

Know Python Bytes

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SOCIETAL IMPACTS

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UNIT 4

For XII IP:

2020-21

Societal Impacts

10 Marks

CONTENTS (Learning Outcomes) ☺

XII IP 2020-21

Revised syllabus and original syllabus is same for Unit-IV.

Only the marks has increased from 8 to 10.

Unit 4: Societal Impacts

Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.

E-waste: hazards and management.

Awareness about health concerns related to the usage of technology.



Cybersecurity

“Be smart, but don't let the technology
be smarter than you. Let your brain
work more than your fingers.”

-- Payal Bhattacharjee

CYBER SAFETY

Cyber Safety refers to the safe and responsible use of Internet to ensure safety and security of personal information and not posing threat to anyone else's information.

It involves gaining knowledge about possible threat to personal safety and security risks for the information along with measures to prevent and counter them.

SAFELY BROWSING THE WEB

Are you posing/facing online dangers?

How will you avoid these dangers?

How to virtually behave /conduct yourself while
browsing web?

BEFORE YOU POST

THINK

T — is it TRUE?

H — is it HELPFUL?

I — is it INSPIRING?

N — is it NECESSARY?

K — is it KIND?

CYBER CRIME

- A generalized definition of cyber crime may be “*unlawful acts wherein the computer is either a tool or target or both*”
- The computer may be used as a tool in the following kinds of activity- financial crimes, sale of illegal articles, pornography, online gambling, intellectual property crime, e-mail spoofing, forgery, cyber defamation, cyber stalking
- The computer may however be target for unlawful acts in the following cases- unauthorized access to computer/ computer system/ computer networks, theft of information contained in the electronic form, e-mail bombing, Trojan attacks, internet time thefts, theft of computer system, physically damaging the computer system

CYBER BULLYING

Harassing, demeaning, embarrassing, defaming or intimidating someone using modern technologies like Internet, cell phones, instant messengers, social networks etc. is called Cyber Bullying



EXTRA KNOWLEDGE:

Cyber Trolls

A Tastier – and Prettier! – Alternative to Baked Potatoes

By Good Housekeeping | Shine Food – 4 hours ago



For seriously satisfying spuds, try these vitamin-rich reds.



Ken M • 1 hour 41 minutes ago | Remove
also you get more vitamin if you eat the shell

0 0



Big Voice • 1 hour 38 minutes ago | Report Abuse
It's called the skin potatoes have skins.

1 0



Ken M • 1 hour 17 minutes ago | Remove
technically a shell cause potatos are in the peanut family

0 0



Matt • 51 minutes ago | Report Abuse
No Ken you need to stop smoking what ever your smoking there buddy.

0 0



Ken M • 6 minutes ago | Remove
then how come potato is latin for king of the peanuts

0 0

Cyber Trolls refers to a person who purposely posts opposing, sarcastic, demeaning or insulting comments about something or someone with an aim of targeting a person online.

Derogatory messages or comments posted online targeting people are called **cyber trolls**.

Cyber troll is a **cyber crime** closely related to **cyber bullying**.

EXTRA KNOWLEDGE:

CYBER STALKING

Cyber stalking is a kind of online harassment wherein the victim is subjected to a barrage of online messages and emails.

The repeated use of electronic communications to harass or frighten someone, for example by sending threatening mails.

Cyberstalkers commonly have four objectives:

- locate,
- surveil,
- emotionally harass,
- and criminally manipulate their prey.



In some cases, the cyberstalker will prey on their target's family, friends, and coworkers to attack their target.

Examples of Cyberstalking:

Mark Zuckerberg has been stalked by Pradeep Manukonda

EXTRA KNOWLEDGE:

SPREADING RUMOURS ONLINE



People create fake profiles and indulge in posting false information on social media, or comments that could hurt others or spread rumours that may trigger panic or hurt religious sentiments of other people resulting into clashes and even riots etc.

- Spreading rumours online is a cybercrime and is a punishable offence. As per IT Act of India, Publishing/circulation of Rumours, especially hurting religious sentiments is a cybercrime and may invite a fine with imprisonment extendable upto 3 years.

