

**SUBJECT: COMPUTER FUNDAMENTAL**  
**TOPIC: MEMORY**

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**DEPT:COMPUTER SCIENCE**

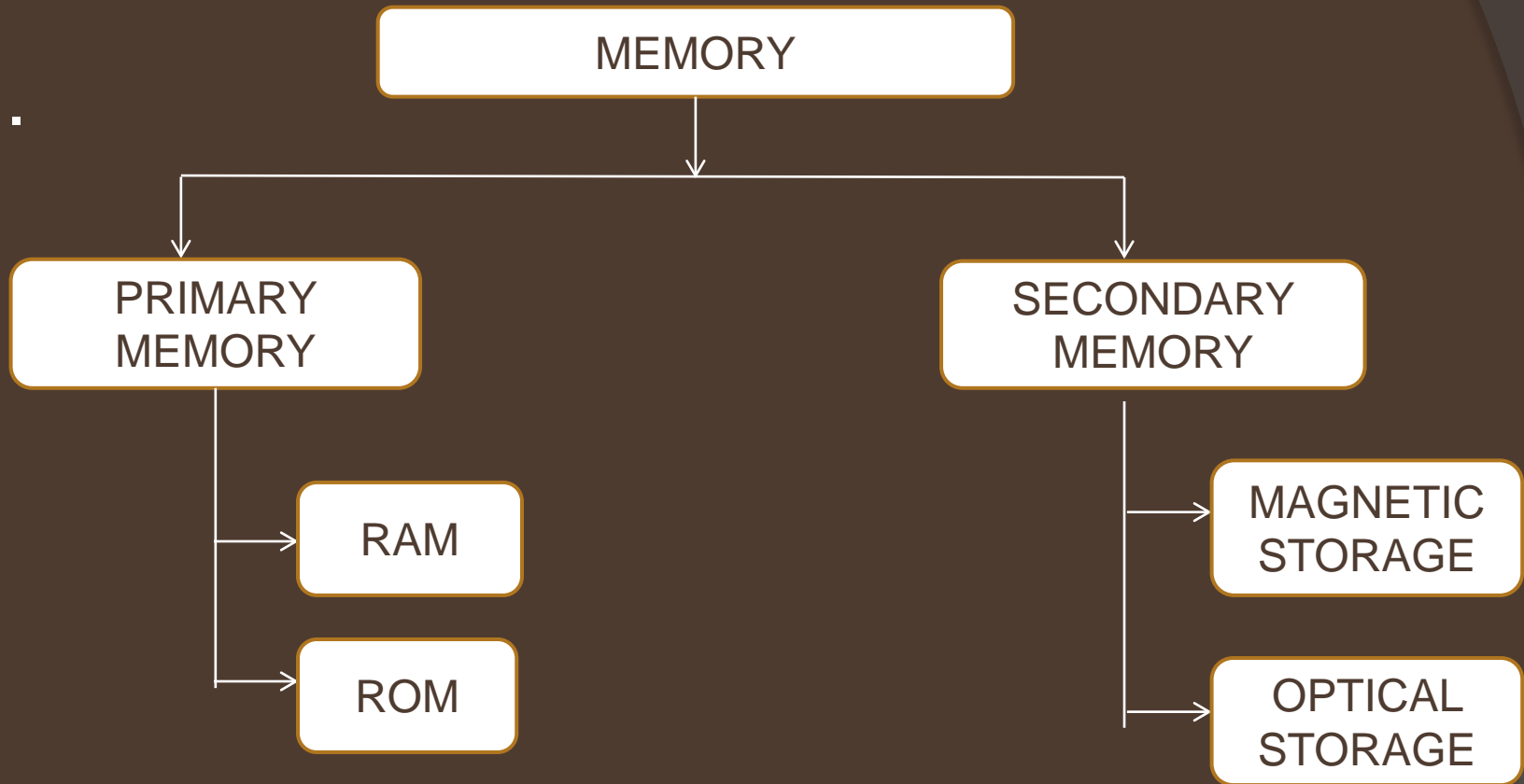
# TOPIC COVERED

- MEMORY
- TYPES OF MEMORY
- PRIMARY MEMORY
- RAM AND ROM
- SECONDARY MEMORY
- REFERNCES

# MEMORY

- Memory is internal storage areas in the computer system.
- The term **memory** means data storage that comes in the form of chips, and the word *storage* is used for memory that exists on tapes or disks.
- The term **memory** is usually used as a shorthand for *physical memory*, which refers to the actual chips capable of holding data

# TYPES OF MEMORY



# PRIMARY MEMORY

- Primary memory is computer memory that is accessed directly by the CPU.
- This includes several types of memory, such as the processor cache and system ROM.
- However, in most cases, primary memory refers to system RAM.

# RAM

- The read and write memory of the computer is known as RAM.
- The information can be written into it during normal operation.
- RAM also exists in a non-volatile.
- RAM is the internal memory of the CPU for storing data, program, and program result.
- It is a read/write memory which stores data until the machine is working.
- As soon as the machine is switched off, data is erased.

