



# SHREE H. N. SHUKLA GROUP OF COLLEGES

(Affiliated to Saurashtra University & Gujarat Technological University)



## Lt. Shree Chimanbhai Shukla

COMPUTER FUNDAMENTAL  
BCA & BSC IT SEM 1

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## CH – 5 Emerging Technologies and Virus

### Q- Explain remote sensing GIS & GPS.

- Remote sensing is application of space science.
- Remote sensing is collection of information about object without physical connection of that object.
- The data collection if indian remote sensing are IRS-A and IRS-B.

### GIS

- GIS means Geographical Information System.
- GIS is a system to capture, store and manage data with special refer to the earth.
- It is satellite base computer system that capable of store and edit the information.
- GIS is a power full tool in many aera like millitray department wether information and many more.

### GPS

- Global Position System.
- GPS work through out space.
- It capture 3D data for the various application.
- It most original found for military application in 1980.
- There are 24 satellite in GPS.
- The speed of this satellite is 7000 mile per hours.

### CDMA

- Code division multiple access (CDMA) is a channel access method used by various radio communication technologies.
- CDMA is an example of multiple access, which is where several transmitters can send information simultaneously over a single communication channel. This allows several users to share a band of frequencies (see bandwidth).
- To permit this to be achieved without undue interference between the users, CDMA employs spread-spectrum technology and a special coding scheme (where each transmitter is assigned a code).
- CDMA is used as the access method in many mobile phone standards such as cdmaOne, CDMA2000 (the 3G evolution of cdmaOne), and WCDMA (the 3G standard used by GSM carriers), which are often referred to as simply *CDMA*.

### GSM



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- GSM (Global System for Mobile Communications, originally *Groupe Spécial Mobile*), is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones. It is the de facto global standard for mobile communications with over 90% market share, and is available in over 219 countries and territories.
- The GSM standard was developed as a replacement for first generation (1G) analog cellular networks, and originally described a digital, circuit-switched network optimized for full duplex voice telephony.
- This was expanded over time to include data communications, first by circuit-switched transport, then packet data transport via GPRS (General Packet Radio Services) and EDGE (Enhanced Data rates for GSM Evolution or EGPRS).
- Subsequently, the 3GPP developed third generation (3G) UMTS standards followed by fourth generation (4G) LTE Advanced standards, which are not part of the ETSI GSM standard.
- "GSM" is a trademark owned by the GSM Association. It may also refer to the initially most common voice codec used, Full Rate.

## Q- Explain Communication Device.

### Cell Phone

- A mobile phone (also known as a cellular phone, cell phone, and a hand phone) is a phone that can make and receive telephone calls over a radio link while moving around a wide geographic area.
- It does so by connecting to a cellular network provided by a mobile phone operator, allowing access to the public telephone network.
- By contrast, a cordless telephone is used only within the short range of a single, private base station.
- In addition to telephony, modern mobile phones also support a wide variety of other services such as text messaging, MMS, email, Internet access, short-range wireless communications (infrared, Bluetooth), business applications, gaming and photography. Mobile phones that offer these and more general computing capabilities are referred to as smartphones.
- The first hand-held cell phone was demonstrated by John F. Mitchell and Dr Martin Cooper of Motorola in 1973, using a handset weighing around 2.2 pounds (1 kg). In 1983, the DynaTAC 8000x was the first to be commercially available. From 1990 to 2011, worldwide mobile phone subscriptions grew from 12.4 million to over 6 billion, penetrating about 87% of the global population and reaching the bottom of the economic pyramid.

### MODEM



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- A modem (modulator-demodulator) is a device that modulates an analog carrier signal to encode digital information and demodulates the signal to decode the transmitted information. The goal is to produce a signal that can be transmitted easily and decoded to reproduce the original digital data.
- Modems can be used with any means of transmitting analog signals, from light emitting diodes to radio.
- The most familiar type is a voice band modem that turns the digital data of a computer into modulated electrical signals in the voice frequency range of a telephone channel. These signals can be transmitted over telephone lines and demodulated by another modem at the receiver side to recover the digital data.