A LOT OF
PROBLEMS
IN THE WORLD
WOULD
DISAPPEAR
IF WE TALK
TO EACH OTHER
INSTEAD OF
ABOUT EACH OTHER

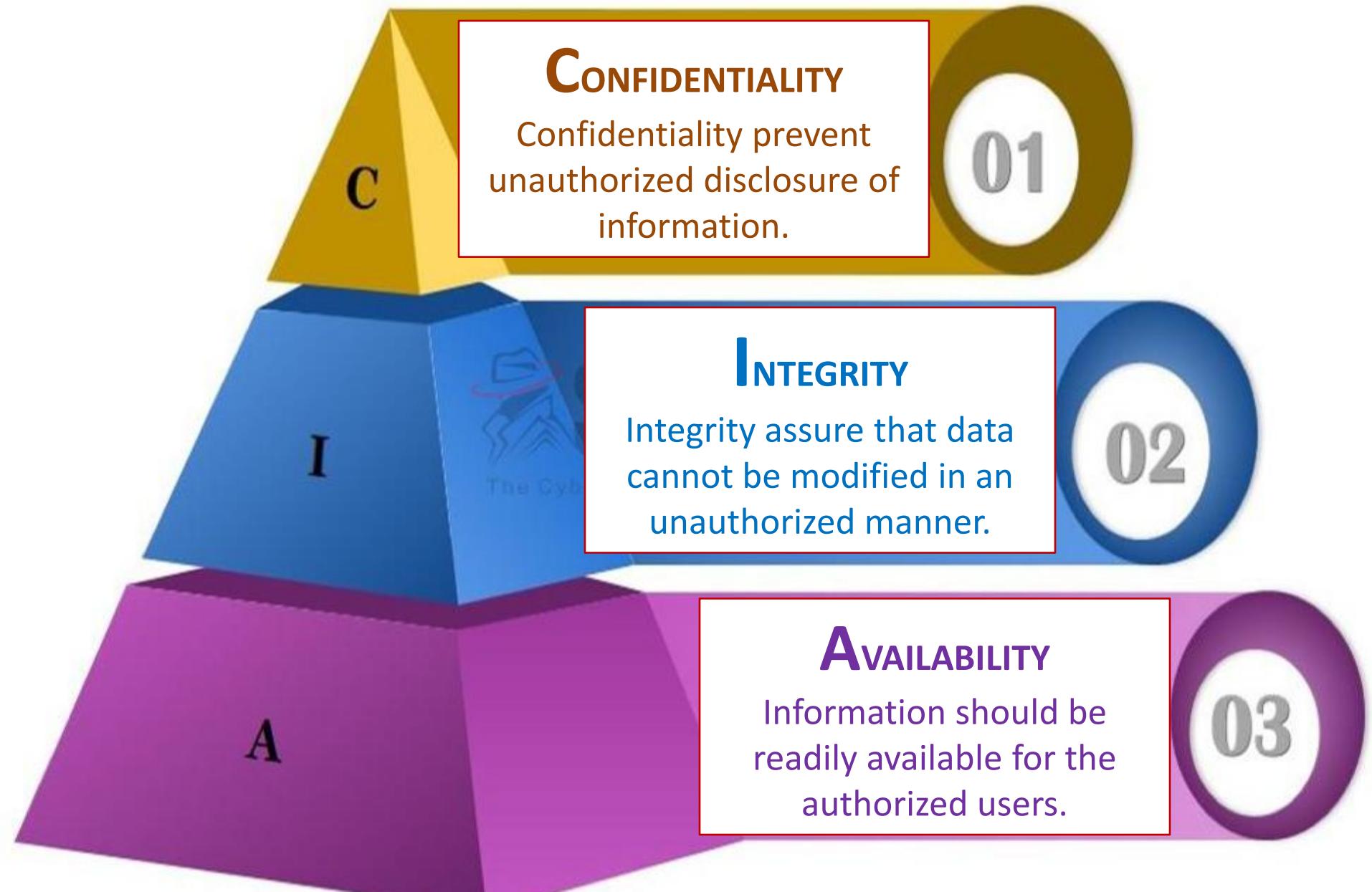
EXTRA KNOWLEDGE: REPORTING CYBERCRIME

If any cybercrime happens , one must report it firstly to the members of his/her safety net (**to parents, school authorities**) and then to police. The procedure for reporting cybercrimes is more or less the same as for reporting any other kind of offence.

- **Local police stations** can be approached for filing complaint just as the **cybercrime cells**.
- **Filing of ‘E-FIR’** in most of the states of India.
- **Launch of new website by Ministry of Home Affairs** for registering **crime against women and children online** including cybercrimes

EXTRA KNOWLEDGE:

CIA Triad





- A **threat** is a potential violation of security. When a threat is actually executed, it is known as **attack**.

Some common threats (MALWARES):-

- Viruses ,Worms,Trojan Horse
- Spyware
- Adware
- Spamming
- PC Intrusion:
 - Denial of Service
 - Sweeping attack
 - Password guessing
- Phishing



VIRUS: Computer viruses are malicious codes/ programs that cause damage to data and files on a system. It can attack any part of a computer's software such as a boot block, OS, system areas, files and application-program-macros etc. It needs a host/ carrier application/program.

- Damages or deletes files
- Slow down your PC
- Invade your email program

WORMS: It is a self-replicating program which eats up the entire disk space or memory and keeps on creating its copies until all the disk space or memory is filled.

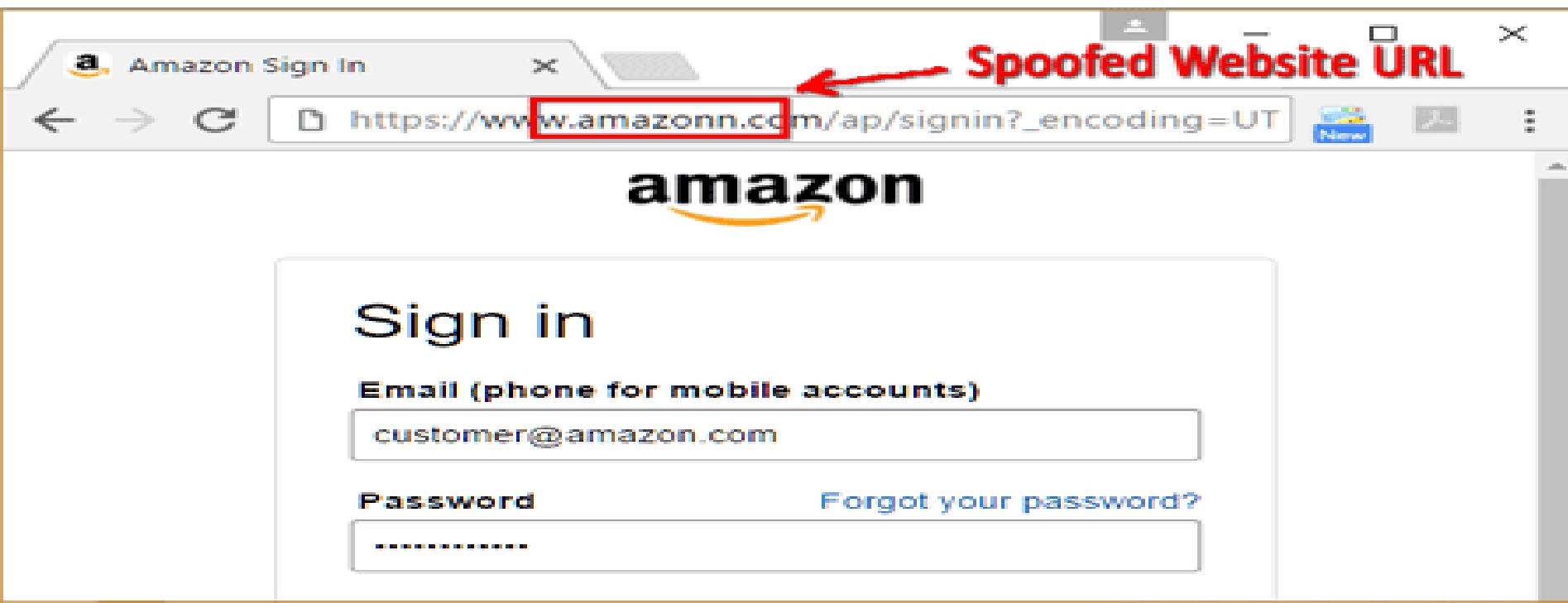
TROJAN HORSE: A Trojan horse is a program that appears harmless (such as a text editor/ screen saver or a utility program) but actually performs malicious functions such as deleting or damaging files at the background, which the user is usually unaware of.



PHISHING

Phishing refers to a criminally fraudulent process of attempting to acquire sensitive information such as usernames, passwords, credit card information, account data etc.

In phishing , an imposter uses an authentic looking email or website to trick recipients into giving out sensitive personal information.





Added by the University of Otago's anti-spam system, Puremessage (PMX). Not always present.

[PMX:#####] Internet Banking Security Reminder!.

Kiwibank_NZ <online_details@kiwibank.co.nz>

Sent: Tue 29/01/2013 6:25 a.m.

To:

Assertion that this email requires attention

IMPORTANT:

The "ACCESS NOW" link goes to "istanbulafsiad.org.tr", not Kiwibank.

- Kiwibank need you to follow the link below so we can enroll your account for our new security program for safer internet banking

[http://istanbulafsiad.org.tr/templates/ib.
kiwibank.co.nz/login/
Click to follow link](http://istanbulafsiad.org.tr/templates/ib.kiwibank.co.nz/login/)

ACCESS NOW



Regards.

No name or other contact details.

© 2013 Kiwibank Limited.



COMMON SOCIAL NETWORKING SITES



A **social networking service** (also **social networking site**, or **SNS** or **social media**) is an online platform which people use to build social networks or social relations with other people who share similar personal or career interests, activities, backgrounds or real-life connections.

People who have set up their profile on the same platform are called as **online friends**.



APPROPRIATE USAGE OF SOCIAL NETWORKS: DIGITAL FOOTPRINT

Our life is totally dependent on Social media- either directly or indirectly. But, if anyone thinks that he/she will remain entirely anonymous and pose a threat to others then, he/she is in absolute fool's paradise. Let's see how...

DIGITAL FOOTPRINT:

Whatever we do online, either post something or visit friends' pages or search anything on Internet etc. leaves a permanent foot print and it remains for years storing trails of our online activities.

