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CS-03: COMPUTER FUNDAMENTALS AND EMERGING TECHNOLOGY

Unit No.	Topics	Details
1	Introduction to Computers	<ul style="list-style-type: none">• Basics of Computers<ul style="list-style-type: none">○ What is Computer?○ Characteristics of Computer○ Data Processing Cycle (Data → Process → information)• Classification of Computer by Data Processed<ul style="list-style-type: none">○ Analog, Digital and Hybrid Computers• History and Generations of Computers<ul style="list-style-type: none">○ First to Fifth Generation Computers• Classification of Computer by Processing Capabilities<ul style="list-style-type: none">○ Micro, Mini, Mainframe and Super Computers• History and Generations of Computers .<ul style="list-style-type: none">○ First to Fifth Generation Computers• Simple Model of Computer<ul style="list-style-type: none">○ Input Devices○ CPU (Central Processing Unit)○ Arithmetic & Logic Unit○ Control Unit○ Internal Memory• Output Devices• Secondary Storage Devices
	Internal/External parts used with Computer Cabinet	<ul style="list-style-type: none">• Introduction to Mother board• Types of Processors.<ul style="list-style-type: none">○ Dual Core, Core 2 Duo, i2, i3, etc• Memory structure and Types of Memory<ul style="list-style-type: none">○ RAM (SRAM, DRAM, SO, DDR, etc.)○ ROM (ROM, PROM, EPROM, EEPROM, etc.)• Slots<ul style="list-style-type: none">○ ISA Slots / PCI Slots / Memory Slots• Sockets• Cables<ul style="list-style-type: none">○ Serial Cable / Parallel Cable / USB Cable• Ports<ul style="list-style-type: none">○ USB / Serial / Parellel / PS2• Power Devices :UPS• Graphic Cards• Network card, Sound Card

CH -1 Introduction to Computers

Topic: Basics of Computers

1. What is Computer?

Trailer: (Only for Understanding)

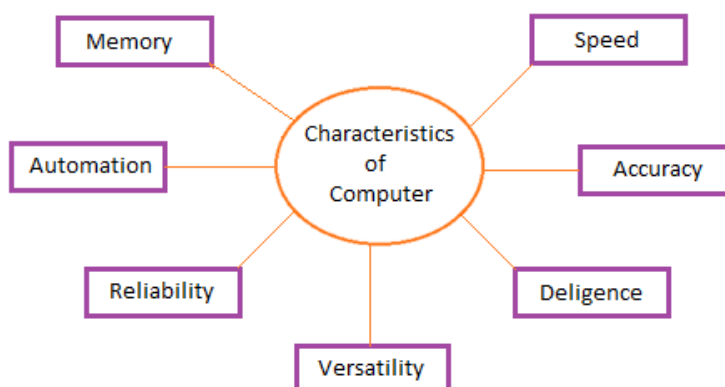
- ❖ **Computer** एक ऐसा Electronic Device है जो User द्वारा Input किये गए Data में प्रक्रिया करके सूचनाओं को Result के रूप में प्रदान करता है, अर्थात् **Computer** एक Electronic Machine है जो User द्वारा दिए गए निर्देशों का पालन करती है। इसमें डेटा को स्टोर, पुनर्प्राप्त और प्रोसेस करने की क्षमता होती है।

Details: (For Exam Content)

- ✓ A **computer** is an electronic device that manipulates information, or data.
- ✓ It has the ability to **store, retrieve, and process** data.
- ✓ You may already know that you can use a computer to **type documents, send email, play games, and browse the Web**.
- ✓ You can also use it to edit or create **spreadsheets, presentations, and even videos**.
- ✓ An **electronic device** for storing and processing data, typically in binary form, according to instructions given to it in a **variable program**.
- ✓ A computer is a machine or device that performs **processes, calculations and operations** based on instructions provided by a software or hardware program.
- ✓ It has the ability to accept data (input), process it, and then produce outputs.



2. Characteristics of Computer



Speed

- ✓ A computer works with much **higher speed** and **accuracy** compared to humans while performing mathematical calculations.
- ✓ Computers can process millions (1,000,000) of instructions per second.



- ✓ The time taken by computers for their operations is microseconds and nanoseconds.

Accuracy

- ✓ Computers perform calculations with **100% accuracy**.
- ✓ Errors may occur due to data inconsistency or inaccuracy.

Diligence

- ✓ A computer can perform millions of tasks or calculations with the same **consistency and accuracy**.
- ✓ It doesn't feel any fatigue or lack of concentration. Its memory also makes it superior to that of human beings.

Versatility

- ✓ Versatility refers to the capability of a computer to perform **different kinds of works** with same accuracy and efficiency.

Reliability

- ✓ A computer is reliable as it gives consistent result for similar set of data i.e., if we give same set of input any number of times, we will get the same result.

Automation

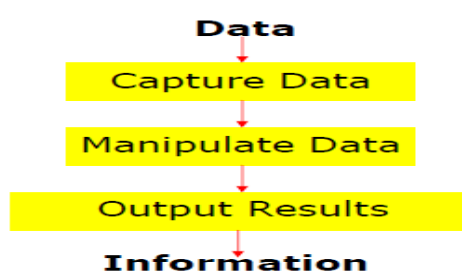
- ✓ Computer performs all the **tasks automatically** i.e. it performs tasks without manual intervention.

Memory

- ✓ A computer has **built-in memory** called primary memory where it stores data. Secondary storage are removable devices such as CDs, pen drives, etc., which are also used to store data.

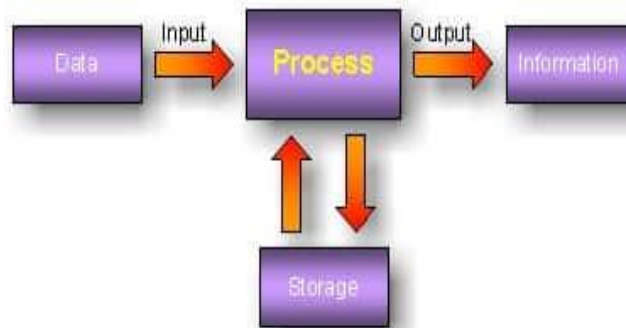
3. Data Processing Cycle

- ✓ The activities processing of data using a computer is called **Data**.



- ✓ Data processing consists of three sub activities
 - Step 1 - Takes data as input.
 - Step 2 - Stores the data/instructions in its memory and uses them as required.
 - Step 3 - Processes the data and converts it into useful information.
 - Step 4 - Generates the output.
 - Step 5 - Controls all the above four steps.

- ✓ Data is raw material use as input and information processed data obtained as output of data processing.



- ✓ Stages of data processing:
- ✓ **Input** – The raw data after collection needs to be fed in the cycle for processing. This is considered the first step and called input.
- ✓ **Processing** – Once the input is provided the raw data is processed by a suitable or selected processing method. This is the most important step as it provides the processed data in the form of output which will be used further.
- ✓ **Output** – This is the outcome and the raw data provided in the first stage is now “processed” and the data is useful and provides information and no longer called data. Output is also understood as meaningful information or useful information.

Learning Outcome: (Summary)

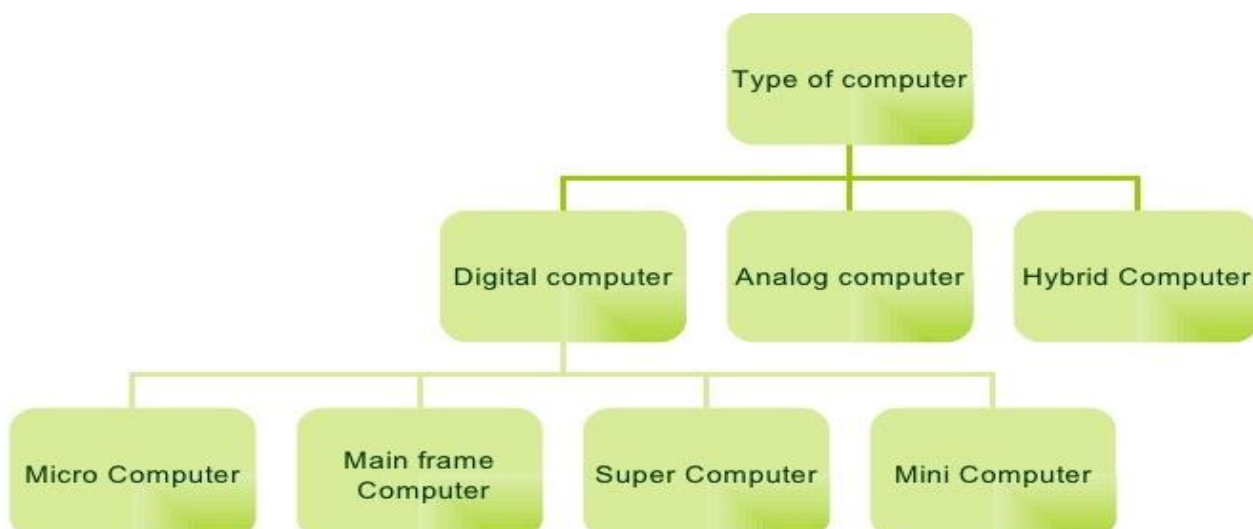
- ❖ The Computer is a man-made electronic programmable machine designed to sequentially and automatically carry out a sequence of arithmetic and logical operations.
- ❖ The data processing cycle is the set of operations used to transform data into useful information.

Topic: Classification of Computer by Data processed

Trailer: (Only for Understanding)

- ❖ डाटा प्रोसेसिंग वह प्रक्रिया है जिसमे कंप्यूटर की मदद से Raw data की जाँच की जाती है, ताकि उस raw data में से अपने काम की जानकारियों को निकाला जा सके।

Details: (For Exam Content)





Analog Computer

- ✓ Analog is a Greek word meaning to find the equality between two units.
- ✓ It is computer that operates on data which is in the form of continuously variable physical quantities such as electrical current, sound waves.

Hybrid Computer

- ✓ It is a combination of digital and analog computers combining the good qualities of both.
- ✓ Hybrid computer has the speed of analog computer and the accuracy and efficiency of digital computer.
- ✓ These types of computer are used for the special kind of work. For example, aero plane, radar, submarine.

Digital Computer

- ✓ Digital computer is a machine based on digital technology.
- ✓ Digital computer gives the output by making necessary calculations from the given data.
- ✓ This type of computer cannot do any measurement.
- ✓ It is used in various fields. For example, calculator.

Topic: Classification of Computer by processing Capabilities

1. Microcomputer

- ✓ A micro computer's CPU is a microprocessor, which originated in late 1970's and built around 8 – bit microprocessor chips.
- ✓ An improvement on 8 bit chip technology was seen in early 1980s when a series of 16 bit chip namely 8086 and 8088 was introduced by Intel Corporation each one with an advancement over the other.
- ✓ Currently processor named Pentium-II is available in the market.

2. Mini Computers

- ✓ A minicomputer is a multi-user computer capable of supporting from 10 to hundreds of users simultaneously.
- ✓ Initially microcomputers were 8 bit and 12 bit machines but by 1970s almost all mini computers were 16 bit machines.
- ✓ Mini computers speed, memory, size and other characteristics developed and the minicomputer was then used for various standalone applications.
- ✓ A 32 minicomputer which was called super mini was introduced.
- ✓ It had larger memory and could support more users working simultaneously on the computer in comparison to the previous minicomputers.

3. Mainframe Computer

- ✓ Mainframe computers are generally 32 bit machines or on the higher side.
- ✓ These are suited to big organizations to manage high volume application.
- ✓ Few of the popular mainframe series are MEDHA, Sperry, DEC, IBM, HP, HCL, etc.
- ✓ Mainframe are also used as central host computers in distributed systems.
- ✓ There are several organizations such as banks, insurance companies, hospitals, railways etc, that need to process large number of transactions on-line and require computer systems having data storage and processing capabilities.



- ✓ Mainframe systems are computer systems that are mainly used for handling the bulk of data and information processing of such organizations.
- ✓ Mainframe systems are much bigger and several time more expensive than workstations.
- ✓ A typical mainframe system needs a large room with closely monitored temperature.

4. Super Computer

- ✓ Super computers are the most powerful and the most expensive computers available at a given time.
- ✓ They are primarily used for processing complex scientific applications that require high processing power.
- ✓ For example scientists build models of complex processes and stimulate (motivate) the processes on a super computer.
- ✓ The super computers are used in petroleum industry, aerospace industry, automobile industry, film and TV industry, etc.