## Infrared

- Infrared (IR) light is electromagnetic radiation with longer wavelengths than those of visible light, extending from the nominal red edge of the visible spectrum at 700 nanometers (nm) to 1 mm.
- This range of wavelengths corresponds to a frequency range of approximately 430 THz down to 300 GHz. Most of the thermal radiation emitted by objects near room temperature is infrared.
- Infrared radiation was discovered in 1800 by astronomer William Herschel, who discovered a type of invisible radiation in the light spectrum beyond red light, by means of its effect upon a thermometer.
- Slightly more than half of the total energy from the Sun was eventually found to arrive on Earth in the form of infrared. The balance between absorbed and emitted infrared radiation has a critical effect on Earth's climate.
- Infrared light is emitted or absorbed by molecules when they change their rotational-vibrational movements. Infrared energy elicits vibrational modes in a molecule through a change in the dipole moment, making it a useful frequency range for study of these energy states for molecules of the proper symmetry. Infrared spectroscopy examines absorption and transmission of photons in the infrared energy range.
- Infrared light is used in industrial, scientific, and medical applications. Night-vision devices using active near-infrared illumination allow people or animals to be observed without the observer being detected.
- Infrared astronomy uses sensor-equipped telescopes to penetrate dusty regions of space, such as molecular clouds; detect objects such as planets, and to view highly red-shifted objects from the early days of the universe.
- Infrared thermal-imaging cameras are used to detect heat loss in insulated systems, to observe changing blood flow in the skin, and to detect overheating of electrical apparatus.

## BLUE TOOTH

- Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to



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2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs).

- Invented by telecom vendor Ericsson in 1994, it was originally conceived as a wireless alternative to RS-232 data cables. It can connect several devices, overcoming problems of synchronization.
- Bluetooth is managed by the Bluetooth Special Interest Group (SIG), which has more than 19,000 member companies in the areas of telecommunication, computing, networking, and consumer electronics.
- Bluetooth was standardized as IEEE 802.15.1, but the standard is no longer maintained. The SIG oversees the development of the specification, manages the qualification program, and protects the trademarks.
- To be marketed as a Bluetooth device, it must be qualified to standards defined by the SIG. A network of patents is required to implement the technology, which is licensed only for that qualifying device.

## WiFi

- Wi-Fi, also spelled Wifi or WiFi, is a technology that allows an electronic device to exchange data or connect to the internet wirelessly using 2.4 GHz UHF and 5 GHz SHF radio waves.
- The name is a trademark name, and was stated to be a play on the audiophile term Hi-Fi. The Wi-Fi Alliance defines.
- Wi-Fi as any "wireless local area network (WLAN) products that are based on the Institute of Electrical and Electronics Engineers' (IEEE) 802.11 standards".
- However, since most modern WLANs are based on these standards, the term "Wi-Fi" is used in general English as a synonym for "WLAN". Only Wi-Fi products that complete Wi-Fi Alliance interoperability certification testing successfully may use the "Wi-Fi CERTIFIED" trademark.
- Many devices can use Wi-Fi, e.g., personal computers, video-game consoles, smartphones, some digital cameras, tablet computers and digital audio players.
- These can connect to a network resource such as the Internet via a wireless network access point. Such an access point (or hotspot) has a range of about 20 meters (66 feet) indoors and a greater range outdoors. Hotspot coverage can comprise an area as small as a single room with walls that block radio waves, or as large as many square kilometers achieved by using multiple overlapping access points.

## Lifi

- LiFi technology will allow us to connect to the internet using light from lamps, streetlights or LED televisions.
- faster than wifi, it does not need a router. All you need to do is point your mobile or tablet towards a light bulb to surf the web.



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- LiFi (light fidelity) is a bidirectional wireless system that transmits data via LED or infrared light.
- It was first revealed in 2011 and, unlike wifi, which uses radio frequency, LiFi technology only needs a light source with a chip to transmit an internet signal through light waves.
- This is an extraordinary advance over today's wireless networks.
- LiFi multiplies the speed and bandwidth of wifi, 3G and 4G.
- The latter have a limited capacity and become saturated when the number of users surfing increases, causing them to crash, reducing speeds and even interrupting the connection.