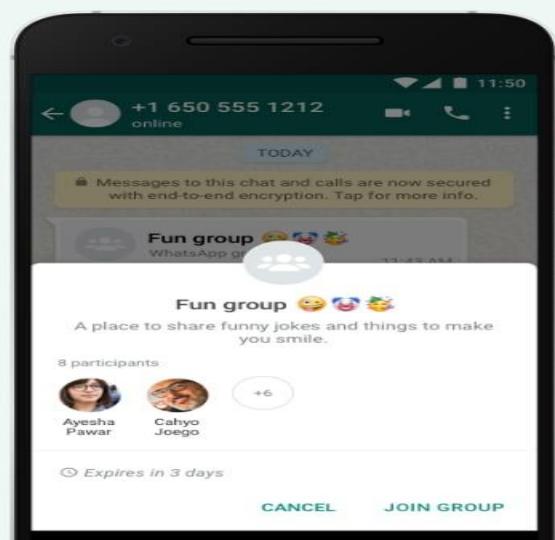
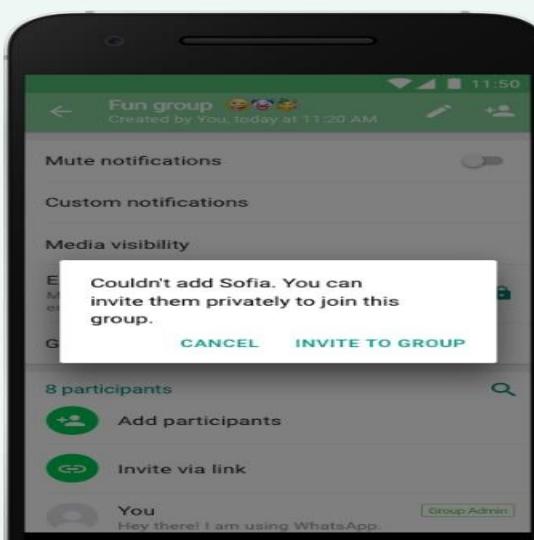
Digital footprints are the records and traces individuals' activities which are stored permanently as they use the Internet. *These footprints may pose potential threat / danger at a later stage in your personal/professional life.*



Privacy settings

Just remember to change the default privacy settings and set-up your own privacy settings for all types of social media platforms yourself, so that you can control,

- Who all can see what you have posted
- Who all can send requests to you
- What all information about you is visible to others, even to your contacts etc.



NET AND COMMUNICATION ETIQUETTES

What you should do- USAGE RULES

- i. **Be Authentic / honest** (*Have honest and clear views, don't boast*)
- ii. **Use a disclaimer** (*Your personal views are yours*)
- iii. **Don't pick Fights Online** (*Constructive posts by choosing right words*)
- iv. **Don't Use Fake Names or Pseudonyms** (*Be yourself*)
- v. **Protect your Identity** (*NEVER provide your full name , parents' details, phone no., address online*)
- vi. **Does your information/ Post pass the Publicity Test ?**
- vii. **Respect your audience** (*No slangs/obscenity/insults*)
- viii. **Respect other's Sentiments** (*Respect others' privacy and be considerate to sensitive topics-Politics, Religion*)
- ix. **Monitor comments** (*Review and approve comments*)

DATA PROTECTION

CONFIDENTIALITY OF INFORMATION

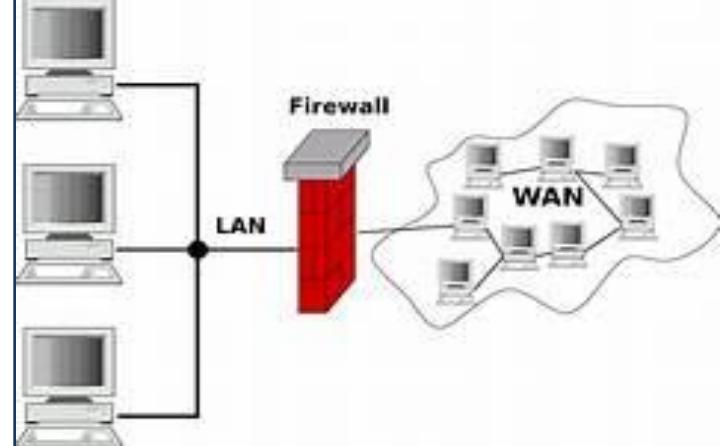
Ensures that only authorized users
get access to sensitive and
protected data.



Practices to Ensure DATA PROTECTION

(Confidentiality of information)

- 1) Use firewall wherever possible
- 2) Control browser settings to block tracking
- 3) Browse privately wherever possible
- 4) Be careful while posting on Internet
- 5) Ensure Safe sites while entering crucial information
- 6) Carefully handle emails
- 7) Do not give sensitive information on wireless networks
- 8) Avoid using public computers
 - Browse privately
 - Don't save your login information
 - Never save passwords while working on a public computer
 - Avoid entering sensitive information onto a public computer
 - Don't leave the computer unattended
 - Disable the feature that stores passwords
 - Properly log out before you leave the computer
 - Clear history and cookies.



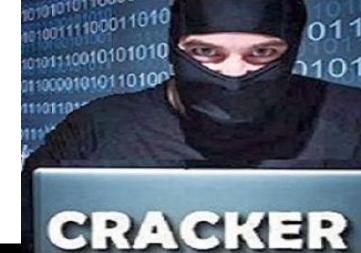
PRIVATE & CONFIDENTIAL





HACKING (HACKER) &

CRACKING (CRACKER)



CRACKER

HACKERS

Hacker is a person who are interested in gaining knowledge about computer systems and possibly using this knowledge for playful pranks.

Hackers enjoy learning the subject to become an expert. This act is known as Hacking.

Hackers can be ethical as well as unethical.

CRACKERS

Cracker is a malicious programmer who gains unauthorized access to a computer system or secured systems for the purpose of stealing and corrupting data.

Crackers do stuff for popularity mainly.

Crackers are always unethical, because they do not take permission from anyone as in the case of ethical hacking

ETHICAL ISSUES

SOCIETY runs on

INFORMATION which is based on

KNOWLEDGE. And knowledge refers to

INTELLECTUAL property of a person. The property in digital form is

DIGITAL PROPERTY

Some common Ethical issues related to these information are:

- 1) Plagiarism
- 2) Intellectual property rights
- 3) Digital property rights

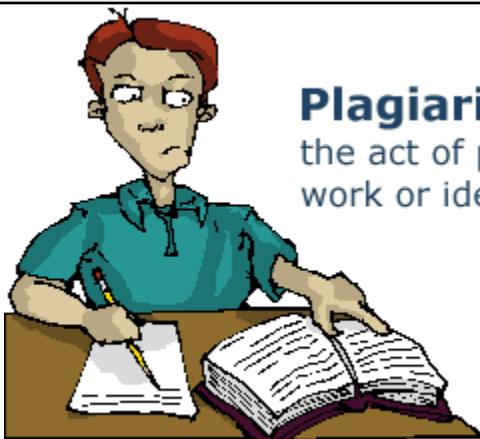
PLAGIARISM

Stealing someone else's work and presenting it to others as your own work without acknowledging the creator of the work i.e. source of the information.