# RAM



# TYPES OF RAM

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graph TD; A[TYPES OF RAM] --> B[STATIC RAM]; A --> C[DYNAMIC RAM];
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STATIC RAM

DYNAMIC RAM



# STATIC RAM

- Data is lost when the power gets down due to volatile nature.
- SRAM chips use a matrix of 6-transistors and no capacitors.
- Transistors do not require power to prevent leakage, so SRAM need not be refreshed on a regular basis.
- SRAM is thus used as cache memory and has very fast access.

# DYNAMIC RAM

- DRAM, unlike SRAM, must be continually **refreshed** in order to maintain the data.
- This is done by placing the memory on a refresh circuit that rewrites the data several hundred times per second.
- DRAM is used for most system memory as it is cheap and small.
- All DRAMs are made up of memory cells, which are composed of one capacitor and one transistor.

# ROM

- ROM stands for **Read Only Memory**.
- The memory from which we can only read but cannot write on it.
- This type of memory is non-volatile.
- The information is stored permanently in such memories during manufacture.
- A ROM stores such instructions that are required to start a computer.

# ROM



# PROM

- PROM is read-only memory that can be modified only once by a user.
- The user buys a blank PROM and enters the desired contents using a PROM program.
- Inside the PROM chip, there are small fuses which are burnt open during programming.
- It can be programmed only once and is not erasable.

# EPRM

- EPRM can be erased by exposing it to ultra-violet light for a duration of up to 40 minutes.
- an EPRM eraser achieves this function. During programming, an electrical charge is trapped in an insulated gate region.
- The charge is retained for more than 10 years because the charge has no leakage path.
- For erasing this charge, ultra-violet light is passed through a quartz crystal window (lid).

# EEPROM

- EEPROM is programmed and erased electrically.
- It can be erased and reprogrammed about ten thousand times.
- Both erasing and programming take about 4 to 10 ms (millisecond).
- In EEPROM, any location can be selectively erased and programmed.
- EEPROMs can be erased one byte at a time, rather than erasing the entire chip.

# ADVANTAGES OF PRIMARY MEMORY

- **These are semiconductor memories.**
- **It is known as the main memory.**
- **Usually volatile memory.**
- **Data is lost in case power is switched off.**
- **It is the working memory of the computer.**
- **Faster than secondary memories.**
- **A computer cannot run without the primary memory.**



# SECONDARY MEMORY

- Common secondary storage devices are the hard disk and optical disks.
- Secondary memory is computer memory that is non-volatile and persistent in nature and is not directly accessed by a computer/processor.
- It allows a user to store data that may be instantly and easily retrieved, transported and used by applications and services.
- Secondary memory is also known as secondary storage.

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## **TYPES OF SECONDARY STORAGE**

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graph TD; A[TYPES OF SECONDARY STORAGE] --> B[MAGNETIC STORAGE]; A --> C[OPTICAL STORAGE];
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**MAGNETIC STORAGE**

**OPTICAL STORAGE**

# MAGNETIC STORAGE

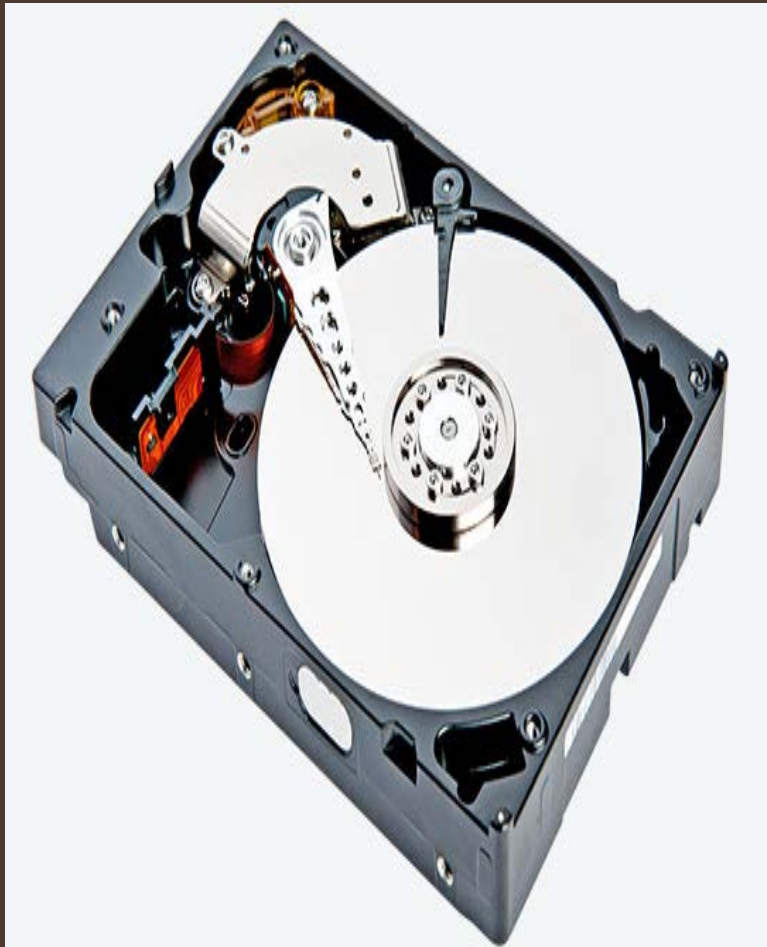
- Magnetic storage is a form of **non-volatile storage**.
- This means that the data is not lost when the storage device is not powered.
- This is in contrast to **volatile storage**, which is typically used for the main memory of a computer system.
- Volatile storage requires a constant power supply - when a computer system is turned off, the data is lost.

