

# SHREE H. N. SHUKLA GROUP OF COLLEGES

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## Ch – 2 Input Devices

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.
- 1<sup>st</sup> 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.

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- The layout of keyboard is QWERTY.
- Now a days many types of keyboard available like 84key, 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 +,-,\*,/,....
  - 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

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- 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.
- 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 thistechnology.



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## 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.



## 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



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## 5. Track Ball

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

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Patent#ZL201930298846.1

## 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.

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- 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.



## 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.



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- It is hand held device.
- It is advance technology use in every where like shopping mall, post office and other department.



## 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:

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- 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.

Andoer



## 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.

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- 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.

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- 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



## 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.

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## 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.**

## **Trailer: (Only for Understanding)**

- ❖ Wireless technology describes electronic devices that communicate without cords using radio frequency signals. Wireless technology is used in a variety of modern device to provide convenience and greater mobility, and wireless devices play an important role in voice and Internet communications.

## **Details: (For Exam Content)**

- 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.

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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.
- 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.



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- 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.



## Learning Outcome: (Summary)

- ❖ 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.

## 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.

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- 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.



## Learning Outcome: (Summary)

- ❖ Floppy disks are used for moving information between computers, laptops or other devices. Some early digital cameras, electronic music instruments and older computer game consoles use floppy disks. Floppy disks are inserted in to a floppy disk drive or simply floppy drive to allow data to be read or stored.

### 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.

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- 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.



## Learning Outcome: (Summary)

- ❖ hard disk, also called hard disk drive or hard drive, magnetic storage medium for a computer. Hard disks are flat circular plates made of aluminum or glass and coated with a magnetic material. Hard disks for personal computers can store terabytes (trillions of bytes) of information.

## 4. Magnetic Tape

### Trailer: (Only for Understanding)

- ❖ Magnetic tape is a long and narrow strip of plastic that thin magnetic material is coated on. Nearly all recording tape is of this type, whether used for recording audio or video or computer data storage. Magnetic tape recording uses magnetic tape which moves on a recording head.

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## Details: (For Exam Content)

- 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.
- 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.



## Learning Outcome: (Summary)

- ❖ Magnetic tape is a medium for magnetic recording, made of a thin, magnetizable coating on a long, narrow strip of plastic film .....Magnetic tape revolutionized sound recording and reproduction and broadcasting. It allowed radio, which had always been broadcast live, to be recorded for later or repeated airing.

**Q- Explain Storage Mechanism of Magnetic Storage Devices.**

## Tracks and Sectors

- 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

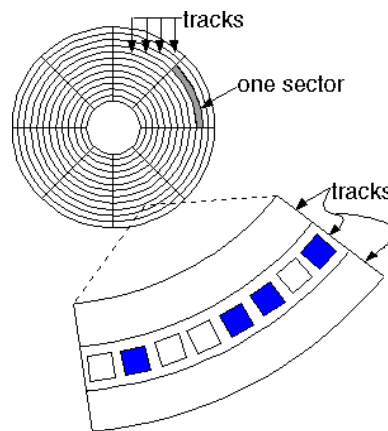
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the spot, the greater the storage.

## 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.



- 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.

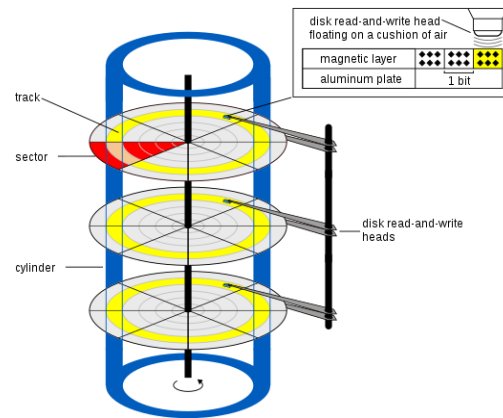
## Cylinder

- 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.

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- 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.

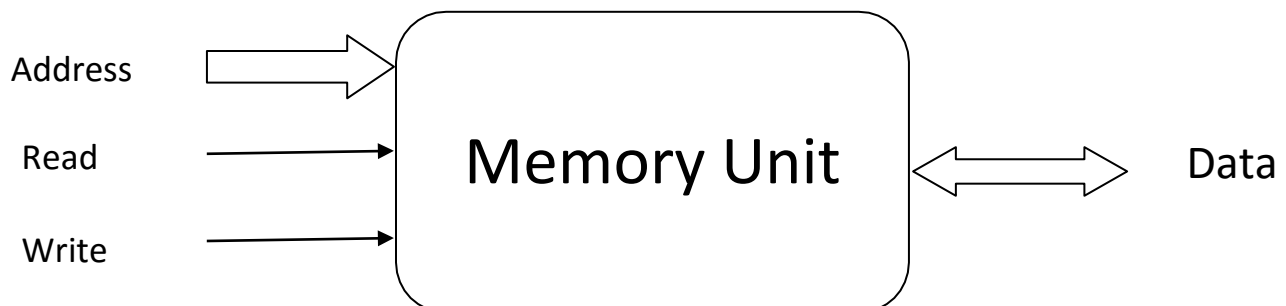


## cluster

- 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.



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

**Details: (For Exam Content)**

- 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.

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## Q- What is Rotational Delay – Latency ?

### Details: (For Exam Content)

- 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.
- 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.



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## 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.

## 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.

**Q- Explain Flash Memory and Cloud Storage in details.**

**Trailer: (Only for Understanding)**

- ❖ **फ्लैश मंेमोरी (Flash memory / चपला स्मृजत)** कम्प्यूटर एवं अन्य डिजिटल जनकायों में प्रयुक्त होने वाली एक प्रकार की कंप्यूटर स्मृजत है जो जवद्युत शक्त के न रहने पर भी बनी रहती है (अथात्, नॉन्-वोलैटाइल मंेमोरी)।

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## Details: (For Exam Content)

### 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.



### 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.
- 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.

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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