Some acts of plagiarism:

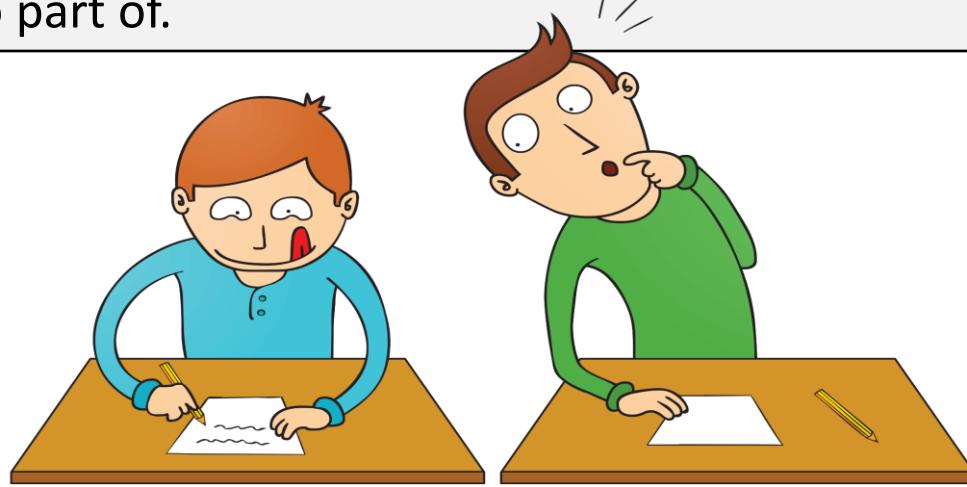
- Using some other work as your own without giving credit to the author
- Using someone else's work in a incorrect distorted form than the intended original form.
- Modifying someone else's music composition without attributing it to the creator of the work.
- Giving incorrect source of information or wrongful citation about the source
- Failure in giving credit or acknowledging the contribution of others in a collaborative effort, to which you are also part of.

11



Plagiarism:

the act of presenting another's work or ideas as your own.



INTELLECUAL PROPERTY RIGHTS (IPR)

IPR are the Rights of the owner of information to decide how much information is to be shared, distributed or exchanged. Owner can also decide the price for sharing the intellectual property.

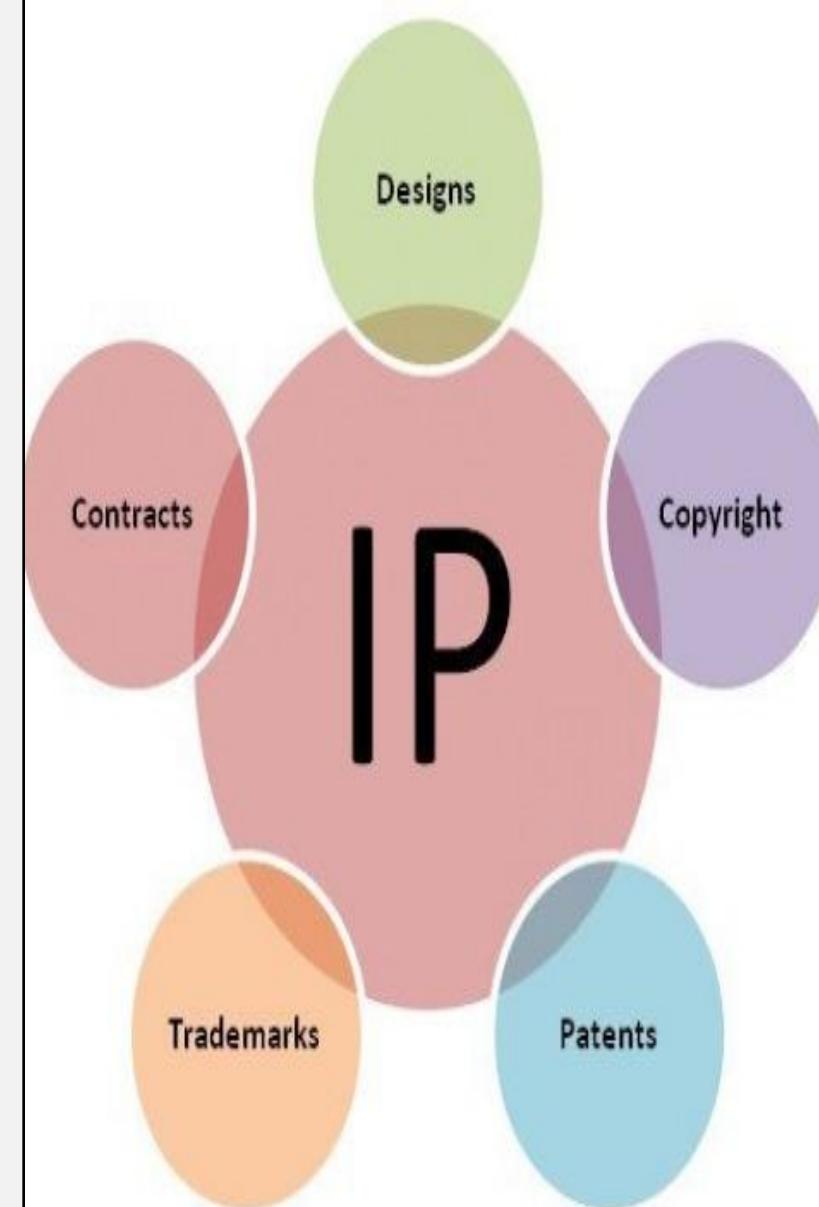
The creator/producer of the information is the real owner of the information and has every right to safeguard his/her intellectual property.

The IPR must be protected, for it:

→encourages new software, new software applications by individuals and business organization, as well as improving existing applications

→ensures new ideas and technologies are widely distributed

→promotes investment in the national economy



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 in any electronic storage device. Digital property rights lie with the owner who has created it or who has got it developed by paying legally is the owner of a digital property. For Eg: online personal accounts (email), social media accounts & on-line storage accounts etc.

Threats to Digital properties

1. **Digital software penetration tools** : Hackers create tools like keygens and cracks to penetrate your digital property, which enables unauthorized (illegitimate) users to freely access the properties
2. **Stealing and plagiarizing codes of your digital properties:** Making a plagiarized copy version of your digital software by somehow stealing your digital property.

Digital Property Rights Protection

- i. **Anti-temper solutions:** prevents hackers from hacking, reverse engineering or manipulating digital properties such utility tools, software apps, video games etc.
- ii. **Legal Clauses:** Term's of Service that prohibits the scrapping of software are included in the legal clauses of the Digital properties
- iii. **Limit the sharing of the software code:** Use of DRM solutions and sharing code with only trusted individuals

OPEN SOURCE

CONTENT STANDARD OPERATING SYSTEM DIGITAL CONCEPT SOFTWARE

COMPUTING CODE COMMUNITIES MODIFICATION DOCUMENTATION BARTERING

DEVELOPER APPROACH INTERNET

STANDARD OPERATING SYSTEM

Movement

COLLABORATION

SHARED SERVER

LICENSE FREE COPYRIGHT PRODUCER

PEER

About: FREE and OPEN Source Software (FOSS)

Some Related Terms

1) Free Software:-

It means the s/w is free of cost which is freely accessible and can be freely used, changed, copied and distributed by all who wish to do so.