## SLM

- A spatial light modulator (SLM) is an object that imposes some form of spatially varying modulation on a beam of light.
- A simple example is an overhead projector transparency. Usually when the phrase SLM is used, it means that the transparency can be controlled by a computer.
- In the 1980s, large SLMs were placed on overhead projectors to project computer monitor contents to the screen.
- Since then more modern projectors have been developed where the SLM is built inside the projector.
- These are commonly used in meetings of all kinds for presentations.

## Q- Explain Virus.

- A computer virus, much like a flu virus, is designed to spread from host to host and has the ability to replicate itself.
- Similarly, in the same way that flu viruses cannot reproduce without a host cell, computer viruses cannot reproduce and spread without programming such as a file or document.
- In more technical terms, a computer virus is a type of malicious code or program written to alter the way a computer operates and is designed to spread from one computer to another.
- A virus operates by inserting or attaching itself to a legitimate program or document that supports macros in order to execute its code.
- In the process, a virus has the potential to cause unexpected or damaging effects, such as harming the system software by corrupting or destroying data.

## What is the history of computer viruses?

- Today's malware authors owe a lot to the cybercriminals of yesteryear.
- All the tactics and techniques employed by cybercriminals creating modern malware were first seen in early viruses.
- Things like Trojans, ransomware, and polymorphic code.



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- These all came from early computer viruses. To understand the threat landscape of today, we need to peer back through time and look at the viruses of yesteryear.

## Types of Computer Viruses

- A computer virus is one type of malware that inserts its virus code to multiply itself by altering the programs and applications.
- The computer gets infected through the replication of malicious code.
- Computer viruses come in different forms to infect the system in different ways. Find some of the most common type of computer viruses here,
  1. Boot Sector Virus
  2. Direct Action Virus
  3. Resident Virus
  4. Multipartite Virus
  5. Polymorphic Virus
  6. Overwrite Virus
  7. Space filler Virus

## Problems and Protection from Virus

- Antivirus software, or anti-virus software (abbreviated to AV software), also known as anti-malware, is a computer program used to prevent, detect, and remove malware.
- Antivirus software was originally developed to detect and remove computer viruses, hence the name.
- However, with the proliferation of other kinds of malware, antivirus software started to provide protection from other computer threats.
- Some products also include protection from other computer threats, such as infected and malicious URLs, spam, scam and phishing attacks, online identity (privacy), online banking attacks, social engineering techniques, advanced persistent threat (APT) and botnet DDoS attacks

## Q- Explain Cloud Computing in details.

- In the simplest terms, cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. What cloud computing is not about is your hard drive.
- When you store data on or run programs from the hard drive, that's called local storage and computing.
- Everything you need is physically close to you, which means accessing your data is fast and easy, for that one computer, or others on the local network. Working off your hard drive is how the computer industry functioned for decades; some would argue it's still superior to cloud computing, for reasons I'll explain shortly.
- The lines between local computing and cloud computing sometimes get very, very blurry.





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- That's because the cloud is part of almost everything on our computers these days. You can easily have a local piece of software (for instance, Microsoft Office 365) that utilizes a form of cloud computing for storage (Microsoft OneDrive).

There are basically 5 essential characteristics of Cloud Computing.

1. **On-demand self-services:**

The Cloud computing services does not require any human administrators, user themselves are able to provision, monitor and manage computing resources as needed.

2. **Broad network access:**

The Computing services are generally provided over standard networks and heterogeneous devices.

3. **Rapid elasticity:**

The Computing services should have IT resources that are able to scale out and in quickly and on as needed basis. Whenever the user require services it is provided to him and it is scale out as soon as its requirement gets over.

4. **Resource pooling:**

The IT resource (e.g., networks, servers, storage, applications, and services) present are shared across multiple applications and occupant in an uncommitted manner. Multiple clients are provided service from a same physical resource.