Learning Outcome: (Summary)

Topic: Generation of computers

Trailer: (Only for Understanding)

- ❖ Computer का महत्व तो आप जानते हैं, इसलिए आपको इसके विकास के बारे में भी जरूर जानना चाहिए। कंप्यूटर के इस विकास को आप और हम generation of computer कहते हैं।
- ❖ कंप्यूटर का विकास कई सालों से होता आ रहा है और आज भी हो रहा है। तो आइए जानते हैं कंप्यूटर की सात पीढ़ियों के बारे में, इन पीढ़ियों को कंप्यूटर के विकास के आधार पर बांटा गया है।

Details: (For Exam Content)

1. First Generation (1942-55):-

- ✓ First generation computers were made up of **Vacuum tubes**.
- ✓ These computers were of very big sizes, expensive consume lot of power.
- ✓ For example,
 - ENIAC – Electronic Numerical Integrator And Calculator (1943-46)
 - EDVAC – Electronic Discrete Variable Automatic Computer (1946-52)
 - EDSAC – Electronic Delay Storage Automatic Calculator (1947-49)
 - UNIVAC – Universal Automatic Computer (1951 - 54)

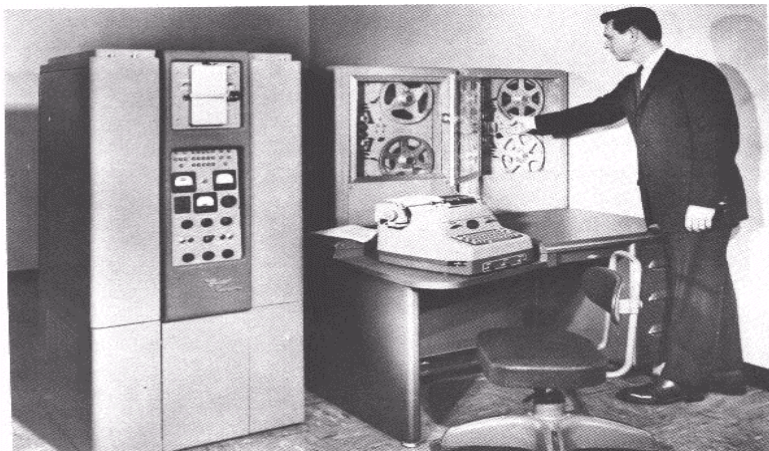


Limitations

- ✓ They were too large in size requiring rooms for installation.
- ✓ Thousands of vacuum tubes that were used so it can produce large amount. Hence the air-conditioned required.
- ✓ High power consumption and short life span.
- ✓ Commercial production of these computers was difficult and costly.
- ✓ Limited programming capabilities
- ✓ No portable.

2. Second Generation (1955-64):-

- ✓ The second generation computers were manufactured using **transistors** instead of vacuum tubes.
- ✓ Compared to vacuum tubes they are in size and having more life.



Advantages

- ✓ They were more than 10 times faster than first generation computers.
- ✓ They were much smaller in size than first generation computers.
- ✓ Requiring smaller space for installation.
- ✓ They accept less power than the first generation computers.
- ✓ They were much easier to program and use than the first generation computers.

Limitations

- ✓ They had more than one transistor to make this type of computers.
- ✓ It is very difficult and costly.
- ✓ Repairing charge is very costly.



3. Third Generation (1964-75):-

- ✓ The third generation was based on IC (Integrated Circuits) technology.
- ✓ The IC technology was also known as “microelectronics” technology because it made it possible to integrate larger number of circuit components into very small i.e. less than 5 mm square surface of silicon known as “chip”.

Advantages

- ✓ They were much more powerful than the second-generation computers.
- ✓ Smaller in size as compared to second-generation computers.
- ✓ Less power than the second-generation computers.
- ✓ Commercial production was easier and cheaper.
- ✓ They are portable.



Limitation

- ✓ Third generation computers were located had to be properly air-conditioned.
- ✓ Highly sophisticated technology and expensive setup was required for the manufacture of IC chips.

4. Fourth Generation (1975-89):-

- ✓ The fourth generation computers were also made by IC technology.
- ✓ It is known as Small Scale Integration (SSI).
- ✓ After the advance technology in the production of IC chip it was possible to coordinate 100 components on one chip.
- ✓ It is known as Medium Scale Integration (MSI).
- ✓ Latest and advance IC technology is Very Large Scale Integration (VLSI) in which more than 10 lakhs components can be coordinate on one chip.
- ✓ Fourth generation computers were based on LSI technology.



Advantages

- ✓ The PCs were much smaller and cheaper as compared to previous generations.
- ✓ They consumed much less power than the third-generation computers.
- ✓ They had faster and larger primary memory and secondary storage devices as compared to third-generation computers.
- ✓ PCs are used for office and home usage.
- ✓ The PCs of the fourth generation made computers affordable even by individuals for their personal use at home.

Limitations

- ✓ Highly difficult technology required for the manufacture of LSI chips.



➤ Fifth Generation (1989 Onwards):-

- ✓ This generation computers use the ULSI (Ultra Large Scale Integration) for making IC chips.
- ✓ Size of this computer is reduced and speed is increase.
- ✓ These computers are very powerful and compact as compared to fourth generation computers.



Advantages

- ✓ In this generation PCs are much smaller and handy the PCs of the fourth generation.
- ✓ They consume much less power.
- ✓ They have faster and larger primary memory and secondary storage devices as compared to other generation.
- ✓ They are totally general purpose machines.
- ✓ Commercial production of these systems is easier and cheaper.

Learning Outcome: (Summary)

- ❖ Generation in computer terminology is a change in technology a computer is/was being used. Initially, the generation term was used to distinguish between varying hardware technologies.
- ❖ Nowadays, generation includes both hardware and software, which together make up an entire computer system. There are five comp

Topic: Simple Model of Computer

Trailer: (Only for Understanding)

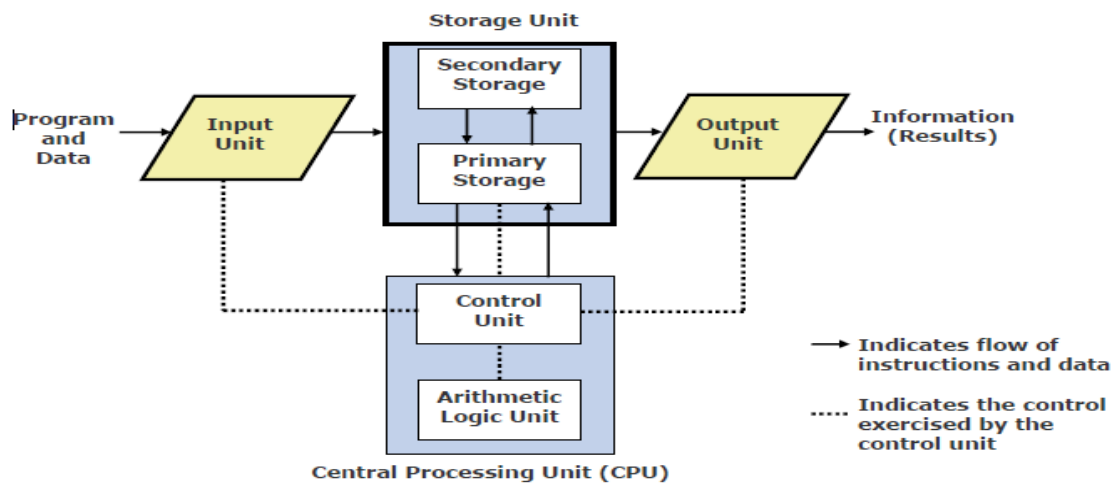
- ❖ System modeling को system model भी कहते हैं। system modeling एक process है। यह प्रोसेस एक system के संपूर्ण structure को develop करता है।
- ❖ यह प्रोसेस system के abstract model को develop करता है, इसमें प्रत्येक model सिस्टम के एक अलग-अलग view या perspective को प्रस्तुत करते हैं।

Details: (For Exam Content)

❖ Input Device:-

- All i/p devices are electromechanical devices that accept data from outside world & translates them into a form the computer interpret (i.e. binary).
- There are mainly three type of input devices
 - Standard Input Device
 - Pointing Input Device
 - Special Input device

❖ CPU (Central Processing Unit):-



❖ Input Unit:-

- An input unit of a Computer system performs the following functions:
 - It accepts (or read) instructions and data from outside word.
 - It converts these instructions and data in computer acceptable form.
 - It supplies the converted instructions and data to the computer system for further processing

❖ Output Unit:-

- An output unit of a computer system performs the following functions :
 - It accepts the results produced by the computer, which are in coded form and hence, cannot be easily understood by us.
 - It converts these coded results to human acceptable (readable) form.
 - It supplies the converted results to outside word.

❖ Storage Device:-

- The storage unit of a computer system holds (or stores) the following:
 - Data and instructions required for processing (received from input devices)
 - Intermediate results of processing
 - Final result of processing, before they are released to an output device
- There are two types of storage:
 - Primary storage
 - Secondary storage
- **Primary storage :-**
 - Used to hold running program instructions
 - Used to hold data, intermediate results, and result of outgoing processing of job(s).
 - Fast in capacity
- **Secondary storage :-**
 - Used to hold stored program instructions
 - Used to hold data and information of stored jobs
 - Slowed than primary storage
 - Large capacity
 - Lot cheaper that primary storage.



❖ Arithmetic and Logic Unit (ALU) :-

- Arithmetic and logic unit of a computer system is the place where the actual executions of instructions take place during processing operation.

❖ Control Unit (CU):-

- Control unit of a computer system manages and coordinates the operations of all other components of the computer system.

Learning Outcome: (Summary)

- ❖ A computer system is a set of integrated devices that input, output, process, and store data and information.
- ❖ Computer systems are currently built around at least one digital processing device.
- ❖ There are five main hardware components in a computer system: Input, Processing, Storage, Output and Communication devices.

Part -2 Internal/External parts used with Computer Cabinet

Q- explain computer port in detail.

Trailer: (Only for Understanding)

- ❖ कम्प्यूटर से किसी दुसरे यंत्र को जोड़ने के लिए कनेक्टिंग केबल की आवश्यकता होती है लेकिन केबल, कम्प्यूटर और दुसरे यंत्र में जिस स्थान पर लगाया जाता है, उसे पोर्ट कहते हैं।
- ❖ पोर्ट से केबल जुड़ने के बाद ही कम्प्यूटर या किसी दुसरे यंत्र में धारा और डाटा का संचार होता है।

Details: (For Exam Content)

- A port is a physical docking point using which an external device can be connected to the computer.
- A port can also be programmatic docking point through which information flows from a program to computer or over the internet.
- Mother board has following ports.
- - Likes ps2 port, ram port, usb port, agp port, parallel port ,cmos battery.

Characteristics:

- A port has the following characteristics:
- External devices are connected to a computer using cables and ports.
- Ports are slots on the motherboard into which a cable of external device is plugged in.
- Examples of external devices attached via ports are mouse, keyboard, monitor, microphone, speakers etc.

1) ps2 port

- ps2 means play station 2 port.
- it was design by ibm in 1972.
- in this port we can connect mouse and key board.
- it is also called mouse and key board port.

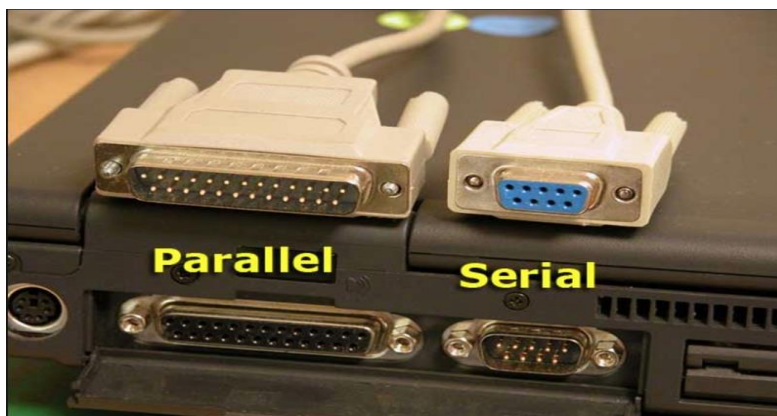


2) Parallel Port

- A parallel port is a socket on the computer that is used to connect a printer or other peripheral device such as a portable hard disk, scanner or a CD – ROM.
- Used for scanners and printers
- Also called printer port
- 25 pin model
- Also known as IEEE 1284-compliant Getronics port.

3) Serial Port

- A serial port can be used to connect devices that use a serial interface such as a modem, scanner, mouse etc.



4) USB Port

- The Universal Serial Bus (USB) is an external port and allows user to connect up to 127 external PC peripherals, including USB keyboards, mice, printers, modems, scanners & external disk drives.



USB cable and port



ComputerHope.com



Learning Outcome: (Summary)

- ❖ A port is a physical docking point using which an external device can be connected to the computer.

Q- Explain Slot in detail.