2) Open Source Software(OSS):-

An open software is also available freely i.e its source code is available freely and one can make modifications to it and can redistribute it with different name. But if anyone wants for solution of problem on the existing s/w by the manufacturer, it will not be free (it will be with some nominal charges)

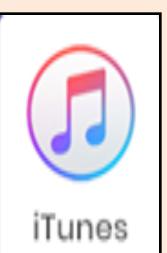
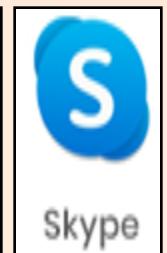
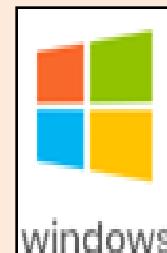
3) FLOSS(Free Libre Open Source Software):-

A Software which is both free of cost and Open source software i.e. source code is available.



4) Proprietary Software):-

A Software which is neither free of cost nor available for Public. There is a proper license attached to it which user has to buy in order to use it.



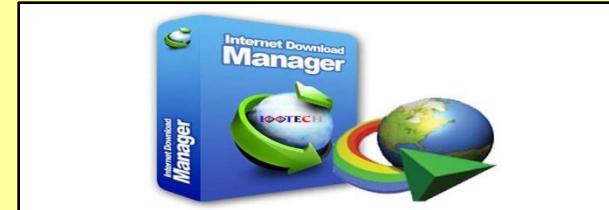
About: **FREE and OPEN Source Software (FOSS)**

Some Related Terms

5. Shareware / Trialware / Demoware:-

- This software is made available with the rights to distribute copies, but if anyone intends to use the software , then after a certain stipulated time period, a license fee should be paid.
- Its source code is not allowed and hence its modification is not allowed.

“Trial version before you buy it”.



6. Freeware

- This software is free of cost.
- It allows copying and further distribution, but still under owner's control, i.e. Copyrighted.
- Its source code is not available, hence no modification is possible.



About: FREE and OPEN Source Software (FOSS)

Some Related Terms

GNU stands for

(GNU's not Unix) :-

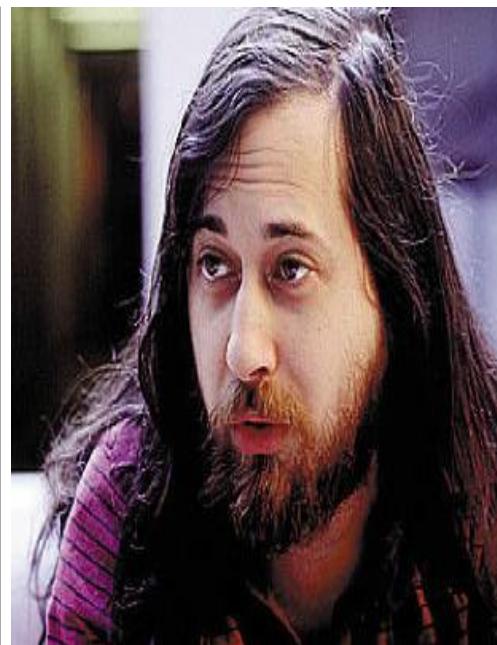


Here, GNU means an animal which is living in freedom. It is a free operating system identical to Unix but not Unix.

GNU's Not Unix is a recursive acronym.

FSF(Free Software Foundation)

It is a non-profit organization created for the purpose of supporting free s/w movement. It also funds many programmers for developing free s/w.



GNU, which stands for Gnu's Not Unix, is the name for the complete Unix-compatible software system which I am writing so that I can give it away free to everyone who can use it.

Richard Stallman



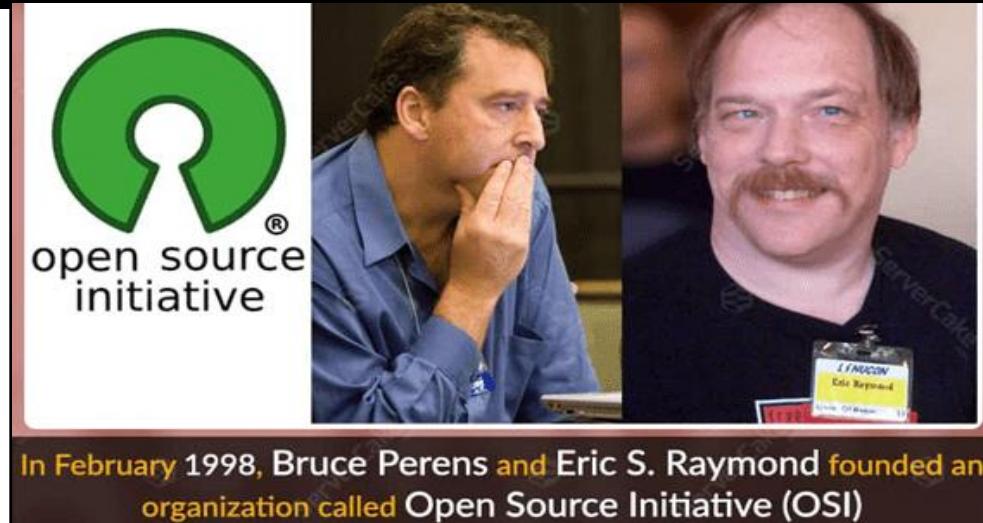
FSF and GNU both were initiated by Richard Stallman.

About: **FREE and OPEN Source Software (FOSS)**

Some Related Terms

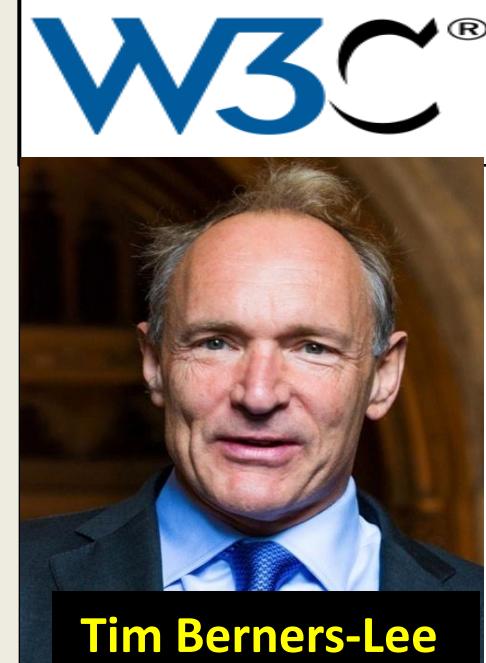
OSI(Open Source Initiative)

It is an organization developed for promoting Open source software. It defines criteria and terms for open source s/w.



W3C (World Wide Web Consortium) :-

It is responsible for producing the s/w standards for world wide web. The World Wide Web Consortium (W3C) is the main international standards organization for the World Wide Web. Founded in 1994 and currently led by Tim Berners-Lee, the consortium is made up of member organizations that maintain full-time staff working together in the development of standards for the World Wide Web. W3C also engages in education and outreach, develops software and serves as an open forum for discussion about the Web.



What are LICENSES?

Licenses are the permissions given to use a product or someone's creation by the copyright holder.