5. **Measured service:**

The resource utilization is tracked for each application and occupant, it will provide both the user and the resource provider with an account of what has been used. This is done for various reasons like monitoring billing and effective use of resource.

There are the following three types of cloud service models -

1. Infrastructure as a Service (IaaS)
2. Platform as a Service (PaaS)
3. Software as a Service (SaaS)

## 1. Infrastructure as a Service (IaaS)

- IaaS is also known as **Hardware as a Service (HaaS)**. It is a computing infrastructure managed over the internet. The main advantage of using IaaS is that it helps users to avoid the cost and complexity of purchasing and managing the physical servers.
- **Characteristics of IaaS**
  - There are the following characteristics of IaaS –
  - Resources are available as a service
  - Services are highly scalable
  - Dynamic and flexible
  - GUI and API-based access





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- Automated administrative tasks
- **Example:** DigitalOcean, Linode, Amazon Web Services (AWS), Microsoft Azure, Google Compute Engine (GCE), Rackspace, and Cisco Metacloud.

## 2. Platform as a Service (PaaS)

- PaaS cloud computing platform is created for the programmer to develop, test, run, and manage the applications.
- **Characteristics of PaaS**
  - There are the following characteristics of PaaS -
  - Accessible to various users via the same development application.
  - Integrates with web services and databases.
  - Builds on virtualization technology, so resources can easily be scaled up or down as per the organization's need.
  - Support multiple languages and frameworks.
  - Provides an ability to "**Auto-scale**".
- **Example:** AWS Elastic Beanstalk, Windows Azure, Heroku, Force.com, Google App Engine, Apache Stratos, Magento Commerce Cloud, and OpenShift.

## 3. Software as a Service (SaaS)

- SaaS is also known as "**on-demand software**". It is a software in which the applications are hosted by a cloud service provider. Users can access these applications with the help of internet connection and web browser.
- **Characteristics of SaaS**
- There are the following characteristics of SaaS -
  - Managed from a central location
  - Hosted on a remote server
  - Accessible over the internet
  - Users are not responsible for hardware and software updates. Updates are applied automatically.
  - The services are purchased on the pay-as-per-use basis
  - **Example:** BigCommerce, Google Apps, Salesforce, Dropbox, ZenDesk, Cisco WebEx, ZenDesk, Slack, and GoToMeeting.

## Important Terms and Acronyms

### 1) ATM

- Automatic tailor machine.



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- ATM is also called automated banking machine (ABM).
- Using ATM customer can access their bank account in order to make cash withdraw, deposit cash and check the balance.
- ATM card is issued by the bank.
- ATM card also known as bank card, E-card or smart card.
- Using ATM card we can enter pin number then after access bank accounts.
- ATM machine was found in 1996.
- ATM works 24\*7.

## 2) Backup & Restore

- There are two different types of backup supported: File backup and system image. File backups are saved to ZIP files.
- Two types of file backup are supported:
  - The first type, normal backup, stores everything selected for backup.
  - The second type, incremental backup stores only files that are changed after a previous backup.
- However, unlike the file backup and NTBackup, in which data are backed up file by file, system image is a disk image of the backed up system saved block by block in a VHD file. Block-based backup is more efficient at performing subsequent differential backups, as only the blocks that have changed need to be backed up.
- During a backup, Windows uses Volume Shadow Copy Service to ensure that files are not changed while they are being backed up. Newer backup media such as CD, DVD and Blu-ray discs are supported in Backup and Restore.
- Windows Backup service is the Windows service responsible for backup and restore operation. The Backup and Restore application, however, is not the only way of interfacing with this service: The Wbadmin command-line utility may also be used.

## 3) HARD COPY AND SOFT COPY:

- Soft copy and hard copy are types of output.
- A soft copy is the unprinted digital document file. This term is often contrasted with hard copy. It can usually be viewed through an appropriate editing program, such as word processing programs, database programs, or presentation software, depending on the file type.
- It can be transported from one computer to another through file transfer/downloading mechanisms such as ftp or http, as an email attachment, or through USB drives and other disk drives. Keeping a digital copy of a document can allow easy editing of it later on. See hard copy for information about printed documents.
- Using soft copies of work over traditional printed documents eliminates the need for paper and ink. Multiple copies of the same document can be kept in different



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versions, allowing the user to easily backtrack to an earlier version. Also, soft copies are more easily manipulated by users than hard copies, which can be both an advantage and a disadvantage.

