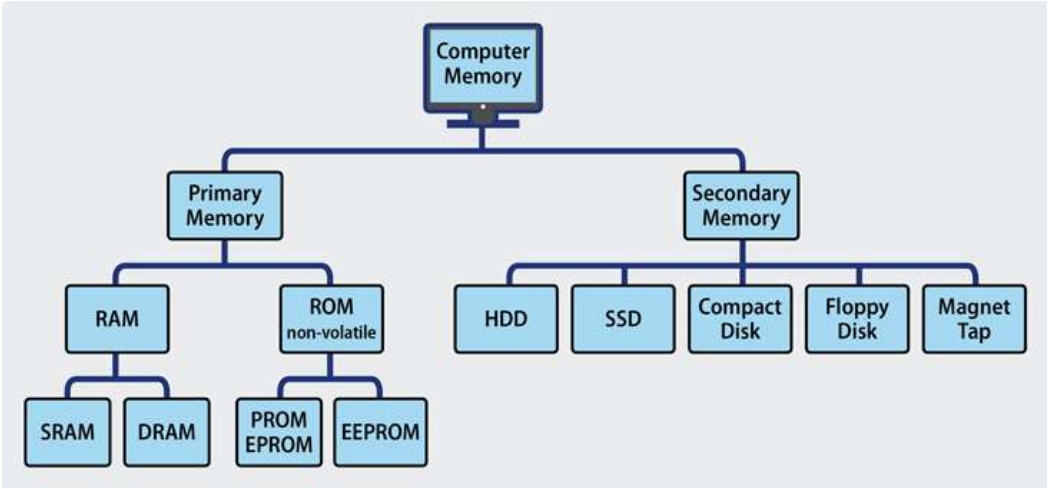
Course Name : O Level(B3-Ist sem.) Subject : ITT&NB
Topic : Memory(Cache memory) Date : 30-03-20

Memory

A memory is just like a human brain. It is used to store data and instructions. Computer memory is the storage space in the computer, where data is to be processed and instructions required for processing are stored. The memory is divided into large number of small parts called cells. Each location or cell has a unique address.

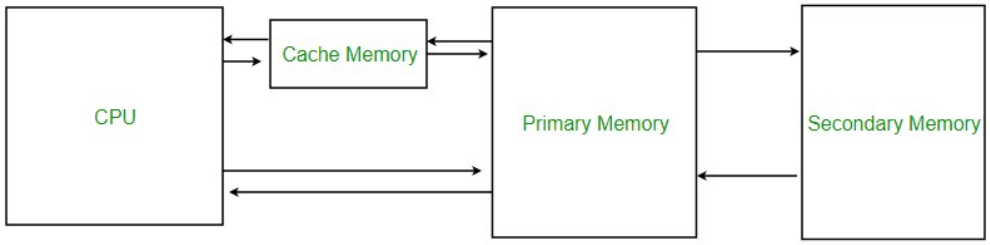


Memory is primarily of three types −

- Cache Memory
- Primary Memory/Main Memory
- Secondary Memory

Cache Memory

Cache memory is a very high speed semiconductor memory which can speed up the CPU. It acts as a buffer between the CPU and the main memory. It is used to hold those parts of data and program which are most frequently used by the CPU. The parts of data and programs are transferred from the disk to cache memory by the operating system, from where the CPU can access them.



Levels of cash memory:

Level 1 (L1) cache or Primary Cache

L1 is the primary type cache memory. The Size of the L1 cache very small comparison to others that is between 2KB to 64KB, it depent on computer processor. It is a embedded register in the computer microprocessor(CPU).The Instructions that are required by the CPU that are firstly searched in L1 Cache. Example of registers are accumulator, address register,, Program counter etc.

Level 2 (L2) cache or Secondary Cache

L2 is seconday type cache memory. The Size of the L2 cache is more capacious than L1 that is between 256KB to 512KB. L2 cache is Located on computer microprocessor. After searching the Instructions in L1 Cache, if not found then it searched into L2 cache by computer microprocessor.

Level 3 (L3) cache or Main Memory

The L3 cache is larger in size but also slower in speed than L1 and L2, it's size is between 1MB to 8MB.In Multicore processors, each core may have separate L1 and L2,but all core share a common L3 cache. L3 cache double speed than the RAM.

Advantages

The advantages of cache memory are as follows −

- Cache memory is faster than main memory.
- It consumes less access time as compared to main memory.
- It stores the program that can be executed within a short period of time.
- It stores data for temporary use.

Disadvantages

The disadvantages of cache memory are as follows −

- Cache memory has limited capacity.
- It is very expensive.

Exercise:

1. What is Memory? How many types of Memory?
2. Define cash memory and its types.