COPYRIGHT and COPYLEFT Licenses



- Copyright is a legal mechanism for protecting ownership rights over intellectual property.
- *Copy/left* is an attempt to use copyright legislation to ensure any piece of free software stays free.
 - a copyleft license uses copyright law to ensure that every person who receives a copy of a work has the same rights to study, use, modify, and also redistribute both the work, and derived versions of the work. Such licenses typically do so by requiring that the same license terms apply to all redistributed versions of the work.

LICENSES AND DOMAINS OF OPEN SOURCE

SOFTWARE(OSS) TECHNOLOGY

These licenses allow OSS to be freely used, modified and shared.

GPL: The (GPL) General Public License is the most commonly used license for open-source projects. It allows users to legally copy, distribute and modify software. After modification , one can even charge very nominal for the software, but still it will be under GNU GPL.



LGPL: A (LGPL) Lesser General Public License is a license for open-source software that allows for provisions for including elements of free software in either free or proprietary software. It offers lesser rights than GPL.



*****Difference between GPL and LGPL is that the project formed (software extension formed) after modification must be released in case of GPL which is not essential in LGPL.***

BSD: The BSD (Berkeley Software Distribution) License lets you freely modify and distribute your software's code in the source or binary format as long as you retain a copy of the copyright notice, list of conditions, and the disclaimer.(BSD) licenses are used for the distribution of many freeware, shareware and open source software.

BSD

LICENSES AND DOMAINS OF OPEN SOURCE SOFTWARE(OSS) TECHNOLOGY

MIT: The MIT License is a free software license that was created at the Massachusetts Institute of Technology which grants the software end user rights such as copying, modifying, merging, distributing, etc. It has the restriction that as long as you have license can do anything with the software.

***** MIT License is the least restrictive Open source License.***

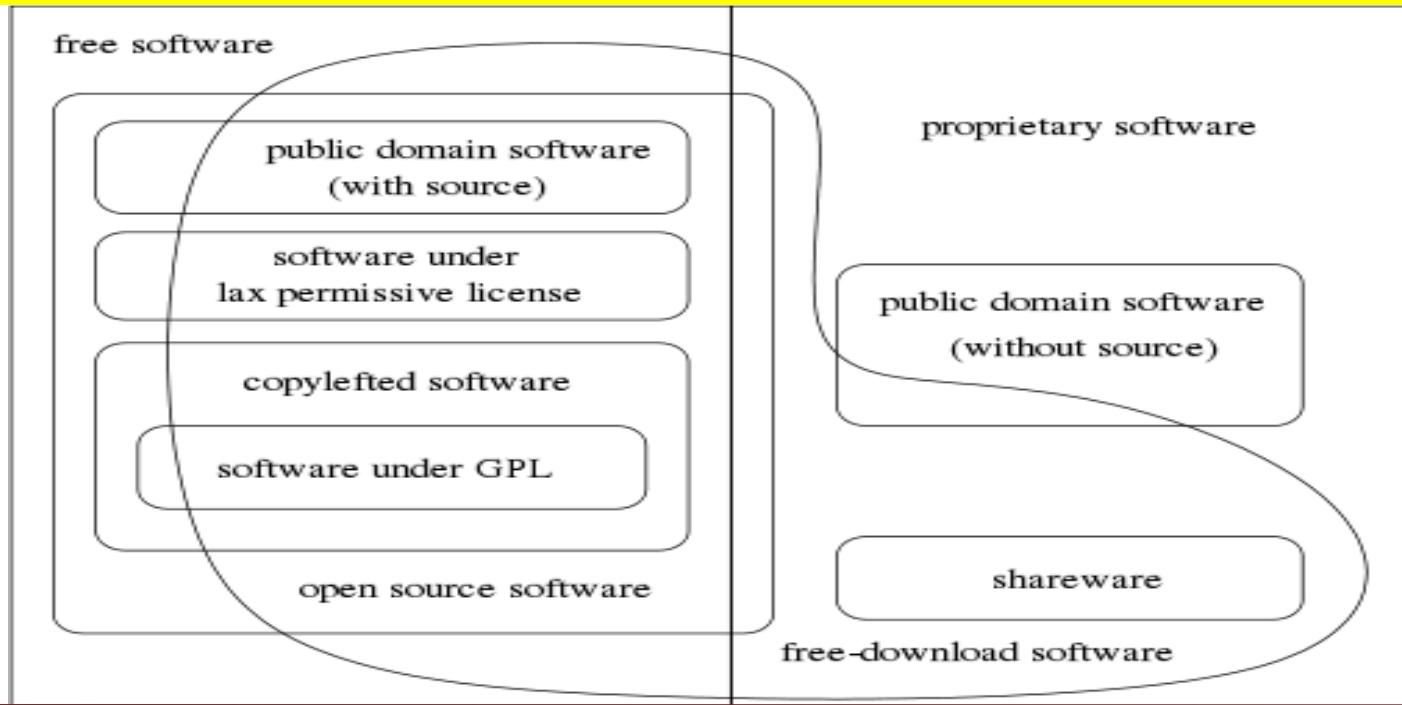
Apache: The Apache Software License (ASL) is a license scheme for free and open-source computer software (FOSS) written by the Apache Software Foundation (ASF). ASL allows projects and software to be freely downloaded and used. The code is distributed openly and is allowed to be freely modified, redistributed or studied. Through open-source code, Apache encourages users to voluntarily improve the design of the software.



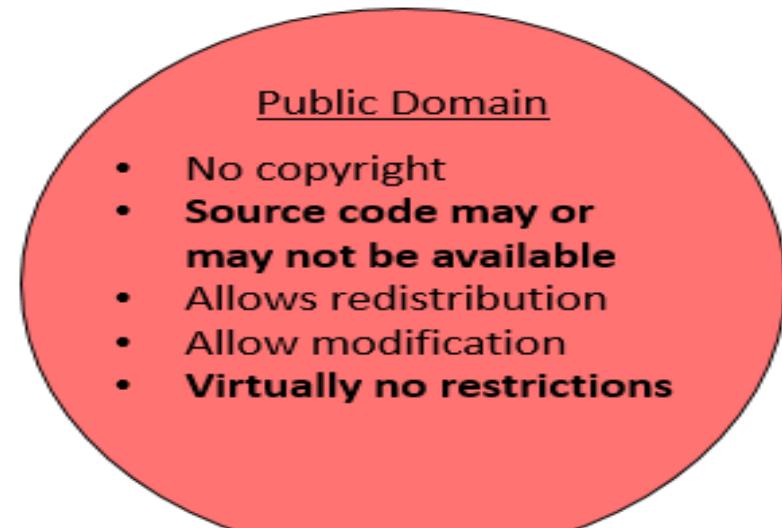
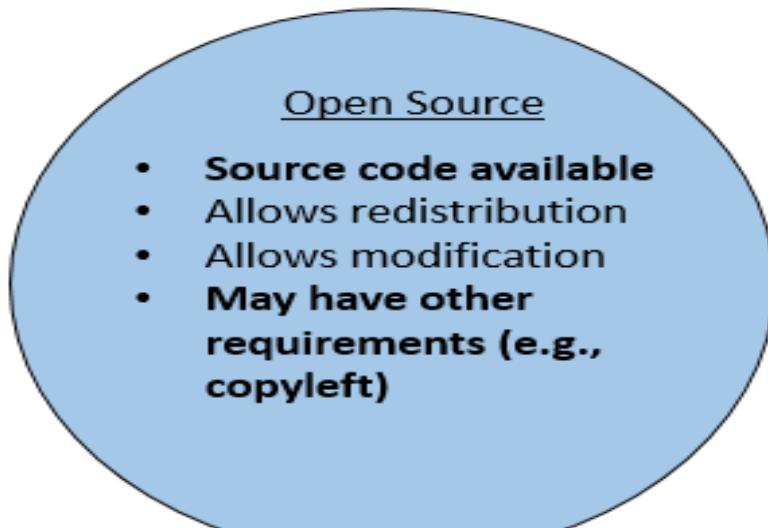
COMPARISON OF LICENSES