Trailer: (Only for Understanding)

- ❖ An opening in a computer where you can insert a printed circuit board. Slots are often called expansion slots because they allow you to expand the capabilities of a computer.

Details: (For Exam Content)

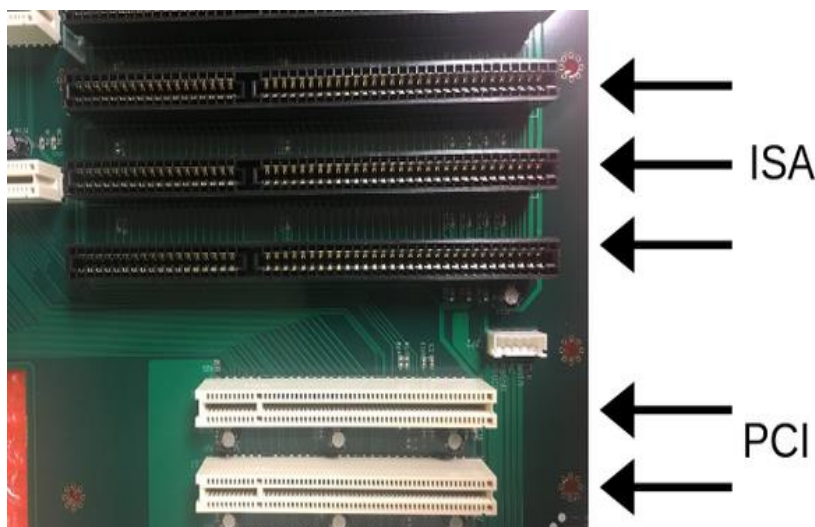
- An opening in a computer where you can insert a printed circuit board. Slots are often called *expansion slots* because they allow you to expand the capabilities of a computer.
- The boards you insert in expansion slots are called *expansion boards* or *add-on boards*.

1) ISA Slots

- Stands for "Industry Standard Architecture." ISA is a type of bus used in PCs for adding expansion cards.
- For example, an ISA slot may be used to add a video card, a network card, or an extra serial port.
- The original 8-bit version of ISA was introduced in 1981 but the technology did not become widely used until 1984, when the 16-bit version was released.

2) PCI Slots

- Stands for "Peripheral Component Interconnect."
- PCI is a hardware bus used for adding internal components to a desktop computer.
- For example, a PCI card can be inserted into a PCI slot on a motherboard, providing additional I/O ports on the back of a computer.



3) Memory Slots

- A **memory slot**, **memory socket**, or **RAM slot** is what allows RAM (computer memory) to be inserted into the computer.
- Most motherboards have two to four **memory slots**, which determine the type of RAM used with the computer.
- The most common types of RAM are SDRAM and DDR for desktop computers and SODIMM for laptop computers, each having various types and speeds.



- The picture below is an example of what memory slots may look like inside a desktop computer.
- In this picture, there are three open and available slots for three memory sticks.

Computer Memory Slots



Learning Outcome: (Summary)

- ❖ slot, is an engineered technique for adding capability to a computer in the form of connection pinholes.

Q- Explain Sockets in details.

Trailer: (Only for Understanding)

- ❖ सॉकेट एक हार्डवेयर कंपोनेंट है जो कि एक डिवाइस को दूसरे डिवाइस से संपर्क (communicate) कराने का काम करता है

Details: (For Exam Content)

- Sockets allow communication between two different processes on the same or different machines.
- It's a way to talk to other computers using standard Unix file descriptors.
- In Unix, every I/O action is done by writing or reading a file descriptor.
- A file descriptor is just an integer associated with an open file and it can be a network connection, a text file, a terminal, or something else.
- A Unix Socket is used in a client-server application framework. A server is a process that performs some functions on request from a client.
- Most of the application-level protocols like FTP, SMTP, and POP3 make use of sockets to establish connection between client and server and then for exchanging data.

Learning Outcome: (Summary)

- ❖ Sockets allow communication between two different processes on the same or different machines.

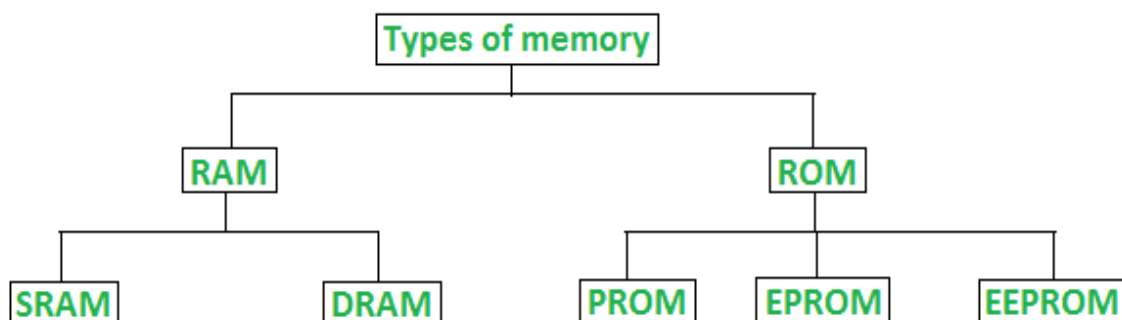
Q- Explain Memory Structure in detail.

Trailer: (Only for Understanding)

- ❖ Primary Memory को मुख्य मेमोरी (Main Memory) और अस्थायी मेमोरी (Volatile Memory) भी कहा जाता है. यह मेमोरी CPU का भाग होती है. जहाँ से CPU डाटा और निर्देश प्राप्त करता है. और प्रोसेस करने के बाद रक्षित रखता है.

Details: (For Exam Content)

- Memory is the most essential element of a computing system because without it computer can't perform simple tasks.
- Computer memory is of two basic type – Primary memory(RAM and ROM) and Secondary memory(hard drive, CD, etc.).
- Random Access Memory (RAM) is primary-volatile memory and Read Only Memory (ROM) is primary-non-volatile memory.



Classification of computer memory

❖ 1. Random Access Memory (RAM) –

- It is also called as *read write memory* or the *main memory* or the *primary memory*.
- The programs and data that the CPU requires during execution of a program are stored in this memory.
- It is a volatile memory as the data loses when the power is turned off.
- RAM is further classified into two types- *SRAM (Static Random Access Memory)* and *DRAM (Dynamic Random Access Memory)*.



DRAM	SRAM
1. Constructed of tiny capacitors that leak electricity.	1. Constructed of circuits similar to D flip-flops.
2. Requires a recharge every few milliseconds to maintain its data.	2. Holds its contents as long as power is available.
3. Inexpensive.	3. Expensive.
4. Slower than SRAM.	4. Faster than DRAM.
5. Can store many bits per chip.	5. Can not store many bits per chip.
6. Uses less power.	6. Uses more power.
7. Generates less heat.	7. Generates more heat.
8. Used for main memory.	8. Used for cache.

Difference between SRAM and DRAM

❖ 2. Read Only Memory (ROM) –

- Stores crucial information essential to operate the system, like the program essential to boot the computer.
- It is not volatile.
- Always remain its data.
- Used in embedded systems or where the programming needs no change.
- Used in calculators and peripheral devices.
- ROM is further classified into 4 types- *ROM*, *PROM*, *EPROM*, and *EEPROM*.

❖ Types of Read Only Memory (ROM) –

- **PROM (Programmable read-only memory)** – It can be programmed by user. Once programmed, the data and instructions in it cannot be changed.
- **EPROM (Erasable Programmable read only memory)** – It can be reprogrammed. To erase data from it, expose it to ultra violet light. To reprogram it, erase all the previous data.
- **EEPROM (Electrically erasable programmable read only memory)** – The data can be erased by applying electric field, no need of ultra violet light. We can erase only portions of the chip.

RAM	ROM
1. Temporary Storage.	1. Permanent storage.
2. Store data in MBs.	2. Store data in GBs.
3. Volatile.	3. Non-volatile.
4. Used in normal operations.	4. Used for startup process of computer.
5. Writing data is faster.	5. Writing data is slower.

Difference between RAM and ROM

Learning Outcome: (Summary)

- ❖ In computing, memory is a device or system that is used to store information for immediate use in a computer or related computer hardware and digital electronic devices.

Q- Explain Uninterruptible power supply (UPS).

Trailer: (Only for Understanding)

- ❖ UPS का पूरा नाम Uninterruptible Power Supply है। UPS मूल रूप से बैटरी के साथ एक इन्वर्टर है जिसका उपयोग इलेक्ट्रॉनिक उपकरण जैसे पीसी, सर्वर, ऑडियो वीडियो आदि के लिए बैटरी बैकअप और सर्ज प्रोटेक्शन प्रदान करने के लिए किया जाता है।

Details: (For Exam Content)

- Uninterruptible power supply (UPS) is a type of power supply system that contains a battery to maintain power to provide power to electronics in the event of a power surge or outage.
- Typically UPS power keeps a personal computer (PC) running for several minutes after a power outage, enabling you to save data that is in memory and shut down the computer gracefully.



Learning Outcome: (Summary)

- ❖ An uninterruptible power supply or uninterruptible power source (UPS) is an electrical apparatus that provides emergency power to a load when the input power source or mains power fails.

Q- Explain Graphics Card.

Trailer: (Only for Understanding)

- ❖ ग्राफिक कार्ड एक कंप्यूटर का हार्डवेयर पार्ट है. एक ग्राफिक कार्ड का काम इमेज को कंप्यूटर स्क्रीन पर डिस्प्ले करना होता है. ... ग्राफिक कार्ड कंप्यूटर के मदरबोर्ड से जुड़ा होता है. ग्राफिक कार्ड में एक प्रोसेसिंग यूनिट, एक मेमोरी, इसको ठंडा रखने का एक यंत्र होता है, जिनकी मदद से आप इसे कंप्यूटर से जोड़ पाते हो।

Details: (For Exam Content)

- A graphics card, also called a video card or a display card, is a circuit board in a computer with specialized hardware optimized for displaying high-quality graphics at a high rate of speed.
- Most modern computers include them, and while they're sometimes associated with video gamers looking to get the most fun out of their games, they're also useful for professional applications like using Adobe Photoshop to edit photos or editing business videos.



Learning Outcome: (Summary)

- ❖ A graphics card is an expansion card for your PC that is responsible for rendering images to the display. High-end GPUs are used for gaming, ray tracing, graphics production, and even mining crypto currency.

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Ch – 2 Input Devices

Q-1 What is Input device? Explain types of input device. [5 Marks]

- Input device is electronic device which accepted data from outside world & translate them into computer language.
- There are so many types of input device like keyboard, mouse, scanner, mic & many more.

❖ Standard Input Device:

1. Keyboard:

- Keyboard is most common type of input device.
- It allow data entry in to computer system by press set of key.
- Keyboard is look like typewriter.
- Typewriter was found in 1819.
- 1st keyboard was found in 1890.
- There are two types of keyboard like.
 1. General purpose keyboard
 2. Special purpose keyboard

1. General purpose keyboard

- It is standard keyboard use with most of computer system.
- It is called general purpose because it has enough key to make them useful for any type of application.
- The most popular general purpose keyboard use today are 101 keys.
- Keyboard was found in 1972 by IBM.
- The first keyboard has 83 keys so it is called PC83 keyboard.
- The layout of keyboard is QWERTY.
- Now a days many types of keyboard available like 84keyboard, pc 101 keys, 104 keys, 126 keys.
- There are various types of keys available like number key, alpha numeric key, special key, arrow key & other function keys.
 - 1) Alpha Numeric Key
 - It contain English alphabet like A to Z & number like 0 to 9 it has special character like ?,+,-,@,\$ and many more.
 - 2) Numeric Key
 - It contain number like 0 to 9 and some operator like +,-,....

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- 3) Arrow Key (Cursor Key)
 - There are 4 types of arrow key like up, down, left, right
- 4) Special Key
 - Special key are use with special purpose some of the most important special key are enter, shift, alter, ctrl, backspace, tab, space bar and many more
- 5) Other function key
 - Keyboard has set of 12 function key like f1 to f12.
2. Special purpose keyboard:
 - The special purpose keyboard use with special application.
 - Use of this type of keyboard is fast data entry.
- ❖ Types of keyboard
 1. Normal Keyboard:
 - This types of keyboard use with desktop computer
 - Normal keyboard connect into ps2 port and usb port.
 2. Laptop Keyboard:
 - It is small in size.
 - It does not require any type of port because laptop keyboard is attach into laptop.
 3. Wireless Keyboard:
 - This type of keyboard does not required any type of wire for the connection.
 - Compare to other keyboard it is expensive.
 4. Rollback Keyboard
 - In this type of keyboard user roll entire keyboard and transfer into one place to another place it is very expensive.
- ❖ **Pointing Input Device:**
 1. **Mouse**
 - The first mouse was found by douglas engelbart in 1964.
 - Mouse is also called edit text device.
 - Mouse is point in device.
 - It is small and look like mouse.
 - The first mouse use ball technology.
 - Now a days mouse use laser technology for batter movement.
 - The mouse has some common function like click, double click and drag.

