MEMORY

Memory is one of the most important components in a computer. It is usually used to store data that is being currently used by the CPU. Memory greatly influences the performance of the system.

CLASSIFICATION OF MEMORY:

PRIMARY MEMORY
Examp:- ROM,RAM,CACHE,REGISTER.

SECONDARY MEMORY
Examp:- HARD DISK,FLOPPY,CD,DVD,ETC.

PRIMARY & SECONDARY MEMORY: -

PRIMARY MEMORY: -

Primary memory refers to the storage which is directly accessible by the CPU.

SECONDARY MEMORY: -

Secondary storage is used to store large amounts of data but the access speed is less. Secondary holds the data which is not in active use.

PRIMARY STORAGE	SECONDARY STORAGE
STORAGE THAT IS DIRECTLY ACCESSIBLE BY THE CPU.	NOT ACCESSIBLE DIRECTLY BY THE CPU. NEEDS THE HELP OF 1/0 CHANNELS FOR ACCESSING THE CPU.
PROVIDES FAST ACCESS.	PROVIDES SLOW ACCESS.
CAN STORE LESS AMOUNT OF DATA.	CAN STORE A LARGE AMOUNT OF DATA.

CLASSIFICATION OF MEMORY

Memory can also classify in other two ways: -

MEMORY: - 1. VOLATILE MEMORY (EXMP: - ram, cache, register)

2. NON-VOLATILE MEMORY (EXMP: - rom, floppy, DVD)

PRIMARY MEMORY & SECONDARY MEMORY

Volatile memory: -

Volatile which means the data stored in them is lost when the power is switched off. Continued power supply is necessary for volatile memory to hold the data. Hence volatile storage is used to store data temporarily.

Non-Volatile: -

Non-volatile storage retains the data even in the absence of power.

VOLATILE MEMORY	NON-VOLATILE
The memory holds the data as long as the power is present. The data is lost if the power is present. The data is lost if the power supply is switched off.	Non-power supply needs to retain the store data. The data is stored permanently.
Example: - RAM, CACHE, REGISTER.	Example: - ROM, HARD DISK.

READ ONLY MEMORY(ROM): -

FEATURES: -

❖ Rom is a primary memory that is present in the motherboard as an integrated chip.

❖ *It* is a non-volatile type memory.

❖ *Rom* is used to store system related configurations.

❖ Capacity of the ROM does not decide the performance of the system.

The best example of ROM is the BIOS CHIP: -

CLASSIFICATION OF ROM: -

ROM can be classified in four types: -

❖ ROM (Read only memory)

❖ PROM (Programmable read only memory)

❖ EPROM (Erasable programmable read only memory)

❖ EEPROM (ElectricallyErasable programmable read only memory)

RANDOM ACCESS MEMORY (RAM): -

Features: -

❖ Ram is volatile

❖ Ram 1.5 times faster than ROM

❖ Ram provides random access

❖ Runtime ROM is used to store user programs and data and supply to the CPU.

<u>CLASSIFICATION OF RAM</u>

RAM CAN BE CLASSIFIED IN TWO TYPES: -

<u>RAM: -</u> 1. SRAM (Static random-access memory)

2. DRAM (Dynamic random-access memory)

<u>NVRAM</u> is a special type of ram that's nature is non-volatile.

<u>DIFFERENCE OF SRAM AND DRAM</u>

<u>SRAM</u>	<u>DRAM</u>
SRAM is made of flip flops	DRAM is made of capacitors.
Refreshing circuit is not necessary	Periodic refresh is necessary since the charge stored in the capacitors gets discharged.

Used to make cache memory	Connected to motherboard to store user data
SRAM is costly	DRAM IS CHEAPER
The package density of SRAM is less	The package density of DRAM is more
SRAM is faster	DRAM IS SLOWER

CACHE MEMORY

Features: -

❖   Cache memory is made by static RAM.

❖   Accessed data and programs from RAM and easily and quickly to the processor.

❖   It helps to improve the processing speed of computers.

❖   It is faster than DRAM.

❖   At present cache memory is associated with Microprocessor (CPU).

CACHE MEMORY: -

INPUT: -   RAM☐CACHE☐CU☐ALU

Classification of cache memory: -

Cache memory can be classified in three types: -

- ❖ *L1 CACHE (Level one cache)*
- ❖ *L2 CACHE (Level two cache)*
- ❖ *L3 CACHE (Level three cache)*

REGISTER MEMORY: -

FEATURES: -

- ❖ Register is a volatile type of memory.
- ❖ Most of the registers are built inside the CPU.
- ❖ Some of the most important registers in CPU are build accumulators for storing the data and address of the current instruction being executed.

SECONDARY MEMORY: -

Secondary memory basically three types: -

- ❖ Magnetic storage device (hard disk, floppy disk)

- ❖ Optical storage device (CD, DVD)
- ❖ Capacitive storage (Device pen drive)