					
Type	Permissive	Permissive	Permissive	Copyleft	Copyleft
Provides copyright protection	✓ TRUE	✓ TRUE	✓ TRUE	✓ TRUE	✓ TRUE
Can be used in commercial applications	✓ TRUE	✓ TRUE	✓ TRUE	✓ TRUE	✓ TRUE
Provides an explicit patent license	✓ TRUE	✗ FALSE	✗ FALSE	✗ FALSE	✗ FALSE
Can be used in proprietary (closed source) projects	✓ TRUE	✓ TRUE	✓ TRUE	✗ FALSE	✗ FALSE partially
Popular open-source and free projects	Kubernetes Swift Firebase	Django React Flutter	Angular.js JQuery, .NET Core Laravel	Joomla Notepad++ MySQL	Qt SharpDevelop

PUBLIC DOMAIN SOFTWARE Vs. PROPRIETARY SOFTWARE



OPEN SOURCE SOFTWARE Vs. PUBLIC DOMAIN SOFTWARE



DIGITAL FORENSICS



“Digital forensics” is a broad term referring to the search for and detection, recovery and preservation of evidence found on **digital** systems, often for criminal or civil legal purposes.

Identification

- Identify the purpose of investigation
- Identify the resources required

Preservation

- Data is isolate, secure and preserve

Analysis

- Identify tool and techniques to use
- Process data
- Interpret analysis results

Documentation

- Documentation of the crime scene along with photographing, sketching, and crime-scene mapping

Presentation

- Process of summarization and explanation of conclusions is done with the help to gather facts.



Identification



Preservation



Analysis



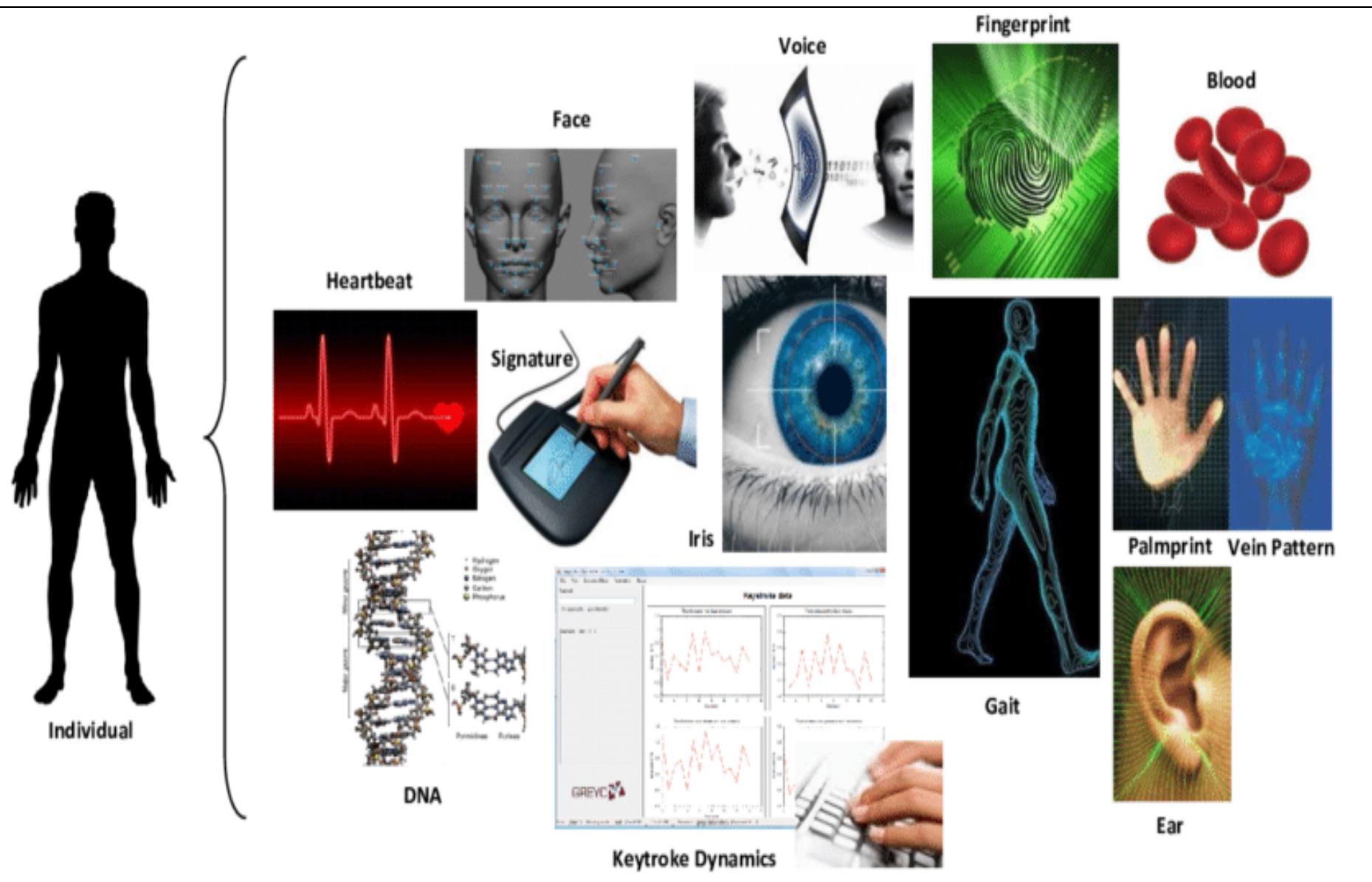
Documentation



Presentation

BIOMETRIC MODALITIES/TRAITS IN DIGITAL FORENSICS

to authenticate an individual



CYBER LAW / IT LAW

- **Cyber law**, or **cyber crime law**, is **legislation** focused on the acceptable behavioral use of technology including computer hardware and software, the internet, and networks.
- **Cyber law** helps protect users from harm by enabling the investigation and prosecution of online criminal activity.



CYBER LAWS AND INFORMATION
TECHNOLOGY ACT 2000

India's IT Act 2000

- In India, cyber laws are enforced through Information Technology Act,2000
- It was notified on 17th October 2000.
- It is based on United Nation's Commission for International Trade related laws (UNCITRAL) model law.
- The purpose of IT Act is
 - to provide legal recognition to electronic commerce (e-Commerce) and to facilitate filing of electronic records with the Government.
 - To provide legal infrastructure for e-commerce in India.