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- There are various types of mouse available like mechanical mouse, laser mouse, wire less mouse and 3d mouse.
- Mouse use ps2 port and usb port.
- Mouse is in expensive.

2. Touch Screen:

- Touch screen it is simple input device.
- It is easy to use.
- Touch screen was found in 1965.
- Today 99% mobile company use this technology.
- In railway station, bus station & banking sector use this technology.



3. Light Pen:

- It is pointing device.
- It was found in 1965.
- It is called light pen because it is similar to the pen and use sensor light.
- It is also called electronic pen.
- The purpose of light pen is draw accurate diagram.

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4. Joy stick

- It is pointing device.
- The function of joy stick is similar to the mouse.
- It was found in 1978.
- The purpose of joy stick is playing game.

Logitech Freedom 2.4 Joystick



5. Track Ball

- Track Ball was Found in 1947.
- Track ball is pointing device.
- It is use in any type of surface.

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- The function of track ball is similar to the mouse.



❖ Special Input device

1) VDE (Voice Data Entry)

- It is use for large data input.
- This device is fast and accurate.
- It is use for handicap person and security department.
- In VDE user speak in special language like American English.
- It is an expensive device.
- Not widely use today.

2) Mic (Microphone)

- Mic is special input device.
- It receive human voice and convert into digital format.
- Special types of driver and software are must required.
- It is use full in live chat and any types of recording.
- It is a popular input device.



Patent#ZL201930298846.1

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3) Scanner

- Scanner is special input device.
- Scanner is input device that translate paper document into electronic format that can store into computer.
- Scanner convert hardcopy into softcopy.
- To operate scanner it must required driver and software.
- Scanner is easy to use.
- Scanner connected with usb port.
- There are four types of scanner
 1. OMR
 2. OCR
 3. OBR
 4. MICR

1. OMR Scanner:

- OMR means optical mark reader.
- This scanner are capable to scan predefine types of mark made by pen or pencil.
- Checking of paper very fast, accurate and without corruption.
- This scanner only scans mark.
- It can not read any character or special symbol.
- Eraser and cancel not possible.
- This scanner needs good quality paper.
- Dusty paper can not scan.
- It is expensive.
- This type of scanner use in government sector and exam department.



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2. OCR Scanner:

- It means optical character reader.
- It is capable to scan alphabet as well as number.
- It is capable to scan graphics and special type of sheet.
- Rough paper and dirty paper can not scan.
- It is very expensive and use work without corruption.



3. OBR Scanner

- OBR means optical barcode reader.
- Barcode scanner is responsible to scan special type of code.
- Data coded in the form of small line known as barcode.
- Barcode represent numerical data by combine vertical line.
- Barcode reader is use laser technology.
- It is hand held device.
- It is advance technology use in every where like shopping mall, post office and other department.



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4. MICR Scanner

- Magnetic ink character reader.
- MICR is use in banking sector for the fast process of large volume of cheque.
- It allow computer to read information like account number and many other detail printed on the cheque .
- It is expensive device we cannot use in our home.



❖ Camera:

- Camera is special input device.
- It is not directly connected to the computer.
- There are four types of camera like video camera, digital camera, web camera and CCTV camera.

1. Video Camera:

- Video camera is specially use for film and television in the screen.
- It is also use for shooting in particular function.
- In this camera it can provide video or picture directly into computer but if record all the data into film and film was developed.
- Video camera is very high quality sound and it also provide high resolution.
- It is very expensive.

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2. Digital Camera:

- Digital camera is use for capture image.
- In current digital camera it also support video and sound recording facility.
- Computer to video camera it does not provide batter resolution and sound quality.



3. Web Camera:

- Web camera is directly connected with personal computer.
- It does not have storage unit.
- It is suitable for person to person communication or live chat.
- Web camera required internet without internet user cannot access web camera.
- Compare to other camera it does not provide good resolution and sound quality.
- It is by default available in laptop.



4. CCTV Camera:

- CCTV means closed circuit television.
- It is responsible to capture live video.
- It is connect computer or other device.
- It is capable to capture day event as well as night event.
- It is use full for security purpose it use in government office , private office, school and colleges.



❖ **Glide pad/ Touchpad**

- Also called a glide pad, glide Point, pressure-sensitive tablet, or trackpad, a touchpad is an input device on laptops and some keyboards.
- It allows the user to move a cursor with their finger.
- It can be used in place of an external mouse.
- A touchpad is operated by using your finger and dragging it across the flat surface of the touchpad.
- As you move your finger on the surface, the mouse cursor moves in that same direction.
- Like most computer mice, the touchpad also has two buttons below the touch surface that allows you to left-click or right-click.

Laptop Touchpad



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Q- Explain Graphics Tablet.

- It is also called digital table, digitizer tablet, graphics paid, drawing tablet or pen tablet.
- It is input device that enable user to hand draw image.
- It is also use to capture hand written signature.
- Graphics tablet that enables a user to hand-draw images, animations and graphics, with a special pen.
- similar to the way a person draws images with a pencil and paper.
- These tablets may also be used to capture data or handwritten signatures.



Q- Explain MIDI (Musical Instrument Digital Interface).

- MIDI (Musical Instrument Digital Interface) is a protocol designed for recording and playing back music on digital synthesizers that is supported by many makes of personal computer sound cards.
- MIDI is not a musical instrument but it is a digital interface for musical instrument.
- It is a protocol designed for recording and playing back.
- MIDI is used for transferring musical instrumental data to computer.
- If multiple notes are played at once, than MIDI transfer the musical data simultaneously.
- Originally intended to control one keyboard from another, it was quickly adopted for the personal computer.
- Rather than representing musical sound directly, it transmits information about how music is produced.
- The command set includes note-ons, note-offs, key velocity, pitch bend and other methods of controlling a synthesizer.

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- The sound waves produced are those already stored in a wavetable in the receiving instrument or sound card.



Q- Explain Wireless device – Keyboard & Mouse.

- A wireless keyboard is a computer keyboard that allows the user to communicate with computers, tablets, or laptops with the help of radio frequency (RF), such as WiFi and Bluetooth or with infrared (IR) technology.
- It is common for wireless keyboards available these days to be accompanied by a wireless mouse.
- A mouse that connects to the computer without a cable. Bluetooth mice are commonly used with tablets, because most tablets have Bluetooth built in.
- They can also be used with a computer that has Bluetooth from the factory or via an adapter.
- Wireless mice that use other radio frequencies (RF) come with their own transceiver that plugs into the USB port of the computer.

Swiss technology company
established in 1981



Q What Is a Point of Sale (POS)?

- Point of sale (POS), a critical piece of a point of purchase, refers to the place where a customer executes the payment for goods or services and where sales taxes may become payable.

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- It can be in a physical store, where POS terminals and systems are used to process card payments or a virtual sales point such as a computer or mobile electronic device.
- POS, is the place where your customer makes a payment for products or services at your store.
- A point-of-sale (POS) transaction is what takes place between a merchant and a customer when a product or service is purchased, commonly using a point of sale system to complete the transaction.



Ch – 2 Data Storage

➤ Introduction

- Secondary Memory consists of devices that allow more permanent storage of data; i.e. they are non-volatile.
- It is usually much higher in capacity than main memory. However, they are much slower than main memory.
- Magnetic Disk (Hard Disk), Floppy Disk, Optical Disks are the examples of secondary storage devices. (will be discussed later)
- Secondary Storage Devices are also called as Secondary Memory.
- They are used to store the data permanent on the media which is used to store the data.

Q- Explain Types of Magnetic Storage Devices

1. Magnetic Disk Storage

- A magnetic disk is a storage device that uses a magnetization process to write, rewrite and access data.
- It is covered with a magnetic coating and stores data in the form of tracks, spots and sectors.
- Hard disks, zip disks and floppy disks are common examples of magnetic disks.
- A magnetic disk primarily consists of a rotating magnetic surface and a mechanical arm that moves over it.
- The mechanical arm is used to read from and write to the disk. The data on a magnetic disk is read and written using a magnetization process.
- Data is organized on the disk in the form of tracks and sectors, where tracks are the circular divisions of the disk.
- Tracks are further divided into sectors that contain blocks of data.
- All read and write operations on the magnetic disk are performed on the sectors.

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2. Floppy Disk

- A floppy disk is a magnetic storage medium for computer systems.
- The floppy disk is composed of a thin, flexible magnetic disk sealed in a square plastic carrier. In order to read and write data from a floppy disk, a computer system must have a floppy disk drive (FDD).
- A floppy disk is also referred to simply as a floppy.
- Since the early days of personal computing, floppy disks were widely used to distribute software, transfer files, and create back-up copies of data. When hard drives were still very expensive, floppy disks were also used to store the operating system of a computer.
- A number of different types of floppy disks have been developed.
- The size of the floppy got smaller, and the storage capacity increased.
- However, in the 1990s, other media, including hard disk drives, ZIP drives, optical drives, and USB flash drives, started to replace floppy disks as the primary storage medium.



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3. Hard Disk

- A hard disk is part of a unit -- often called a disk drive, hard drive or hard disk drive -- that stores and provides relatively quick access to large amounts of data on an electromagnetically charged surface or set of surfaces.
- Today's computers typically come with a hard disk that can contain anywhere from billions to trillions of bytes of storage.
- A hard disk is actually a set of stacked disks, like phonograph records. Each disk has data recorded electromagnetically in concentric circles, or tracks, on the disk.
- A head, similar to a phonograph arm but in a relatively fixed position, writes or reads the information on the tracks. Two heads, one on each side of a disk, read or write the data as the disk spins.
- Each read or write operation requires that data be located, an operation called a seek.
- Data already in a disk cache, however, will be located more quickly.



4. Magnetic Tape

- Magnetic tape is one of the oldest technologies for electronic data storage.
- While tape has largely been displaced as a primary and backup storage medium, it remains well-suited for archiving because of its high capacity, low cost and long durability.
- If the tape is part of a library, robotic selection and loading the right cartridge into a tape drive can add latency. In an archive, latency is not an issue.

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- With tape archiving, there is no online copy for quick retrieval, as everything is vaulted for the long term.
- While tape can't compete with other storage media in terms of random access, there are still industries in which magnetic tape storage is a valuable storage technology.



Q- Explain Storage Mechanism of Magnetic Storage Devices.

Tracks and Spots

- A disk's surface is divided into concentric tracks (circles within circles), and the thinner the tracks, the more storage.
- The data bits are recorded as magnetic spots on the tracks, and the smaller the spot, the greater the storage.

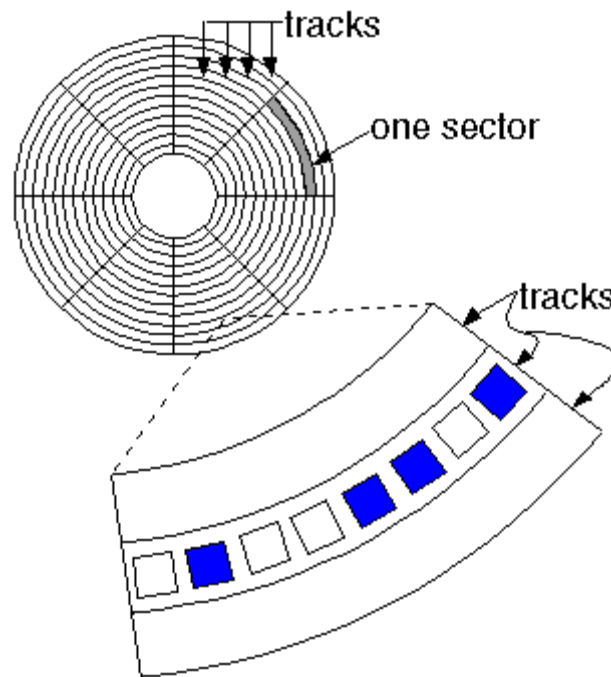
Sectors

- Tracks are further divided into sectors, which hold a block of data that is read or written at one time.
- for example, READ SECTOR 782, WRITE SECTOR 5448. In order to update the disk, one or more sectors are read into the computer, changed and written back to disk.
- The operating system figures out than the inner ones because the outer radius of the platter is how to fit data into these fixed spaces.

Modern disks have more sectors in the outer tracks greater than the inner radius (see CAV). See magnetic tape and optical disc.