- When soft copies are kept on storage devices, they conserve office space. Softcopy documents are more portable compared to hardcopy because it is not bulky like hardcopy.

## 4) BUS AND DATA BUS:

- 4 PCI Express bus card slots (from top to bottom: x4, x16, x1 and x16), compared to a 32-bit conventional PCI bus card slot (very bottom)
- In computer architecture, a bus is a subsystem that transfers data between components inside a computer, or between computers.
- Early computer buses were parallel electrical wires with multiple connections, but the term is now used for any physical arrangement that provides the same logical functionality as a parallel electrical bus. Modern computer buses can use both parallel and bit serial connections, and can be wired in either a multidrop (electrical parallel) or daisy chain topology, or connected by switched hubs, as in the case of USB.

## 5) BUFFER AND SPOOLING:

### Buffer:

- A temporary storage area, usually in RAM. The purpose of most buffers is to act as a holding area, enabling the CPU to manipulate data before transferring it to a device.
- Because the processes of reading and writing data to a disk are relatively slow, many programs keep track of data changes in a buffer and then copy the buffer to a disk.
- For example, word processors employ a buffer to keep track of changes to files. Then when you save the file, the word processor updates the disk file with the contents of the buffer. This is much more efficient than accessing the file on the disk each time you make a change to the file.

### Spooling:

- In computer science, spool refers to the process of placing data in a temporary working area for another program to process.
- The most common use is in writing files on a magnetic tape or disk and entering them in the work queue (possibly just linking it to a designated folder in the file system) for another process.
- Spooling is useful because devices access data at different rates. Spooling allows one program to assign work to another without directly communicating with it.
- The most common spooling application is print spooling: documents formatted for printing are stored usually into an area on a disk and retrieved and printed by a

printer at its own rate. Printers typically can print only a single document at a time and require seconds or minutes to do so.

- With spooling, multiple processes can write documents to a print queue without waiting. As soon as a process has written its document to the spool device, the process can perform other tasks, while a separate printing process operates the printer.
- For example, when a city prepares payroll checks, the actual computation may take a matter of minutes or even seconds, but the printing process might take hours.
- If the program printed directly, computing resources (CPU, memory, peripherals) would be tied up until the program was able to finish.
- The same is true of personal computers. Without spooling, a word processor would be unable to continue until printing finished.
- Without spooling, most programs would be relegated to patterns of fast processing and long waits, an inefficient paradigm.
- Spooler or print management software may allow priorities to be assigned to jobs, notify users when they have printed, distribute jobs among several printers, allow stationery to be changed or select it automatically, generate banner pages to identify and separate print jobs, etc.

## 6) Cursor pointer and icon.

### Cursor:

1. Computers. a movable, sometimes blinking, symbol that indicates the position on a CRT or other type of display where the next character entered from the keyboard will appear, or where user action is needed, as in the correction of an erroneous character already displayed.

2. A sliding object, as the lined glass on a slide rule, that can be set at any point on a scale.

### Pointer:



Grabber pointer



I-beam pointer



Selection pointer

- In graphical user interfaces, a pointer is a small arrow or other symbol on the display screen that moves as you move the mouse.
- You can select commands and options by positioning the tip of the arrow over the desired choice and clicking a mouse button.



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- Many text processing programs use an I-beam pointer.

## Icon:

- A small picture that represents an object or program. Icons are very useful in applications that use windows, because with the click of a mouse button you can shrink an entire window into a small icon. (This is sometimes called *minimizing*.)
- To redisplay the window, you merely move the pointer to the icon and click (or double click) a mouse button. (This is sometimes called *restoring* or *maximizing*.)
- Icons are a principal feature of graphical user interfaces.