# FLOPPY DISK



- The **floppy disk** (or a 3½ floppy for today's standard) is a movable magnetic storage medium.
- Floppy disks are used for moving information between computers, laptops or other devices.
- Floppy disks are inserted into a **floppy disk drive** or simply **floppy drive** to allow data to be read or stored.

# HARD DISK



- The hard disk drive is the main, and usually largest, data storage hardware device in a computer.
- The operating system, software titles, and most other files are stored in the hard disk drive.

# MAGNETIC TAPE



Magnetic tape is a type of physical storage media for different kinds of data.

Magnetic tape has been a major used for audio and binary data storage for several decades, and is still part of data storage for some systems.

# OPTICAL STORAGE

- It is a storage medium that can be written to and read using a laser beam.
- Optical storage is any storage method in which data is written and read with a laser for archival or backup purposes.
- Typically, data is written to optical media, such as CDs and DVDs.

# CD



A standard compact disc measures 4.7 inches, or 120 millimetres (mm), across, is 1.2 mm thick, weighs between 15 grams and 20 grams, and has a capacity of 80 minutes of audio, or 650 megabytes (MB) to 700 MB of data.



# CD ROM



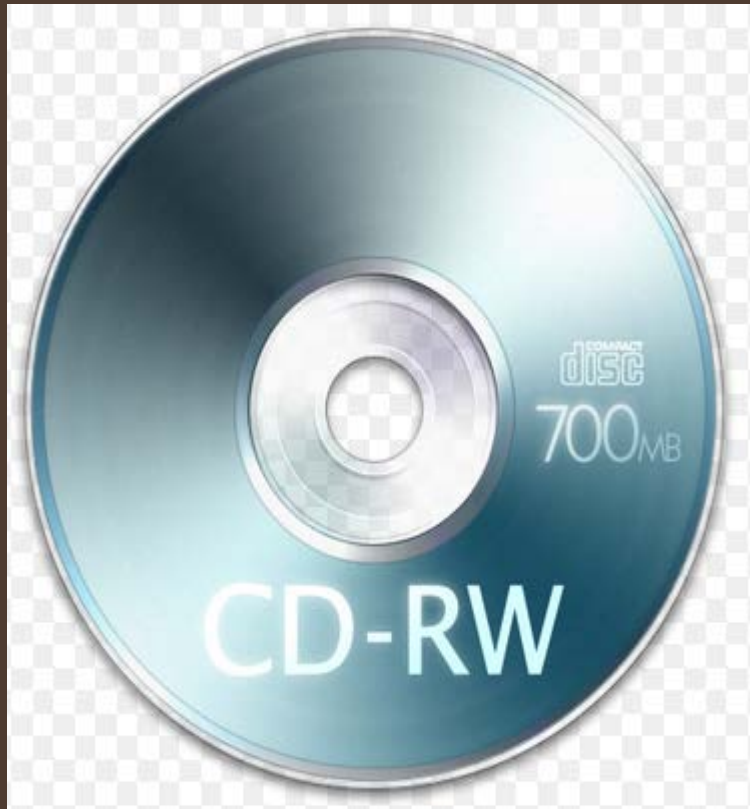
- Stands for "Compact Disc Read-Only Memory."
- A CD-ROM is a CD that can be read by a computer with an optical drive.
- The "ROM" part of the term means the data on the disc is "read-only," or cannot be altered or erased.
- The first CD-ROMs could hold about 600 MB of data, but now they can hold up to 700 MB. CD-

# DVD



- DVDs can be single- or double-sided.
- They can have two layers on each side; a double-sided, two-layered DVD will hold up to 17 gigabytes of video, audio, or other information.
- This compares to 650 megabytes of storage for a CD-ROM disk.

# CD RW



Short for **CD-Re Writable disk**, a type of CD disk that enables you to write onto it in multiple sessions. One of the problems with CD R disks is that you can only write to them once. With CD-RW drives and disks, you can treat the optical disk just like a floppy or hard disk, writing data onto it multiple times.

# ADVANTAGES OF SECONDARY MEMORY

- It is known as the backup memory.
- It is a non-volatile memory.
- Data is permanently stored even if power is switched off.
- It is used for storage of data in a computer.
- Computer may run without the secondary memory.
- Slower than primary memories.

# REFERENCES

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**THANK YOU**