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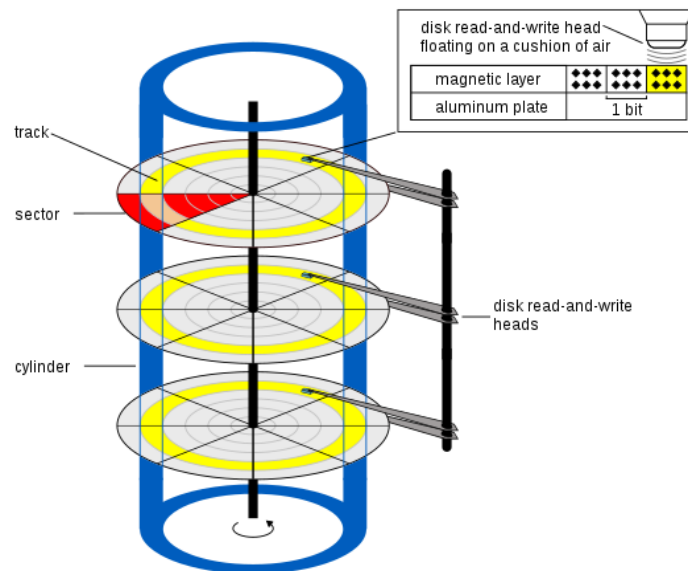
- Tracks are concentric circles that are broken up into storage units called "sectors," typically 4,096 bytes long.
- The sector is the smallest unit that can be read or written.
- Tracks are only 75 nanometers wide today, and bit density is greater than one terabit per square inch.

Cylinder

- Each working surface is divided into a number of concentric rings called tracks. The collection of all tracks that are the same distance from the edge of the platter is called a cylinder.
- A cylinder is a division of data in a disk drive.
- The number of cylinders of a disk drive exactly equals the number of tracks on a single surface in the drive.
- Cylinders are vertically formed by tracks.

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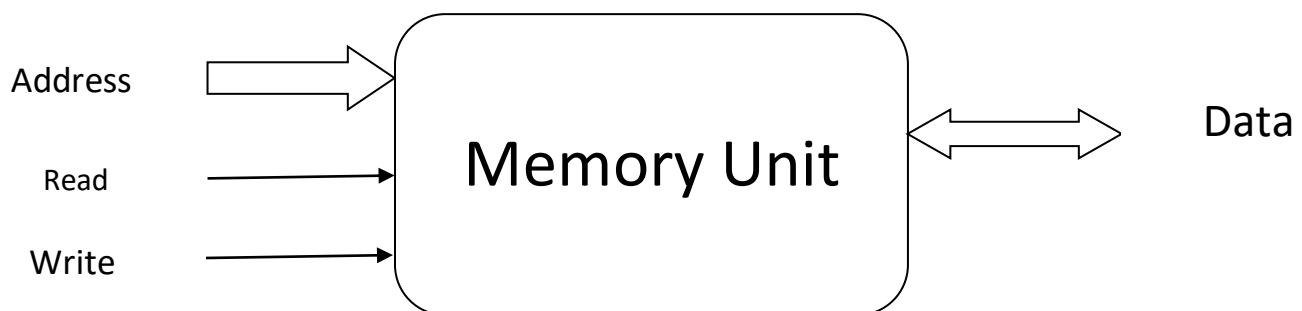


cluster

- Clusters are allocation units for data on various file systems (FAT, NTFS, etc.), where data mainly consists of files.
- Clusters are not directly affected by the physical or virtual geometry of the disk.

Q- Explain Reading / Writing Data to and from Storage Devices.

- The memory unit supports two fundamental operations: Read and Write.
- The read operation reads a previously stored data and the write operation stores a value in memory, see the figure below.



- Memory Read and write Bus Cycles
- The following steps have to be followed in a typical read cycle:

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1. Place the address of the location to be read on the address bus.
 2. Activate the memory read control signal on the control bus.
 3. Wait for the memory to retrieve the data from the address memory location.
 4. Read the data from the data bus.
 5. Drop the memory read control signal to terminate the read cycle.
- The following steps have to be followed in a typical read cycle:
 1. Place the address of the location to be written on the address bus.
 2. Place the data to be written on the data bus.
 3. Activate the memory write control signal on the control bus.
 4. Wait for the memory to store the data at the address location..
 5. Drop the memory write control signal to terminate the write cycle.

Q- What is Seek Time?

- When anything is read or written to a disc drive, the read/write head of the disc needs to move to the right position.
- The actual physical positioning of the read/write head of the disc is called seeking.
- The amount of time that it takes the read/write head of the disc to move from one part to the disk to another is called the seek time.
- Seek time is the time taken for a hard disk controller to locate a specific piece of stored data.

Q- What is Rotational Delay – Latency ?

- A rotational delay is the time between information requests and how long it takes the hard drive to move to the correct sector.
- In other words, it is a time measurement, in ms (milliseconds), of how long before a rotating drive can transfer data.

Q- What is Access Time?

- Access time is total time it takes a computer to request data, and then that request to be met.

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- A good similarity is the time between you ordering a pizza and it being delivered.
- Access time pertains to devices such as memory, hard drive, CD-ROM or other mechanisms.
- Computer access time is commonly measured in nanoseconds or milliseconds and the lower the time the, better.

Q- What is Response Time?

- Response time deals with the total time between a request for service and the fulfillment of that request.
- Response time is a factor in many different computing technologies, including disk I/O, database queries, memory handling and loading web pages.
- Monitor response time measures how quickly pixels change from black to white or to a different shade of grey.
- Quick monitor response times are important for gaming.

Q- Explain USB - Pen Drive.

- USB stands for Universal Serial Bus.
- USB, is a technological protocol developed in the 1990s.
- A pen drive – is a portable storage space device which is capable of taking care of your storage requirements.
- In earlier days, pan drive cannot store the data more than 100 megabytes.
- Now a days technology is advance and we can store more and more data in pan drive.
- We can store up to 120 GB or more data into pan drive.
- The best thing is that you don't need to carry large and hard external hard disk with you.
- You are capable to store your data into piece of plastic which is not bigger than your thumb.

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Q- Explain Cd, DVD and Blue Ray Disk in Details.

CD

- CD means compact Disk.
- It is storage device.
- The storage capacity of CD are 650MB.
- There are many types of CD available like CD Rom, CD Writable, CD Re-Writable etc.
- CD Drive is Use to Access CD.
- CD was found in 17 august 1982 by Sony and Phillips.
- The life of CD is 30 year.

DVD

- DVD means Digital Versatile Disk.
- DVD means Digital Video Disk.
- DVD is optical Storage Media.
- Compare to CD DVD has large storage capacity.
- The capacity of DVD has large storage capacity.
- The capacity of DVD is 4 GB and 16 GB.
- To operate DVD DVD drive is required.
- It was found in 1995 by sony.
- There are many types of DVD available like DVD ROM, DVD recordable and DVD re-Writable.
- The life of DVD is 40 year.

Blu-Ray Disc

- Blu ray disc was found in 1997.
- Blu-ray is an optical disc format designed to display high definition video and store large amounts of data.
- It has large storage capacity.
- The single core blu ray disc can store 27 GB data and dual core blu ray disc can store 50 GB Data.
- It is very expensive.
- Blu disc drive required.

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Q- Explain Flash Memory and Cloud Storage in details.

Flash Memory:

- Flash memory is a type of electronically erasable programmable read only memory (EEPROM), but may also be a standalone memory storage device such as a USB drive.
- EEPROM is a type of data memory device using an electronic device to erase or write digital data.
- Flash memory is a distinct type of EEPROM, which is programmed and erased in large blocks.
- Flash memory is a non-volatile memory chip used for storage and for transferring data between a personal computer (PC) and digital devices.
- It has the ability to be electronically reprogrammed and erased.
- Flash memory was first introduced in 1980.



ComputerHope.com

Cloud Storage:

- Cloud storage is defined as "*the storage of data online in the cloud,*"
- There are many benefits to using cloud storage, however, cloud storage does have the potential for security
- Cloud storage can provide the benefits of greater accessibility and reliability; rapid deployment; strong protection for data backup, archival and disaster recovery purposes.

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- Cloud storage is purchased from a third party cloud vendor who owns and operates data storage capacity and delivers it over the Internet in a pay-as-you-go model.

CLOUD STORAGE FOR BEGINNERS

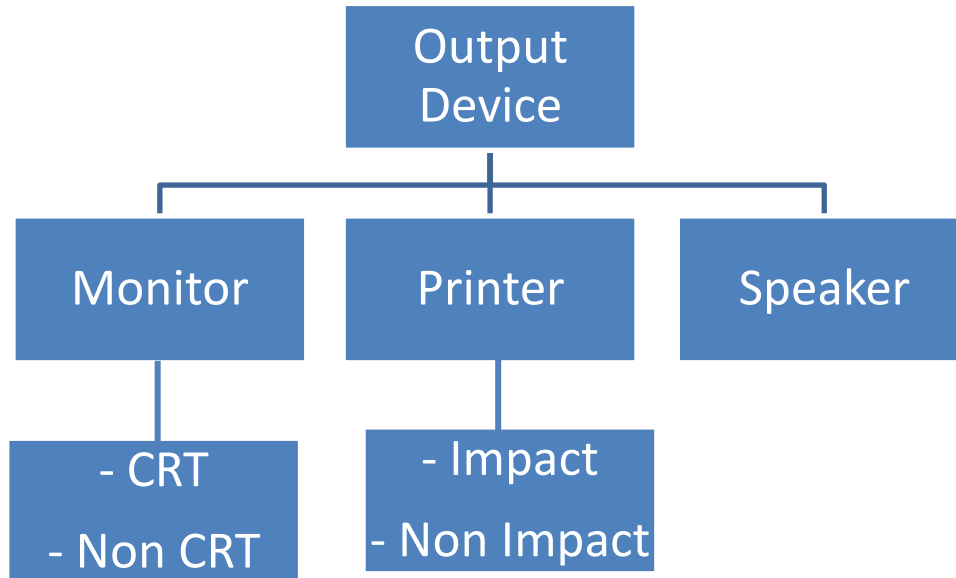


Q- Explain Storage Area.

8 Bit	1 Byte
1024 Byte	1KB - Kilo Byte
1024 KB	1 MB – Mega Bye
1024 MB	1 GB – Giga Byte
1024 GB	1 TB – Terra Byte
1024 TB	1 PB – Peta Byte
1024 PB	1 EB – Exa Byte
1024 EB	1 ZB – Zetta Byte
1024 ZB	1 YB – Yotta Byte

Ch – 3 Output Devices

Q what is output device? Explain in details.



Definition:

- Output device is electronic device that receive data from the computer and translate data from the computer and translate then human language.
- There are many types of output device available today like monitor, printer and speaker.

1) Monitor

- A monitor is an electronic output device that is also known as a **video display terminal (VDT)** or a **video display unit (VDU)**.
- It is most popular output device.
- It produce soft copy output.
- It was found in 1862.

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- It is used to display images, text, video, and graphics information generated by a connected computer via a computer's video card.
- It is a window that generate output of all the process of computer.
- There are two types of monitor like CRT and Non CRT.

1. CRT:

- CRT means Cathode Ray Tube.
- It is Non Portable Monitor.
- This Monitor is look like TV.
- It is most common and popular output device.
- It is used Cathode Ray Tube.
- This monitor available in many size like 15,17,21 and 24 each.
- The electron beams repeatedly hit the surface of the screen. These guns are responsible for generating RGB (Red, Green, Blue) colors, and more other colors can be generated with the help of combining these three colors.
- CRT Monitor also available in black & white color.
- It is old technology not use today.

2. Non CRT:

- Non CRT include LCD,LED,PDP.
- It is use micro processor chip.
- It is light in weight.
- It is use less power.
- It is a portable.
- It is advance technology use every ware today.

❖ Types of NON-CRT Monitors.

- There are three types of monitor like LCD, LED and PDP.

i) LCD

- Liquid Crystal Display.
- After CRT, LCD monitor is used.
- It is small in size and light in weight.
- It is used microchip for processor.
- It provide high resolution.
- LCD was found in 1968.
- LCD monitor is available only in color.

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- There are various size of LCD monitor 17,19,21,24,29.

ii) LED

- Light Emitting Diodes.
- It was found in 1977.
- After LCD,LED technology are used.
- It use less power compare to LCD.
- It is a portable
- It provide high resolution color.
- It is advance technology.

iii) PDP

- Plasma Display Penal.
- It was found in 1981.
- The size of PDP is very big.
- It provide better resolution and high color combination and better picture quality.
- It is very expensive.

