as improving existing applications,
- ensures new ideas and technologies are widely distributed,
- promotes investment in the national economy.

6. *What do you understand by plagiarism ? Why is it a punishable offence ?*

Ans. Plagiarism is the act of using or stealing someone else's intellectual work, ideas etc. and passing it as your own work. In other words, plagiarism is a failure in giving credit to a particular source.

Plagiarism is a fraud and violation of Intellectual property rights. Since intellectual property holds a legal entity status, violating its owner's right is a legally punishable offence.

7. *What is digital property? Give some examples of digital properties.*

Ans. Digital property (or digital assets) refers to any information about you or created by you that exists in digital form, either online or on an electronic storage device.

Examples of digital property include : **any online personal accounts (email/social media accounts/ shopping accounts/video gaming accounts, online storage accounts) and personal websites and blogs ; domain names registered in your name; intellectual properties etc.**

8. *Describe the terms free software and open source software. Write examples of one Proprietary and one OSS Software.*

Ans. *Free software* is the software free of cost, which can be copied, modified and redistributed as well but whose source code is not available. *Open source software*, on the otherhand, is the software, whose source code is available and which can be copied, modified and redistributed as well. There may or may not be charges payable for open source software.

Open Source Software : Linux

Proprietary Software : Microsoft Windows 8.

9. *Expand the following terms : (i) OSS (ii) SDLC (iii) GNU (iv) FLOSS*

Ans. (*i*) **OSS.** Open Source Software.

(*ii*) **SDLC.** System Development Life Cycle.

(*iii*) **GNU.** GNU is Not Unix.

(*iv*) **FLOSS.** Free Libre/Livre and Open Source Software.

10. *Mr. Jayanto Das is confused between Shareware and Open source software. Mention at least two points of differences to help him understand the same.*

Ans. **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.

Shareware is not the same thing as *free and open source software* (FOSS) for *two* main reasons : (*i*) the source code is not available and, (*ii*) modifications to the software are not allowed.

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 limitation. 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.

11. *What is digital divide with regards to freedom of information availability?*

Ans. A digital divide is an economic and social inequality with regard to access to, use of, or impact of information and communication technologies (ICT). Two major reasons behind digital divide in India are :

(*i*) Technological reach is not the same all across India, especially in rural and remote areas.

(*ii*) People in remote areas and rural areas are picking up with digital literacy, now.

12. *Would you suggest open source software (OSS) for an organization or sector where the* ***performance*** *is the factor of utmost importance, such as Military ?*

You must be aware that military has different software needs than the commercial sector because of its unique mission and environment. While ***commercial sector*** *chooses software on the basis of factors like : application choice, ease of use, service and support, price, reliability and performance,* ***the military*** *does the same depending upon factors like : reliability, long-term supportability, security, scalability and performance of the software.*

Keeping in mind the above scenario, answer the above question with a proper justification. Give example of a software, if you are recommending one.

Ans. The open source software comes with characteristics like : availability of open source, no license restriction on type of usage, freedom to modify, redistribute etc. But all these characteristics are not enough to be suggested as a preferred software. Not all the OSS provide long-term support or are secure-enough or scalable. Therefore, we can not blindly recommend any OSS software. The same applies to proprietary software as well.

Therefore, we can recommend only those software to Military that have solid support-base in the form of *community-development-groups* etc. and that have features like *security, scalability* and *performance* along with it. Thus, the OSS software suite like LAMP (*Linux, Apache, MySQL, PhP*) that has all the above mentioned features can be recommended to Military.

SECTION C : Application Oriented Problems

1 *"**Privacy** is the protection of personal information given online. In e-commerce especially, it is related to a company's policies on the use of user data."*

(*a*) *Why is the above given statement important ?* (*b*) *What is the need to safeguard user privacy ?*

Ans. (*a*) It is important for the safeguard of user privacy, online.

(*b*) Online world is an open world and thus the personal information of a user must not be available openly, as it may be misused. Thus, it is very important and highly needed to safeguard user privacy.

2 *Posing as someone else online and using his/her personal/financial information shopping online or posting something is a common type of cyber crime these days.*

(*a*) *What are such types of cyber crimes collectively called ?*

(*b*) *What measures can you take to stop these ?*

Ans. (*a*) Online fraud

(*b*) The measures to stop these frauds may include :

- A monitoring official body that ensures the sanctity of Ecommerce Company and delivery of goods/services as promised.
- Strong security mechanism by the ecommerce site and payment gateways to prevent stealing of crucial information.
- Official guidelines and safeguards on the selling of users' data to third parties.

Keywords

FLOSS Free Libre (or Livre) Open Source Software. Software that are free as well as open.

Freeware Software that are available at no cost but cannot be modified.

Free Software Software available free of cost and also can be copied and redistributed but no source code is available.

OSS (Open Source Software) Software whose source code is available and which can be modified, copied and redistributed.