## 7) CLI AND GUI:

### CLI:

- command line interface: a user interface in which you type commands instead of choosing them from a menu or selecting an icon.
- (Short for Caller Line Identification, also known as caller ID. It is a telephony network feature that allows caller's number and/or name to be displayed on the screen of the recipient's phone, provided that the calling number is not blocked. This feature is available for all digital phones as well as for many analogue ones.)

### GUI:

- In computing, a graphical user interface (GUI, commonly pronounced *gooey*<sup>[1]</sup>) is a type of user interface that allows users to interact with electronic devices using images rather than text commands.
- *GUIs* can be used in computers, hand-held devices such as MP3 players, portable media players or gaming devices, household appliances and office equipment.
- A *GUI* represents the information and actions available to a user through graphical icons and visual indicators such as secondary notation, as opposed to text-based interfaces, typed command labels or text navigation.
- The actions are usually performed through direct manipulation of the graphical elements.
- The term *GUI* is restricted to the scope of two-dimensional display screens with display resolutions able to describe generic information, in the tradition of the computer science research at the PARC (Palo Alto Research Center).
- The term *GUI* is rarely applied to other high-resolution types of interfaces that are non-generic, such as video games (where HUD<sup>[3]</sup> is preferred), or not restricted to flat screens, like volumetric displays.

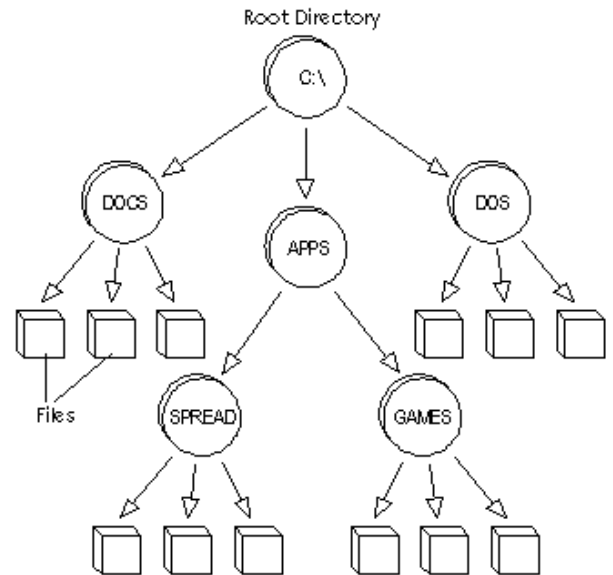
## 8) Drive ,directory and path:

### Drive:

- Computer drives are an integral part of any computer system, be it a PC or a Mac. They perform a variety of different functions ranging from storage to CD and DVD input. Through input and output of different types of data, they give us the flexibility to customize and control the functionality of our computer systems.

### Directory:

- An organizational unit, or container, used to organize folders and files into a hierarchical structure. Directories contain bookkeeping information about files that are, figuratively speaking, beneath them in the hierarchy. You can think of a directory as a file cabinet that contains folders that contain files. Many graphical user interfaces use the term *folder* instead of directory.
  - Computer manuals often describe directories and file structures in terms of an *inverted tree*. The files and directories at any level are contained in the directory above them. To access a file, you may need to specify the names of all the directories above it. You do this by specifying a *path*.
  - The topmost directory in any file is called the *root directory*. A directory that is below another directory is called a *subdirectory*. A directory above a subdirectory is called the *parent directory*. Under DOS and Windows, the root directory is a back slash
  - To read information from, or write information into, a directory, you must use an operating system command. You cannot directly edit directory files. For example, the DIR command in DOS reads a directory file and displays its contents.



### Path:

- path, the general form of a filename or of a directory name, specifies a unique location in a file system. A path points to a file system location by following the directory tree hierarchy expressed in a string of characters in which path components, separated by a delimiting character, represent each directory.
- The delimiting character is most commonly the slash ("/"), the backslash character ("\"), or colon (":"), though some operating systems may use a different delimiter. Paths are used extensively in computer science to represent the directory/file



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relationships common in modern operating systems, and are essential in the construction of Uniform Resource Locators (URLs).