1 word Question Answer

Sr No.	Question	Answer
1.	monitor, printer and speaker is output device?	Yes
2.	VDT Stands for?	video display terminal
3.	VDU stands for?	video display unit
4.	CRT stands for?	Cathode Ray Tube.
5.	LCD Stands for?	Liquid Crystal Display
6.	LED Stands for?	Light Emitting Diodes
7.	PDP Stands for?	Plasma Display Penal

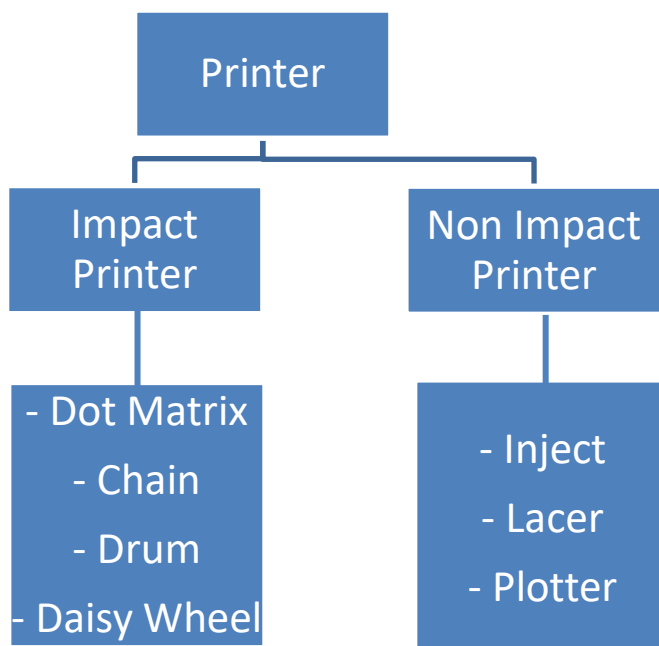
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Q- Explain plasma Technology.

- A plasma display is a computer video display in which each pixel on the screen is light up by a tiny bit of plasma or charged gas, somewhat like a tiny neon light.
- In addition to the advantage of slimness, a plasma display is flat rather than slightly curved as a CRT display.
- Plasma displays come in conventional PC displays sizes and also in sizes up to 60 inches for home theater and high definition television.
- Plasma displays are thinner than cathode ray tube (CRT) displays and brighter than liquid crystal displays (LCD).
- Plasma displays are sometimes marketed as "thin-panel" displays and can be used to display either analog video signals or display modes digital computer input.

Q – Explain Printer in details.



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- Printer are most popular output device.
- It is responsible to generate output in hard copy format.
- Printer are connect into parallel port and usb port.
- To operate printer it require driver and software.
- There are two types of printer like impact printer and non impact printer.
- Printer are classified as character printer, line printer and page printer.
- Character printer print one character at a time.
- Line printer print one line at a time.
- Page printer print one page at a time.
- Printer are available in color and black & white.
- Printer was found in 1938.

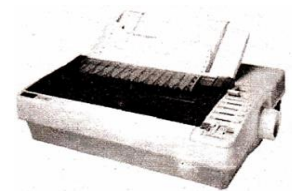
❖ Types of Printer

1. Impact Printer:

- Impact printer use ribbon technology.
- It is old technology printer.
- There are four types of impact printer like DOT Matrix, Chain, Drum & Daisy Wheel Printer.

i) DOT Matrix

- Dot – Matrix printer is a one type of impact printer because they print by hammering the pins on the inked ribbon to leave ink impressions on the paper.
- They are character printers that form characters and all kinds of images as a pattern of dots.
- A dot – matrix printer has a print head that can move horizontally across the paper.
- The print head contains an array of pins, which can be activated independent of each other to extend and strike against an inked ribbon to form a pattern of dots on the paper.
- For faster printing, many dot matrix printers are designed to print both while the print head moves from left to right and while it moves from right to left an return.
- It having a printing speed is between 30 to 600 characters per second.
- The quality of the printed output is directly proportional to density of the dots on the matrix.
- This type of printers are very cheaper then other printers.



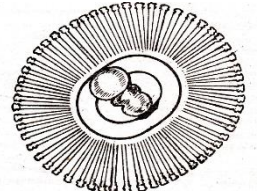
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- Dot – matrix printers are noisy as compared to non-impact printers.
- It is old technology.
- It print multiple copy at a time by using carbon paper.

ii) Daisy Wheel Printer:

- It is impact printer because it use ribbon technology.
- When the desired character moves to the correct position, a print hammer strikes to produce the output.
- This type of printer's print quality is good.
- It is old technology.
- In this printer wheel are use.
- It is a character printer.
- The speed of this printer are 10 to 50 character per second (CPS).

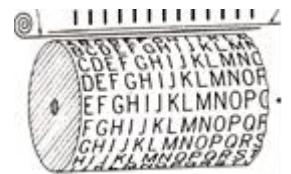


iii) Chain printer:

- It is an Impact Printer and they use a rapidly moving chain called a print chain.
- Each link of the chain is a character font. There is a print hammer located behind the paper.
- It is a character printer.
- The speed of this printer are 40 to 100 character per second.
- It is old technology not use today.

iv) Drum Printer :

- It is consists of a solid, cylindrical drum that has raise characters in band on its surface.
- It is use line printer.
- The speed of this printer are 300 to 2000 line per minute (LPM).
- It is old technology not use today.



2. Non - Impact Printer:

- There are two types of non- impact like impact like inject and laser printer.
- This printer is use spray with laser technology.
- It is very advance technology.
- This type of printer use every ware today.

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i) Inkjet Printer:

- It is non-impact printer because it uses spray technology.
- It produces a high quality output than dot-matrix printer because they form characters by very tiny ink dots.
- A high-resolution inkjet printer has 64 nozzles within height of 7mm providing print resolution of around 360 dots per inch.
- Inkjet printers produce printed output as patterns of tiny dots, they can print any shape of character that a programmer can describe.
- It is a character printer.
- Inkjet printer produces high quality output.
- It is quiet in operation.
- Inkjet printer is color and black and white.
- The speed of this printer is 40 to 300 CPS.
- It is advanced technology.
- It is expensive.

ii) Laser Printer:

- It is non-impact printer because it uses spray technology.
- It is most popular in advanced printing.
- Laser printers are page printers that print one page at a time.
- Low speed laser printer prints 4 to 12 pages per minute (PPM).
- High speed laser printer prints 500 to 1000 pages per minute (PPM).
- It is very expensive.
- It cannot generate multiple prints at a time.

iii) Plotter:

- Plotter is used to print diagrams, banners, large images and graphics.
- Plotters are very slow and they are very large.
- It is expensive.
- It is non-portable.
- In plotters special types of paper or clothes are required.
- Plotters are ideal output devices for architects, engineers, city planners, and others who need to routinely generate high-precision, hard-copy, graphic output of widely varying sizes.
- Mainly plotters are two types:
 - 1) Drum Plotter
 - 2) Flatbed Plotter

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1) Drum Plotter

- In a drum plotter the paper, on which the design has to be made is placed over a drum, which can rotate in both clockwise and anti-clockwise directions to produce vertical motion.
- The mechanism also consists of one or more penholders mounted perpendicular to the drum's surface.
- The pen (s) clamped in the holder (s) can move left to right or right to left to produce horizontal motion.
- That is, under computer control, the drum and the pen (s) move simultaneously to draw the designs and graphs on the sheet placed on the drum.
- The plotter can also annotate the designs and graphs so drawn by using the pen to draw characters of various sizes.

2) Flatbed Plotter

- A flatbed plotter plots a design or graph on a sheet of paper, which that is spread and fixed over a rectangular flatbed table.
- In this type of plotter, normally the paper does not move, and the pen holding mechanism is designed to provide all types of motions necessary to draw complex designs and graphs.
- That is, under computer control, the pen (s) move in the required manner to draw the designs and graphs on the sheet placed on the flatbed table.
- The plotter can also annotate the designs and graphs so drawn by using the pen to draw characters of various sizes.
- Each pen is program selectable, pen, having ink of different colors can be mounted in different holders to multi-colored designs.
- The plot size is restricted by the area of the bed. Some may be as small as 44 size (8"*11" page), while some very large beds used in tire design of cars, ships, aircrafts, buildings, highways, etc. can be up to 20 ft. by 50 ft.
- Some plotters are also designed to etch plastic or metal plates.

1 word Question Answer

Sr No.	Question	Answer
1.	Printer is used to generate output in?	Hard copy

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2.	Character printer print _____	One character at a time
3.	Line printer print _____	one line at a time
4.	Page printer print _____	one page at a time
5.	Printer was found in _____	1938
6.	Impact printer use _____	ribbon technology

Q- Difference between Impact and Non- Impact Printer

Impact Printer	Non-Impact Printer
It is a noisy printer	It is a silent printer.
It prints a document by hammering on a paper.	It prints a document by spring on a paper.
This type of printers is very cheap.	The types of printers are very costly.
Dot-matrix, Drum, Chain, Daisy wheel printers are known as impact printers.	Inkjet and Laser printers are known as non – impact printers.
In this type of printers are used ink ribbons.	This type of printers are doesn't use any ribbon.

Q – Explain Speaker in detail.

- Speaker is output device.
- All the computer generate sound with the help of speaker.
- Speaker covered electronic single in to sound wave.
- There are two types of speaker like internal and external.

i) Internal Speaker :

- Internal speaker available with motherboard.
- It is only responsible to generate beep sound to alert the user.

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ii) External Speaker:

- External speaker available with sound card as well as motherboard circuit.
- It required software or driver.
- Speaker support audio file, video file and sound file.

1 word Question Answer

Sr No.	Question	Answer
1.	Speaker is _____.	Output device
2.	Speaker covered electronic single in to _____.	sound wave
3.	Speaker support _____.	audio file, video file and sound file

Q – Explain Other Output Device:

1) LCD Projector:

- LCD Projector is type of Video Projector.
- It display video, image, file, on screen or other fade surface.
- It is modern projector.
- Easy to use any driver or software needed.
- It is portable and expensive.
- It is use full in education department, private sector, government sector and many more places.

2) OHP Projector:

- OHP means Over Head Projector.
- It is use in education department.
- It display diagram, text or image on the screen.
- It is expensive.
- It is old technology not use today.

3) FAX :

- FAX means Facsimile.

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- It is called telecopy or telefax.
- It transfer text and image.
- Telephone line is required to use of fax machine.

4) OLED Projector :

- OLED means Organic Light Emitting Diode.
- It is display high resolution video, image or graphics.
- It most found in 1987 by codek company.

5) Headphone :

- Headphone are small listening device.
- It is a convert electronic single into sound wave.
- Headphone are also known as earphone.

6) SGD:

- SGD means Speech Generating Device.
- It is also known as voice output communication on aids and voce.
- It is electronic device that allow user to select message to be spoken.
- This device are attach in to computer system.
- It is expensive and not widely use.

7) Google Glass :

- Google Glass is optical head display technology.
- It look like eye glass.
- It display information in eye glass.
- The first Google glass was found in 15th may 2014.
- The price of Google Glass is \$1500.
- On January 2015, Google was announce that it would be stop production of Google glass for security.

8) COM (Computer Output Microfilm)

1 word Question Answer

Sr No.	Question	Answer
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1.	LCD Projector is type of _____.	Video Projector
2.	OHP means _____.	Over Head Projector
3.	FAX means?	Facsimile
4.	OLED means ?	Organic Light Emitting Diode
5.	_____ are small listening device.	Headphone
6.	Headphone convert electronic single into _____.	sound wave
7.	SGD means _____.	Speech Generating Device
8.	Google Glass is optical head _____.	display technology
9.	Google Glass look like _____.	eye glass

Ch – 4 (Part – 2) Languages, Operating Systems and Software Packages

Q-1 What is Computer Language? Explain types of computer Language.

- ✓ Language is way of communication.
- ✓ Programming language consist of all the character and symbol to communication with the computer system.
- ✓ They are created for special purpose.
- ✓ Types of computer language.
- ✓ Computer Language
 1. Machine Language
 2. Assembly Language
 3. High-Level Language

1. Machine level language

- ✓ Machine language is made up of only two symbols “0” and “1” with all its different combinations. So all the instruction are coded in 0s and 1s.
- ✓ There is a specific binary code for each instruction. The binary code for certain operation differs from computer to computer.
- ✓ Each microprocessor has its own instruction and set and corresponding machine codes.
- ✓ An instruction prepared in any machine language has two-part format, as shown under :
- ✓ e.g.
- ✓ Operation Code is the function that must be performed and Operand are the variables involved in this functions.
- ✓ Machine language is directly understood by the computer because it is made up of only two symbols “0” and “1”. So no translation is required.

Advantages

- ✓ Programs can be executed immediately open.
- ✓ end because it doesn't require any translation.
- ✓ No extra storage space is needed.
- ✓ Programmer has complete control over the performance of the hardware.

Disadvantage

- ✓ Tedious to program.

