



UNIT-5

Emerging Technology & Virus

PART - 1



Topics



Communication method

- GIS
- GPS
- CDMA
- GSM

Communication device

- Cell phone
- MODEM
- Infrared
- Bluetooth
- WIFI
- LIFI
- SLM.

Types of virus

- File infector
- Boot Sector
- Macro

Cloud computing

- characteristics
- Service models of cloud computing (IaaS, PaaS, SaaS)

Communication Method

1.

GIS

2.

GPS

3.

CDMA

4.

GSM



1. Geographic Information System

GIS

- It's a Computer System that stores, captures, checks, and display data about Positions on earth's surface.
- GIS uses computers and software to : Gather, manage, Analyze, Visualize.
- GIS can be used with other types of software, such as : Database, statistical packages, Programming languages.
- Father of GIS : **Roger Tomlinson.**





2. Global Positioning System

GPS

- It's a radio navigation system that uses satellites to determine the location, time, and velocity of something on Earth.
- We use it to find our way around town, to get to our destination without getting lost, and to make sure we're on time for our appointments.
- Example of GPS uses : Navigation - getting from one location to another.
- In 2003, Physicist **Dr Ivan Getting and engineer Col Bradford Parkinson**





3. Code-Division Multiple Access

CDMA

- CDMA is a channel access method used by various radio communication technologies.
- It's a form of multiplexing that allows multiple signals to occupy a single transmission channel, optimizing the use of available bandwidth.
- CDMA uses for Spread spectrum technology to transmit data.
- Created by : Qualcomm's co-founders **Irwin Jacobs, Klein Gilhousen, and Andrew viterbi** made major contribution to CDMA





4. Global System for Mobile Communication

GSM

- GSM is a Digital cellular technology that provides mobile data and voice services across devices.
- GSM Provides basic to advanced voice and data services including roaming service. Roaming is the ability to use your GSM Phone number in another GSM network.
- It's a Standard that specifies how 2G(Second Generation)celluar networks oprate
- Created by : in 1983 , **European Conference of postal and telecommunications Administrations (CEPT).**



Communication device

Cell phone

MODEM

Infrared

Bluetooth

WIFI

LIFI

SLM





1.Cell Phone

- A Cell Phone is a portable telephone that uses cellular network technology to make and receive call.
- Cellphones can also offer text messaging, access to the Internet, e-mail, chat, And download apps.
- They can also play games, access common programs, remotely control other devices, store and run files, play music, and watch Movie.
- **Dr. Martin Cooper**, an American engineer, invented the first cell phone **DynaTAC 8000X** in 1973.





2.MODEM

- A modem is a networking device that connects devices to the internet.
- The term "modem" is a combination of "modulate" and "demodulate".
- A modem is a hardware which connects to a computer, broadband network or wireless router
- The sole purpose of the modem is to provide you with internet access.
- Invented the modem : **Dennis Hayes** in 1977.





3. Infrared

- Infrared (IR) is a wireless technology that allows devices to communicate over short ranges.
- IR uses electromagnetic radiation (EMR) to transfer data.
- Some common uses for IR include heat sensors, thermal imaging and night vision equipment.
- A common example of a IR (infrared) device is a TV remote. However, infrared is also used with computers and devices like a cordless keyboard, cordless mouse, and infrared touch screen.
- Created by : the British astronomer **Sir William Herschel** In 1800,





4. Bluetooth

- Bluetooth is a wireless technology that allows devices to communicate over short distances.
- It uses radio frequencies to transmit data, voice, and other information.
- Bluetooth devices don't need to be in line of sight to communicate.
- Bluetooth was originally created as a wireless alternative to wired keyboards, headphones, speakers, and other peripherals.
- Bluetooth range : Up to 100 m. Frequency : 2.402 – 2.481 GHz
- Created by : **Jaap Haartsen** In 1994.





5.WIFI

- WIFI stands for : Wireless Fidelity
- Wi-Fi is a wireless technology that uses radio waves to connect devices to the internet.
- It's commonly used for wireless broadband internet access.
- There are 3 types of Wi-Fi : personal-area network (PAN), metropolitan-area network (MAN), and wide-area network (WAN).
- **Vic Hayes** has been called the "father of Wi-Fi" because he chaired the IEEE committee that created the 802.11 standards in 1997.