- Systems can use either absolute or relative paths. A full path or absolute path is a path that points to the same location on one file system regardless of the working directory or combined paths. It is usually written in reference to a root directory.

## 9) Menu ,popup menu :

### Menu:

- Synonyms:
  - computer menu; menu
- Hypernyms ("computer menu" is a kind of...):
  - list; listing (a database containing an ordered array of items (names or topics))
- **Domain category:**
  - computer science; computing (the branch of engineering science that studies (with the aid of computers) computable processes and structures)
- Hyponyms (each of the following is a kind of "computer menu"):
  - drop-down menu (a menu of options that appears below the item when the computer user clicks on it)
  - cascading menu; hierarchical menu; submenu (a secondary menu that appears while you are holding the cursor over an item on the primary menu)



## pop up menu:

- A pop-up menu displays a list of menu commands. Microsoft Active Accessibility creates a menu pop-up object when a menu item in a menu bar is opened. Microsoft Active Accessibility also creates menu pop-up objects for context menus, which are displayed when the user right-clicks a user interface element.

## 10) Shut down restart and reboot.

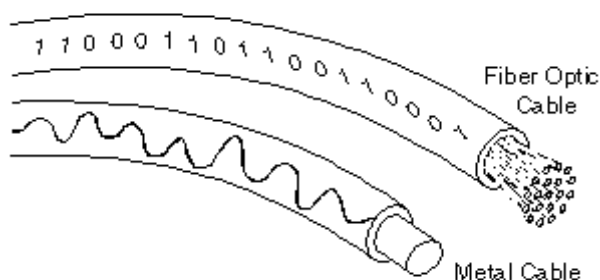
### Shut down :

- (1) To turn the power off.
- (2) In Windows 95 and Windows 98, the normal way to turn a computer off is to select **Start->Shut Down...**

### Restart /reboot:

- To restart a computer. In DOS, you can reboot by pressing the Alt, Control and Delete keys simultaneously.
- This is called a warm boot. You can also perform a cold boot by turning the computer off and then on again.
- On a PC running Microsoft Windows you reboot by selecting the "Shut Down" option from the Start menu.
- On Macs, you reboot by selecting the "Restart" option from the Special menu.

## 11)Fiber optic:



- A technology that uses glass (or plastic) threads (fibers) to transmit data. A fiber optic cable consists of a bundle of glass threads, each of which is capable of transmitting messages modulated onto light waves.
- Fiber optics has several advantages over traditional metal communications lines:



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- Fiber optic cables have a much greater bandwidth than metal cables. This means that they can carry more data. Fiber optic cables are less susceptible than metal cables to interference.
- Fiber optic cables are much thinner and lighter than metal wires. Data can be transmitted digitally (the natural form for computer data) rather than analogically.
- The main disadvantage of fiber optics is that the cables are expensive to install. In addition, they are more fragile than wire and are difficult to splice.
- Fiber optics is a particularly popular technology for local-area networks. In addition, telephone companies are steadily replacing traditional telephone lines with fiber optic cables.
- In the future, almost all communications will employ fiber optics.

## 12) Net meeting

- A product developed by Microsoft Corporation that enables groups to teleconference using the Internet as the transmission medium. NetMeeting supports VoIP, chat sessions, a whiteboard, and application sharing. It's built into Microsoft's Internet Explorer Web browser.

## 13) Ups :

- An uninterrupted power supply (UPS), also known as a battery back-up provides emergency power and, depending on the topology, provide line regulation as well to connected equipment by supplying power from a separate source when utility power is not available.
- It differs from an auxiliary power supply or standby generator, which does not provide instant protection from a momentary power interruption.
- A UPS, however, can be used to provide uninterrupted power to equipment, typically for 5-15 minutes until a generator can be turned on or utility power is restored.

## 14) Peripherals:

- A computer peripheral is any external device that provides input and output for the computer.
- For example, a keyboard and mouse are input peripherals, while a monitor and printer are output peripherals.
- Computer peripherals, or peripheral devices, are sometimes called "I/O devices" because they provide input and output for the computer.
- Some peripherals, such as external hard drives, provide both input and output for the computer.