IT(Amendment) Act 2008

The Act was later amended in December 2008 to provide additional focus on information security i.e. IT Act, 2008. Major amendments are :-

- Digital Signatures i.e. authentication of electronic records.
- Electronic Governance i.e. E-documents get legal recognition.
- Empowered Indian government with the ability to surveil, monitor and block data traffic .
- The government will be able to conduct surveillance on corporate networks and e-mail systems, and can intercept, monitor and decrypt computer systems, resources and communication devices.
- The maximum penalty for any damage to computers is fine up to 1crore.
- Other amended acts such as IPC 1860, 1872, 1891 and 1934.

 The I.T. Act contains **13 chapters** and **90 sections**.

The last four sections namely sections 91 to 94 in the I.T. Act 2000 deals with the amendments to the Indian Penal Code 1860

E-WASTE MANAGEMENT

- **E-Waste:** Electronic waste describes discarded electrical or electronic devices. “**Electronic waste**” may also be defined as discarded computers, office electronic equipment, entertainment device electronics, mobile phones, television sets and refrigerators. This includes used electronics which are destined for reuse, resale, salvage, recycling or disposal.
- **Electrical and Electronic equipment contains metallic and non metallic elements** such as Copper, Aluminum, Gold, Silver, Palladium, Platinum, Nickel, Tin, Lead, Iron, Sulphur, Phosphorous, Arsenic etc.



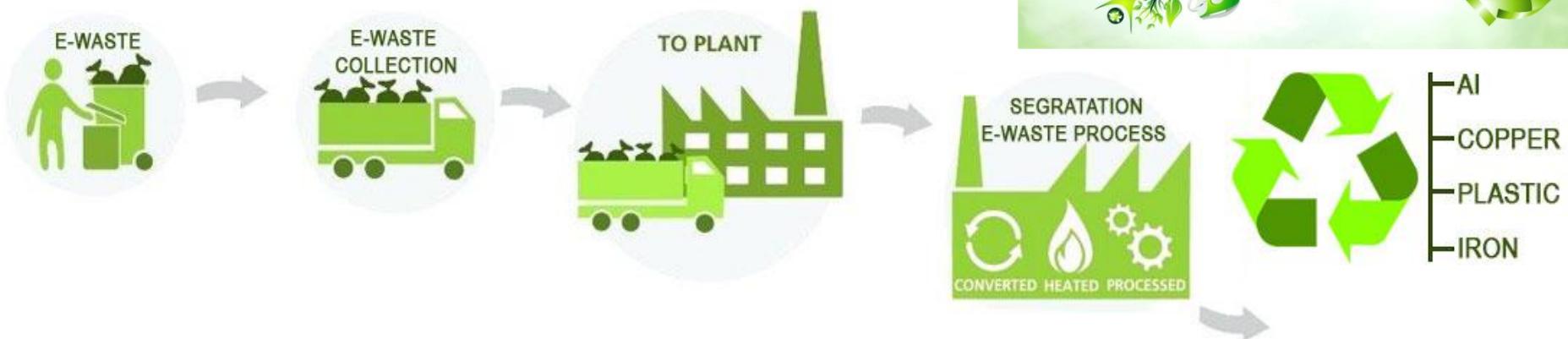
The recycle and recovery includes the following unit operations

- Dismantling involves removal of parts containing dangerous substances, parts containing valuable substances.
- Separation of ferrous metal, non-ferrous metal and plastic.
- Repair and reuse.
- Recovery of valuable materials.
- Disposal of dangerous materials.

The e-waste disposal and recycling is very much necessary and important for the benefit of people, environment and the nation.

The key benefits are:-

- ✓ Allows for recovery of valuable precious metals
- ✓ Protects public health and water quality.
- ✓ Creates jobs
- ✓ Toxic waste
- ✓ Saves landfill space.



Awareness about health concerns related to the usage of Technology

1. Digital eye strain

Symptoms of digital eye strain may include:

- blurred vision
- dry eyes
- headaches
- neck and shoulder pain



2. Emotional problems

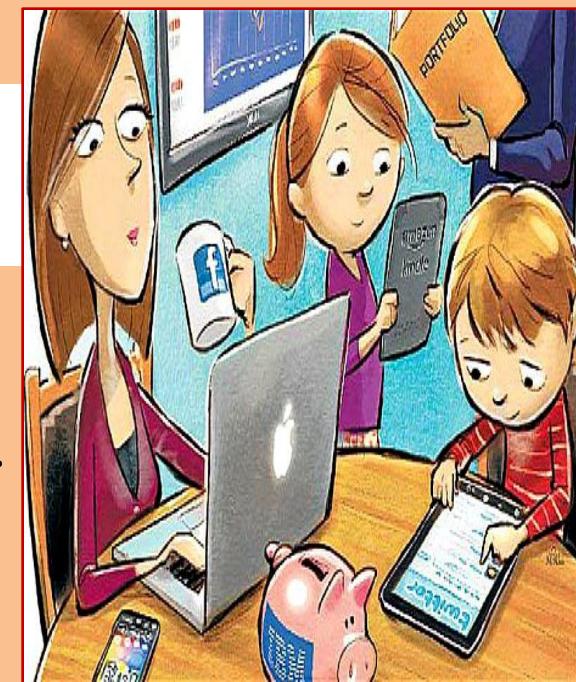
makes you feel anxious or depressed

3. Sleep problems

4. Musculoskeletal problems

When you use a Smartphone, the chances are that you're holding your head in an unnatural forward-leaning position. This position puts a lot of stress on your neck, shoulders, spine and repetitive strain injuries of the fingers, thumbs, and wrists.

- ## **5. Negative effects of technology on kids:**
- Too much screen time or low-quality screen time may lead to
- behavioral problems
 - less time for play and loss of social skills
 - obesity
 - sleep problems
 - violence



MEASURES TO SAFEGUARD FROM NEGATIVE TECHNOLOGICAL EFFECTS

- Clear your phone of unessential apps to keep you from constantly checking it for updates.
- Take frequent breaks to stretch, create an ergonomic workspace and maintain proper posture while using devices
- Carve out a specific, limited amount of time to use your devices.
- Turn some television time into physical activity time.
- Keep electronic devices out of the bedroom. Charge them in another room. Turn clocks and other glowing devices toward the wall at bedtime.
- Make mealtime gadget-free time.
- Prioritize real-world relationships over online relationships.

CHECK OUT else you will be WIPED OUT:-

- Technology is a part of our lives. It can have some negative effects, but it can also offer many positive benefits and play an important role in education, health, and general welfare.
- Knowing the possible negative effects can help you take steps to identify and minimize them so that you can still enjoy the positive aspects of technology.

Technology & Society: (Extra knowledge)



- Technologies whose value and impact arise primarily from their use in economic and social sectors. The impacts of ICT have had on the development of economies, societies and culture include
- Economic impacts include the globalization of production in goods and services, changes in international trade and distribution network, changes in pattern of consumption, virtualization of some products and behaviors and growing the importance of ICT sector within the world. The economic benefit include
 - Secure transactions, Ease of availability, Net banking, Global market
- Social impact include mass market access to an increased information resources, enhanced, new pattern of work and human settlement and changes in the relationships between government, citizen and the state.

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SOMETIMES WE'RE TESTED
NOT TO SHOW OUR WEAKNESSES,
BUT TO DISCOVER OUR
STRENGTHS.



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