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- ✓ Time consuming to code.
- ✓ Operation codes have to be memorized.
- ✓ Assignment of memory is done by programmer.
- ✓ Time consuming for development.
- ✓ Programs development are machine dependent.
- ✓ Preparation of programs was slow and costly.

2. Assembly Language (Low Level Language)

- ✓ Machine language was tedious to code and error were expected to arise in bulk.
- ✓ To ease the programmer's burden, prompt codes and symbolic addresses were developed.
- ✓ Letter symbols were substituted for basic machine language commands codes.
- ✓ Symbolic addresses are used in place of actual machine address or location.
Format of assembly language is similar to machine language :
- ✓ Examples of commands are MOV, ADD, SUB, INC, etc. Examples of Variable names are SUM, MARKS, AVERAGE, etc.
- ✓ Example of Assembly language instruction :
- ✓ This instruction adds value of NUM1 to the AX (Accumulator Register). The symbolic language made program writing so much easier for the programmers but it must be translated into machine code before being used for operation. The translation is actually done by a special translating program.

Advantage

1. Easier to code and understand programs as compared to machine language programs.
2. Task of memory management and allocation not done by programmer (taken care of by the assembler)
3. Can use Macros (Macro is a bunch of instruction referred as a single name)

Disadvantage

1. Programs have to be translated before execution.
2. Translation of programs take up time.
3. Programs are machine dependent. (Restricted for use on that machine)
4. Additional storage area needed for the source programs and object codes.
 - ✓ Examples of Assembly Language
Microsoft Assembly Language (MASM), Turbo Assembler.

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3. High Level Languages (Higher Level Language)

- ✓ To write a program in any languages, a programmer has to remember all the operation codes of the computer and know in detail what each code does and how it affects the various registers of the computer.
- ✓ However, we have also seen that in order to write good computerized programs the programmer should mainly concentrate on the logic of the problem rather than the details of internal structure of the computer.
- ✓ This is a term which describes programming languages that do not control the functions of the computer's components so closely.
- ✓ The instruction here is even more English like, and as a result, the software industry began to explode with varying applications and systems software.

Advantages

- ✓ The main advantage of high-level languages over low-level languages is that they are easier to read, write, and maintain. Ultimately, programs written in a high-level language must be translated into machine language by a compiler or interpreter.
- ✓ The first high-level programming languages were designed in the 1950s. Now there are different languages, BASIC, COBOL, C, C++, FORTRAN, Pascal, and Prolog.

↩ 3GL (Third Generation Language)

- ✓ Procedure Oriented Computations are identified in sequences of instructions. Instructions identify not only the kind of ('what') tasks to be performed but indicates the way ('how') each task can be achieved.

Advantages

1. Wide range of 3GL that support the development of software with varying nature (e.g. system software, business applications, etc.)
2. Allows programmers to have full control over the way tasks are performed.
3. Highly portable compared to Assembly Language.

Disadvantages

1. Programmers must be sufficiently trained.
2. Databases / File oriented applications are tedious to code.
3. Programmers must identify how tasks are to be achieved.

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Examples of 3GL

- ✓ BASIC (Beginners All Purpose Symbolic Instruction Code), COBOL (Common Business Oriented Language), PASCAL, FORTRAN (Formula Translation), C, RPG (Report Program Generator), PL/1 (Programming Language 1), etc.

↩ 4GL (Fourth Generation Language)

- ✓ Tools developed by software vendors to increase the productivity of programming and to reduce the amount of time needed for development of software. A programming language that uses high-level English like instructions to retrieve and form data for inquiries and reporting.

Advantage

1. Simplifies tasks for application development
2. Suitable for developing database oriented applications.
3. Easy to use
4. Programming can be done with little training.
5. Less time needed for development
6. End user can be involved during development process.

Disadvantage

1. Not suitable for development of all software types (e.g. system software, scientific applications, etc.)
2. Does not allow intricate control of hardware when needed.
3. Graphic facilities not able to generate complex graphical displays.
4. Programmer loses control over how tasks are achieved.

Examples of 4GLs

FOCUS, SQL (Structured Query Language), FOXPRO

↩ Fifth Generation Language

- ✓ A **fifth generation programming language** (abbreviated as **5GL**) is a programming language based on solving problems using constraints given to the program, rather than using an algorithm written by a programmer.
- ✓ Most constraint-based and logic programming languages and some declarative languages are fifth-generation languages.
- ✓ While fourth-generation programming languages are designed to build specific programs, fifth-generation languages are designed to make the computer

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solve a given problem without the programmer. This way, the programmer only needs to worry about what problems need to be solved and what conditions need to be met, without worrying about how to implement a routine or algorithm to solve them.

- ✓ Fifth-generation languages are used mainly in artificial intelligence research. Prolog, OPS5, and Mercury are examples of fifth-generation languages.
- ✓ Fifth generation language is yet to come fully. But in today's computer world's fifth generation language has taken place widely. There some software's which are under fifth generation category. Example of Fifth Generation Language is ERP package.

❖ Artificial Intelligence (AI)

- ✓ The ability of a computer to reason, to learn, to struggle for self-improvement is called as Artificial Intelligence in computers. Computer can get experience through trial and error method.
- ✓ In Artificial Intelligence computer have that human intelligence to solve unstructured problem.
- ✓ Machine "learns" what not to do through trial and error. Chess Game is an example of fifth generation language software.

❖ Expert Systems (ES)

- ✓ It is a special computer package which can perform the function of human expert by helping users to make complex decisions.
- ✓ An interactive knowledge based system that responds to questions, ask for clarification, make recommendations, and generally help users make complex decisions.
- ✓ The user of the Expert system sits at the terminal, PC or workstation and takes part in a question and answer session in which the problem and recommends action to be taken.

1 word Question Answer

Sr No.	Question	Answer
1.	Language is ?	way of communication.
2.	Machine language is made up of	only two symbols "0"

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		and "1"
3.	Each microprocessor has its own instruction and set and corresponding _____.	machine codes
4.	A programmer has to remember all the operation codes of the computer in _____.	High Level language
5.	In which language Procedure Oriented Computations are identified in sequences of instructions.	3GL
6.	In which language Tools developed by software vendors to increase the productivity of programming	4GL
7.	_____ is a programming language based on solving problems using constraints given to the program.	5GL

Q-2 What is Translator? Explain types of Translator.

❖ Compiler

- ✓ A compiler is a translator used to convert high-level programming language to low-level programming language.
- ✓ It converts the whole program in one session and reports errors detected after the conversion.
- ✓ The compiler takes time to do its work as it translates high-level code to lower-level code all at once and then saves it to memory.
- ✓ A compiler is processor-dependent and platform-dependent.
- ✓ It has been addressed by alternate names as the following: special compiler, cross-compiler and, source-to-source compiler.

❖ Interpreter

- ✓ The interpreter is similar to a compiler, it is a translator used to convert high-level programming language to low-level programming language.

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- ✓ The difference is that it converts the program one line of code at a time and reports errors when detected, while also doing the conversion.
- ✓ An interpreter is faster than a compiler as it immediately executes the code upon reading the code.
- ✓ It is often used as a debugging tool for software development as it can execute a single line of code at a time.
- ✓ An interpreter is also more portable than a compiler as it is processor-independent, you can work between different hardware architectures.

❖ Assembler

- ✓ An assembler is a translator used to translate assembly language into machine language.
- ✓ It has the same function as a compiler for the assembly language but works like an interpreter.
- ✓ Assembly language is difficult to understand as it is a low-level programming language.
- ✓ An assembler translates a low-level language, such as an assembly language to an even lower-level language, such as the machine code.

1 word Question Answer

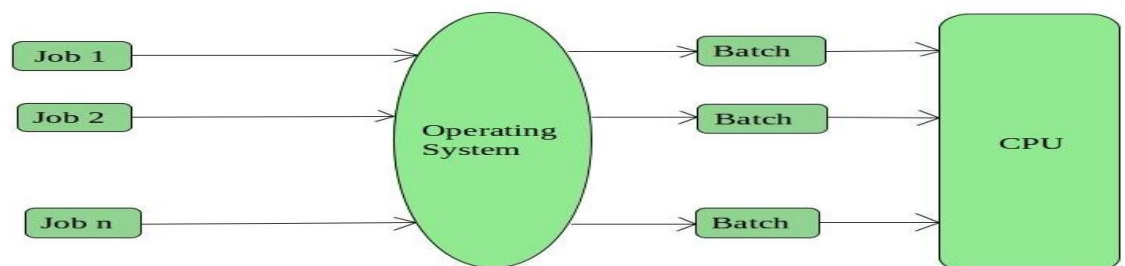
Sr No.	Question	Answer
1.	A _____ is a translator used to converts the whole program in one session and reports errors detected after the conversion.	compiler
2.	_____ converts the program one line of code at a time and reports errors when detected, while also doing the conversion.	interpreter
3.	An _____ is a translator used to translate assembly language into machine language.	assembler

Q-3 What is Operating System? Explain Types of Operating System.

- ✓ An Operating System performs all the basic tasks like managing file, process, and memory. Thus operating system becomes an interface between user and machine.
- ✓ Some of the widely used operating systems are as follows-

➤ Batch Operating System

- ✓ In Batch operating system, data is collected over a period of time and the processing of the data is deferred to a later time.
- ✓ This approach was used very commonly in the past when punch cards served as data storage media and is used as input into the computer system for processing.
- ✓ In batch processing, the data have first to be captured, normally as a form of source documents, like time cards, or alternatively, by RJE (Remote Job Entry) where data is gathered through remote terminals.
- ✓ The data will then be transmitted to the computer or the source document will be physically transported to the data center where transcription (conversion of source document data into machine readable form) is performed.
- ✓ The data is processed by the computer and the resulting output is given to the users. Batch processing is suitable in application where there are large amounts of data and when the turnaround times are not critical. As data are transcribed into machine readable form before submitting for processing, the speed of processing is therefore determined by the computer and not by the operator.
- ✓ Payroll processing is suitable for batch processing as it is only performed on a regular basis. (for example every month).



Advantages of Batch Operating System:

- ✓ It is very difficult to guess or know the time required by any job to complete.

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- ✓ Processors of the batch systems know how long the job would be when it is in queue.
- ✓ Multiple users can share the batch systems
- ✓ The idle time for batch system is very less
- ✓ It is easy to manage large work repeatedly in batch systems

Disadvantages of Batch Operating System:

- ✓ The computer operators should be well known with batch systems
- ✓ Batch systems are hard to debug
- ✓ It is sometime costly
- ✓ The other jobs will have to wait for an unknown time if any job fails

Examples of Batch based Operating System: Payroll System, Bank Statements etc.

➤ Multiprogramming Operating System

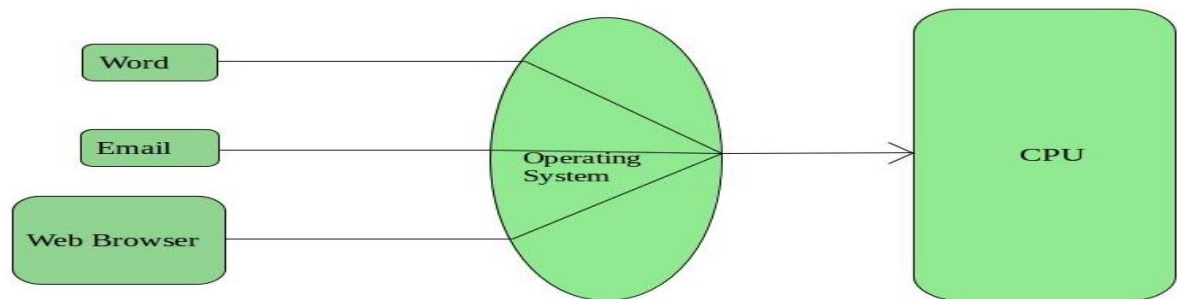
- ✓ Multiprogramming is the process of combining hardware and software to create a situation in which more than one program may be held in main store at one time.
- ✓ It is thus possible to process several tasks simultaneously. The main objective is to minimize unused CPU time.
- ✓ In the time sharing mode the computer switches from one job to the other at a rapid rate. The jobs are entered into the computer through different terminals connected to the computer by cables.
- ✓ After processing the first user's job it proceeds to the second and then the third, and so on, for short bursts of time or "time slices" before returning to the first user's job from where it was earlier suspended.
- ✓ This cycle continues indefinitely; when one program is finished it is replaced by another one.
- ✓ The computer thus performs interleaved execution of two or more different and independent programs.
- ✓ The processor is kept busy while channels and buffers are occupied with job of bringing in data and writing out information.
- ✓ Multiprogramming is dependent on interrupts (an external event which causes running of current program, runs its defined procedure and comes back).
- ✓ Although commands are executed in sequence the system is sometimes required to respond to requests. This routine works according to a system of priorities, with each program having an associated priority number.