## Q- What is a Compiler? Explain its types.

- A compiler is a computer program which helps you transform source code written in a high-level language into low-level machine language.
- It translates the code written in one programming language to some other language without changing the meaning of the code.
- The compiler also makes the end code efficient which is optimized for execution time and memory space.



## Types of Compiler

- Single Pass Compilers
- Two Pass Compilers
- Multipass Compilers

## Single Pass Compiler



- In single pass Compiler source code directly transforms into machine code. For example, Pascal language.

## Two Pass Compiler

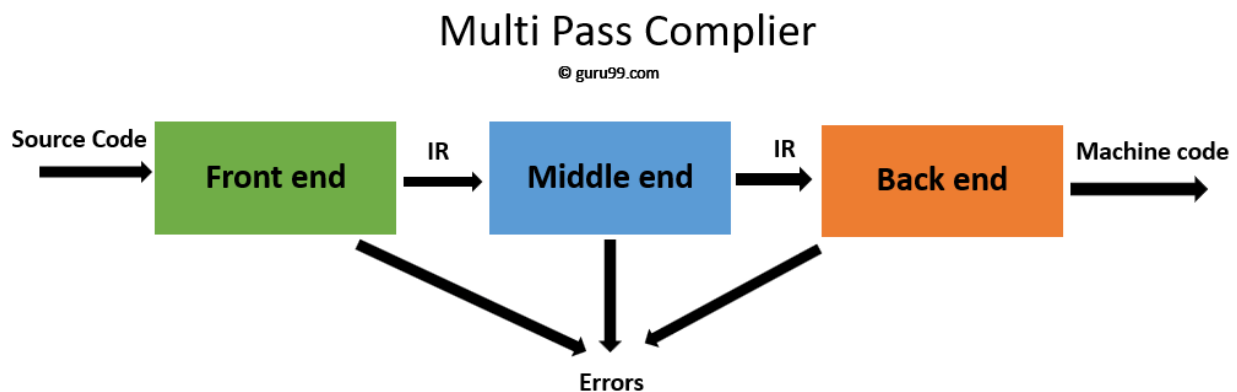


Two pass Compiler is divided into two sections, viz.

1. **Front end:** It maps legal code into Intermediate Representation (IR).
2. **Back end:** It maps IR onto the target machine

The Two pass compiler method also simplifies the retargeting process. It also allows multiple front ends.

## Multipass Compilers



- The multipass compiler processes the source code or syntax tree of a program several times.
- It divided a large program into multiple small programs and process them. It develops multiple intermediate codes.
- All of these multipass take the output of the previous phase as an input. So it requires less memory.
- It is also known as 'Wide Compiler'.

Q- Explain printing Speed.

CPS



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- Short for characters per second, CPS is a data transfer rate estimated from the bit rate and the character length.
- For example, at 2400 bps, 8-bit characters with start/stop bits (for a total of ten bits per character) are transmitted at a rate of approximately 240 characters per second (cps).

## PPM

- PPM is the measurement standard for how fast a printer can print a standardized page.
- There are many types of printers on the market and the PPM for each printer is different.
- If a printer has a PPM of 25, it means the printer can print twenty-five pages of text per minute.

## LPM

- Line printers are mostly associated with unit record equipment and the early days of digital computing, but the technology is still in use.
- Print speeds of 600 lines per minute[3] (approximately 10 pages per minute) were achieved in the 1950s, later increasing to as much as 1200 lpm.
- Line printers print a complete line at a time and have speeds in the range of 150 to 2500 lines per minute.

## DPI

- The higher the DPI, the sharper the print.
- Printers often have various DPI levels, depending on the settings.
- For example, a setting more favorable for printing text typically has a DPI of 300-600. Printing photos and other graphics in color will look best with a higher DPI, often into the thousands.

## CPM

- "cpm" stands for copies per minute.
- This printer has a maximum copy speed of 9 cpm for black & white and 6 cpm for color.
- This printer also has a maximum printing speed of 29 ppm (pages per minute) for black & white and 23 ppm for color.