

A decorative graphic on the left side of the slide, consisting of white lines and circles on a blue background, resembling a circuit board or data flow diagram.

# PRIMARY AND SECONDARY STORAGE DEVICE

# INTRODUCTION

- The purpose of the storage unit of the computer is to store the data entered before processing and also to store the results after processing.
- Physical devices used to store programs or data on a temporary or permanent basis for use in a computer.
- Memory-Data stored in the form of chips.  
Storage-Data stored in tapes or disks.

# STORAGE UNIT

- a. Primary Storage device
- b. Secondary Storage device

## a. PRIMARY STORAGE DEVICE OR RANDOM ACCESS MEMORY (RAM)

- The term random access means that any word in the memory may be accessed, without having to go through all the other words to get to it.
- It can read and write.
- Memory consist of integrated- circuit either on motherboard or small circuit board attached to motherboard.
- Memory enhance easily by adding memory chip.
- It is a volatile form of memory.





## RAM can be of two types:

- Dynamic RAM (DRAM)
- Static RAM (SPRAM)

## DRAM (Dynamic RAM )

- It only holds its data if it is continuously accessed by a refresh circuit.
- Many hundreds of times each second, this circuitry reads and then re-writes the contents of each memory cell.
- It is slower and more complicated than SRAM.
- It is cheap and take up much less space, typically  $\frac{1}{4}$  the silicon area or SRAM or less.
- It is used in primary storage.
- It takes 120 to 200 nano-second to read from or write into any location.

## SRAM ( Static RAM )

- It is also a volatile storage devices.
- These chips are more complicated and take up more space.
- It is used in specialized applications.
- It is fast and access time 80 nano -second to read from or write into any location.
- It is expensive.



## ROM ( READ ONLY MEMORY )

- ROM is “built-in “computer memory containing data that normally can only be read, not written to.
- ROM Memory is pre-set memory.
- ROM is one in which information are stored permanently.
- The access time for memory is very fast.
- ROM is very expensive to design and manufacturer.



- ROM is a Non-volatile memory.
- It has continuous source of power and do not need periodically refreshed.
- Under ROM comes
  - PROM
  - EPROM
  - EEPROM
  - EAROM



## PROM (Programmable Read Only Memory)

- PROM are programmed to record information using a facility known as a PROM – programmer.
- The recorded information cannot be changed.
- It is also non-volatile storage.
- E.g video games, mobile phones etc.



## EPRM (Erasable Programmable Read Only Memory)

- It was developed to allow programmers to reprogram permanent read only chips.
- It is erased and reprogrammed by exposing the inside of the chip to Ultra Violet Light.
- It were used in the old IBM PCs and XTs for storing the BIOS information.

# Electrically Alterable ROM Memory (EAROM)

- Memory can be programmed and erased by electrical signals.
- It does not require exposure to ultraviolet light to erase its contents.
- It provide easy means to load and store temporary or permanent information in a form of ROM memory.
- This memory can be retained for many years without any power supplied.
- It is a backup to RAM memory.
- A special form of EEPROM is flash memory

## EEPROM ( Electrically Erasable memory)

- It allow the erasure of ROM chips on the fly.
- It send a series of special electrical signals through the chip erases EEPROM chips.
- EEPROM chip is often referred to as the CMOS BIOS chip in computer.
- Information erased by electric pulses like Flash memory.



# SECONDARY STORAGE DEVICES

- This section of the memory is also referred to as backup storage.
- The storage capacity of primary storage is not sufficient to store the large volume so secondary storage.
- Secondary storage also know as external memory or auxiliary storage not directly accessible by the CPU.



# SECONDARY STORAGE DEVICES

- HARD DISK
- FLOPPY DISK
- COMPACT DISK
- TAPE DRIVES
- DLT (Digital Linear Tapes)
- DAT (Digital Audio Tape)
- Micro Vault USB Storage Media

## i). HARD DISK:

- Hard disk has the storage capacities of 8GB, 10GB, 20GB, 40GB.
- CPU use the hard disk to load programs and data as well as to store data.
- To prevent hard disk crash must operate the PC within dust-free and cool room.



## ii). FLOPPY DISK

- It is a flexible circular disk of diameter 3.5 inches made of plastic coated with a magnetic material.
- It is a square plastic jacket.
- It can store 1.4 Mbytes of data.
- Data recorded on a floppy disk is read and stored in a computer's memory by a device called a floppy disk drive.



- Some of it has limited life time.
- It has to be recycled periodically to keep them alive.
- A frequently recycled floppy will have a life time of 3 to 4 years.



Apple III Diskware™ Program

CONFIDENCE PROGRAM

VERSION 1.1

© APPLE 1980, 1981

### iii). Compact Disk:

- CD ROM uses a laser scan to record and read data along spiral tracks on a 5 1/4 disk.
- A disk can store around 650/00mb of information.
- CD-ROMs are normally used to store data as back up.
- Lots of information can be written on CD-ROM and stored for future reference.





#### iv).Tape Drives:

- It is one of the oldest of storage technologies.
- It can hold the most data on a single cartridge.
- A computer tape drive works similar to a tape recorder or a VCR.
- It is a sequential and not random access media.
- It access data slow so tap is mainly used for system backups and regular archiving of files and records.
- It can back up a couple hundred megabytes to several gigabytes of information in cheap price.



## v). DLT (Digital Linear Tape)

- DLT drives are a robust and durable medium.
- Release in 1991.
- DLT drives are very reliable, high-speed and high-capacity making the DLT drives an excellent use for network backups.





## VI).DAT (Digital Audio Tape)

- The popular choice for tape drives is DAT.
- It is best known for digital audio recording.
- These drives use a recording technique called helical scanning which is used in VCRs.
- The 4mm tape is wrapped round a spinning read/write head that records data in overlapping diagonal tracks.
- DAT tapes can hold 2GB to 40GB of compressed data.





## VII). Micro Vault USB Storage Media

- Micro Vault media plugs directly into the computer's USB port and acts just like another drive.
- It is small, Light, shock-proof and moisture proof.
- The device is recognized automatically when we connect it to the computer.
- By connecting it via USB, the files can be transferred by dragging and dropping.

- There are no cables or adaptors needed, no power cord and no driver software to install.
- It is compatible with both Macintosh and Windows operating system.
- E.g power point presentation, digital photos, MPEG videos and MP3s etc.