6.LIFI

- LIFI stands for : Light Fidelity.
- LiFi is a wireless communication technology that uses light to transmit data.
- LiFi is a bidirectional wireless system that transmits data via LED or infrared light.
- About 100 times faster than speeds achievable by WiFi.
- Li-Fi has a coverage range of approximately 10 meters.
- **Harald Haas** invented LiFi in 2011.





7.SLM

- SLM can stand for : Service level management .
- SLM is the process of managing the cloud resources and services.
- Also, it is the process of managing and deploying the recourses, providing the services based on demand, control the service, monitor the service and report the service.





Types of virus

File Infector

Boot Sector

Macro





File Infector

- A file infector virus is a type of computer virus that attaches itself to executable programs
- These programs include word processors, spreadsheet applications, and computer games.
- Effects of file infector virus : it causes permanent damage to the device, and you will not be able to use them again.
- Removing a virus from a PC : install antivirus software. (like Avast..)
- Run a virus scan. then
- Delete or quarantine infected files then.
- Restart your computer.





Boot Sector

- A boot sector virus is a type of malware that infects the boot sector of a disk or the master boot record (MBR) of a hard disk.
- A boot sector is the part of a disk that contains the code and data required to start a computer's operating system.
- Boot sector viruses are also known as: MBR viruses, DBR viruses, Boot infectors.





Macro

- A macro virus is a type of computer virus that's written in the same macro language as software programs.
- Macro viruses can infect any computer running any kind of operating system, including Windows, macOS and Linux.
- A macro virus is a type of computer exploit or malware that automatically triggers a series of software functions, often with deleterious effect.



- Cloud computing

Service models of cloud computing





Cloud computing

→ Cloud computing is the ability to access computing resources on demand,

Such as : Storage, Computing power, Applications, Servers, Development tools, Networking capabilities, Databases, Software, Analytics, Intelligence.

→ The main three types of cloud computing are

- ◆ public cloud
 - private cloud
 - hybrid cloud.





LaaS

Infrastructure as a Service (IaaS):

- Definition: IaaS provides virtualized computing resources over the internet. It offers fundamental computing infrastructure like virtual machines, storage, and networking.
- Characteristics:
 - Users have control over the operating systems, applications, and development frameworks.
 - Allows for scalability and flexibility, as users can scale resources up or down based on demand.
 - Examples of IaaS providers include Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP).





PaaS

Platform as a Service (PaaS):

- **Definition:** PaaS provides a platform allowing customers to develop, run, and manage applications without dealing with the complexities of building and maintaining the underlying infrastructure.
- **Characteristics:**
 - Provides a complete development and deployment environment.
 - Users can focus on coding and application development without worrying about managing the underlying infrastructure.
 - Examples of PaaS providers include Heroku, Google App Engine, and Microsoft Azure App Service.





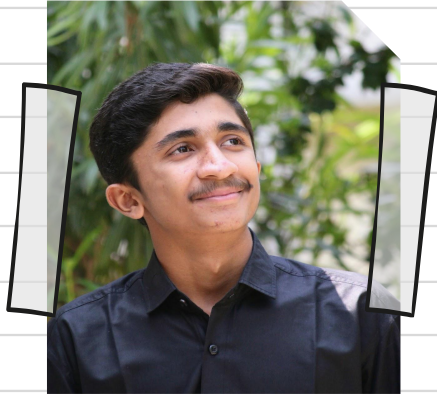
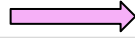
SaaS

Software as a Service (SaaS):

- **Definition:** SaaS delivers software applications over the internet on a subscription basis. Users access these applications through a web browser without needing to install or maintain the software locally.
- **Characteristics:**
 - Eliminates the need for users to manage or control the underlying infrastructure, as it is handled by the SaaS provider.
 - Offers a pay-as-you-go model and automatic updates.
 - Examples of SaaS applications include Salesforce, Google Workspace, and Microsoft Office 365.



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