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➤ Time Sharing Operating System

- ✓ As the name “Time Sharing” implies it has the ability to process several tasks simultaneously. In the time sharing mode the computer switches from one job to the other at a rapid rate.
- ✓ The jobs are entered into the computer through different terminals connected to the computer by cables.
- ✓ After processing the first user’s job it proceeds to the second and then the third, and son on, for short bursts of time or “time slices” before returning to the first users job from where it was earlier suspended.
- ✓ This cycle continues indefinitely, when one program is finished it is replaced by another one.
- ✓ The exchange of programs from the secondary storage unit and the CPU takes some amount of time called over head time. Thus it is not efficient in processing long programs. Main advantage is that a number of users can use the computer simultaneously.



Advantages of Time-Sharing OS:

- ✓ Each task gets an equal opportunity
- ✓ Less chances of duplication of software
- ✓ CPU idle time can be reduced

Disadvantages of Time-Sharing OS:

- ✓ Reliability problem
- ✓ One must have to take care of security and integrity of user programs and data
- ✓ Data communication problem
- ✓ Examples of Time-Sharing OSs are: Multics, Unix etc.

➤ On-Line Operating System

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- ✓ In an On-Line system, the terminal used by the operator is connected to the main computer so that the operator can interact with the computer in a conversational mode. It is used in applications requiring fast response from the computer.
- ✓ There are some benefits by allowing users to communicate with the computer on-line. Error checking can be performed by the computer when data entry is carried out. The operator can be informed of the error so that immediate correction can be made. On-Line queries can be performed to allow immediate retrieval of information.
- ✓ The nature of on-line systems allow centralization of information, fast data retrieval immediate file updates and improved customer services. Limited validation checks at the terminal increases the accuracy of input.
- ✓ However, the cost of implementation such a system is much more than the batch system.
- ✓ Furthermore, as the terminals may be located remotely from the main computer site, security aspects of implementation must receive special considerations.
- ✓ Aspects which should be incorporated are
 - ✓ Security of access to facilities
 - ✓ Security of data files
 - ✓ Audit trail – maintaining a record of all actions that have been carried out to any data

➤ Real-Time Operating System

- ✓ A Real-Time systems are always on-line but on-line systems need not be real-time systems. However, further constraints are placed in terms of response time and availability of the system.
- ✓ By definition, a real time system receive data and process it quickly enough to produce output which can be used to control or affect the outcome of an ongoing activity of process.
- ✓ In general, real-time systems handles small volumes of data at any one time and the turnaround time is critical. Feedback is essential in real-time systems so that processing can keep pace with external factors.
- ✓ Most real-time systems are used in mission critical application like process control and therefore, reliability and availability is of paramount importance.
- ✓ Missile guidance systems are examples of real-time systems. Control signals are sent to the fins of the missile to correct any deviations.

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Advantages

- ✓ Error messages are immediate
- ✓ Source documents are available at the time the error occurs.
- ✓ Faster than on-line systems.

Disadvantages

- ✓ Direct access devices have to be used.
- ✓ Elaborate controls and backup procedures to guard against unwarranted access to the system.
- ✓ Control checks are difficult since updating occurs at the time of processing.

1 word Question Answer

Sr No.	Question	Answer
1.	An _____ performs all the basic tasks like managing file, process, and memory.	Operating System
2.	In _____, data is collected over a period of time and the processing of the data is deferred to a later time.	Batch operating system
3.	_____ is the process of combining hardware and software to create a situation in which more than one program may be held in main store at one time.	Multiprogramming
4.	In the _____ mode the computer switches from one job to the other at a rapid rate.	time sharing
5.	In an _____, the terminal used by the operator is connected to the main computer so that the operator can interact with the computer in a conversational mode.	On-Line system

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6.	A Real-Time systems are always on-line but on-line systems need not be_____.	real-time systems
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Q- Explain Word processing Packages.

- ✓ A word processor provides more facilities for text storage, manipulation and retrieval of files. It provides several other facilities such as boldfacing text, text formatting, automatic paging, text alignment, margin setting, headers-footers, etc.
- ✓ Block operations in word processing are used to define blocks of text, copy or move blocks and delete and print blocks. Facilities for printing text a specified format are also available in word processors.
- ✓ Printer control settings, character fonts, text sizes, highlighting and underlining are used to create special effects for presentation.
- ✓ A word processing package also provides file manipulation features, such as copying, deleting or renaming files automatic backup, searching, replacing and merging of documents.
- ✓ Word processors are used for Office automation and personal productivity. Examples of word processors are Word Star, Word Perfect, MS-Word, Page Maker, Lotus Word-Pro, etc.

Q- Explain Spreadsheets Packages.

- ✓ Spreadsheets are program equivalent to a computerized ledger sheet with rows and columns. The display screen and computer store are divided into cells organized into rows and columns. Each cell is the intersection of a column and row which stores one data item.
- ✓ Most spreadsheets come in an “integrated” package which allows the business person to readily save data in files, enter data into the spreadsheet, perform calculations and create graphics from the results. It is a powerful analytical tool for preparing budgets, managing inventory, developing plans, accounting, etc.
- ✓ Formulas can be entered into the cell address. Formulas are mathematical expressions encompassing basic addition, subtraction, multiplication, divisions

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and other formulas built into a spreadsheet to perform calculations. E.g. sum, average, max, min, etc.

- ✓ Macros in spreadsheets can be used to activate several commands. They are defined by specifying the list of instructions to be executed and called by quoting their labels.
- ✓ Examples of spreadsheets are Lotus 1-2-3, MS-Excel, Q-Pro, etc.

Q- Explain Graphical Packages.

- ✓ A “graphical” package is an application package that allows user to draw graphs, charts, or images using a prescribed set of tools. Tools available include :
 - Graphical Tools : Which can automatically produce various type of graphs given a set of values.
 - Shape/Line Tools : Allows user to easily create shapes like circles and boxes.
 - Painting Tools : Allows painting and shading using different colors and patterns.
 - Text Drawing Tools : Allows text in various formats to be entered.
- ✓ A programmer usually use a mouse to draw figures on the screen and also to pick the graphics tools that he wishes to use to draw the diagrams, symbols, images, etc. Examples of graphical packages are Animator Pro, 3D Studio, Coral Draw, Photo Shop, etc.

Q- Explain Database Packages.

- ✓ A database management package is used to create an environment where data can be stored in one place and need only a single input and updating to have data integrity, integration and data sharing. The essential features of a database package include :
 - Creating, saving and printing simple database files.
 - Creating custom data entry forms, modifying databases file structures, creating data entry screens. Adding data to database files, editing entries and deleting entries.
 - Moving around a database, finding data and indexing data. Creating query files and using them to locate and print specified records only.
 - Creating and printing reports from database files, generating mailing labels, and summarizing data statistically.

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- Cross-referencing data from more than one database file, as if it were on a single file.
- Creating different views of the same data required by different users.
- Importing files from other software and exporting data to other software. Creating or writing program to suit user requirements.
- ✓ The DBMS let us specify data base structure and query (search condition) the database in a large number of ways. Examples of Database packages are dBase, foxbase, FOXPRO, Oracle, etc.

Q- Explain Presentation Packages.

- ✓ A presentation program is a software package used to display information in the form of a slide show. It has three major functions: an editor that allows text to be inserted and formatted, a method for inserting and manipulating graphic images, and a slide-show system to display the content.
- ✓ Examples oSlideWiki, Audience (software), Ease, Emaze etc.
- ❖ **Features of presentation package**
- ✓ **Creation of Slides:**
- ✓ A slide is a single screen of a presentation, and every presentation is composed of several slides.
- ✓ Slides contain any mixture of text, images, video, animations, links and sound
- ✓ **Animation:**
- ✓ Animation effects allow the various elements on each slide to appear after a certain amount of time or when a presenter presses a button.
- ✓ **Transitions:**
- ✓ This is how the presentation software “moves” the display of one slide to another.
- ✓ Transitions usually include dissolving from one slide to the next or the current slide being moved in some way to show the next slide as though it was underneath.

1 word Question Answer

Sr No.	Question	Answer
1.	A _____ provides more facilities for text storage, manipulation and retrieval of files.	word processor

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2.	_____ are program equivalent to a computerized ledger sheet with rows and columns.	Spreadsheets
3.	_____ in spreadsheets can be used to activate several commands.	Macros
4.	A _____ package is an application package that allows user to draw graphs, charts, or images using a prescribed set of tools.	Graphical
5.	A _____ package is used to create an environment where data can be stored in one place and need only a single input and updating to have data integrity, integration and data sharing.	database management
6.	A _____ is a software package used to display information in the form of a slide show.	presentation program

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

- 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

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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

- 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.

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- 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 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.

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- 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.
- 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.

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- 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.
- 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,

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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.
- 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.

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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
 - 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.

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- 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 teller machine.
- 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 cash- card.
- Using ATM card we can enter pin number then after access bank accounts.
- ATM machine was found in 1996.
- ATM work 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:

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- 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 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.

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- 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.

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- 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.
- 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:

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- 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*^[1]) 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^[3] is preferred), or not restricted to flat screens, like volumetric displays.

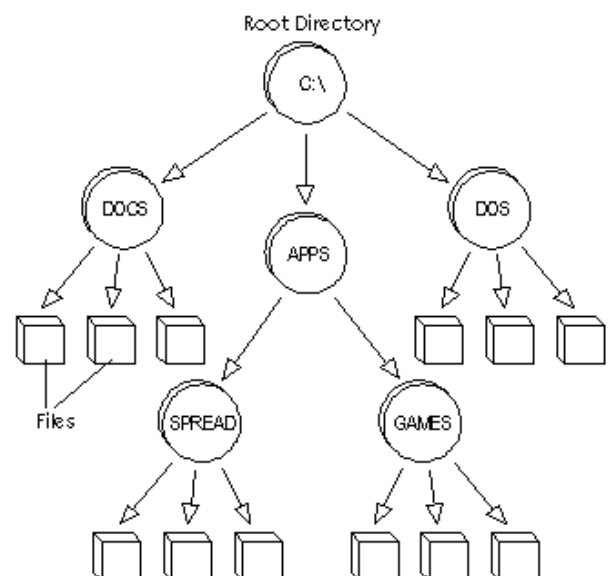
8) Drive ,directory and path:

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



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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 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)

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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.

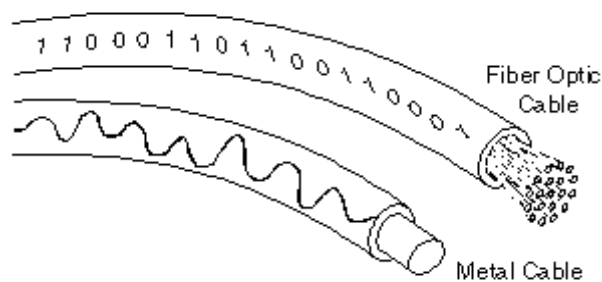
Shut down :

- (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.

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Two Pass Compiler

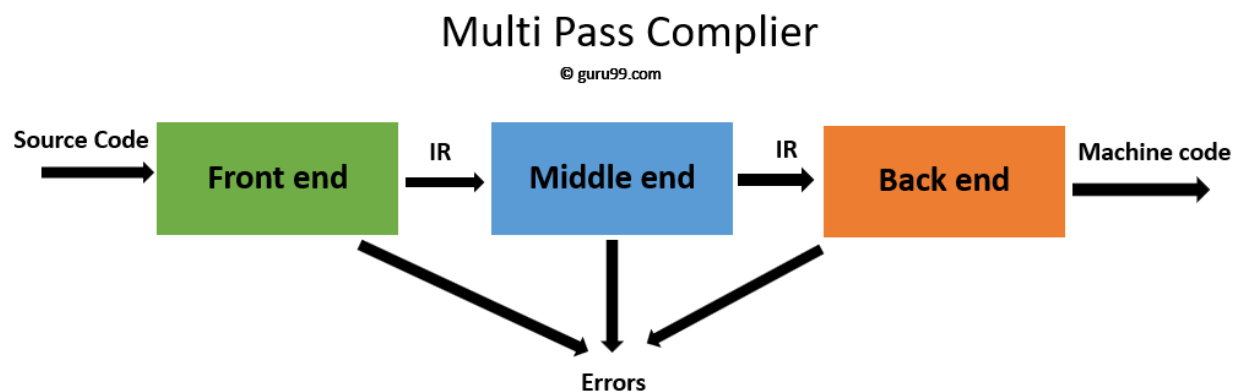


Two pass Compiler is divided into two sections, viz.

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

- 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).

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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.