Lecturer Notes: Classification on Generations of Computers

The generations of computers illustrates the miniaturization of transistors and integrated circuit chips over the years

Generations of computers have seen changes based on evolving technologies. With each new generation, computer circuitry, size, and parts have been miniaturized, the processing and speed doubled, memory got larger, and usability and reliability improved.

The five generations of computers are characterized by the electrical current flowing through the processing mechanisms listed below:

- The first within vacuum tubes
- The second within transistors
- The third within integrated circuits
- The fourth within microprocessor chips
- The fifth unveiled smart devices capable of artificial intelligence

First Generation
- The period 1940 to 1956, roughly considered as the First Generation of Computer.
- The first generation computers were developed by using vacuum tube or thermionic valve machine.
- The input of this system was based on punched cards and paper tape; however, the output was displayed on printouts.
- The first generation computers worked on binary-coded concept (i.e., language of 0-1). **Examples:** ENIAC, EDVAC, etc.
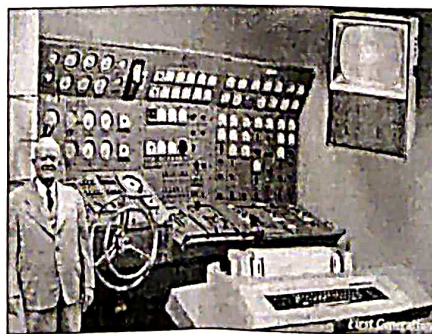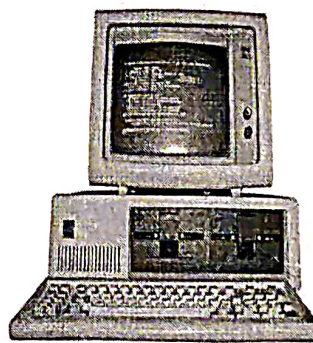

Second Generation
- The period 1956 to 1963 is roughly considered as the period of Second Generation of Computers.
- The second generation computers were developed by using transistor technology.

- In comparison to the first generation, the size of second generation was smaller.
- In comparison to computers of the first generation, the computing time taken by the computers of the second generation was lesser.
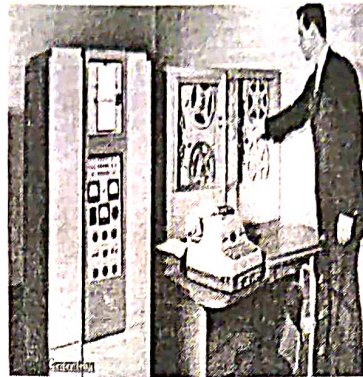
Third Generation

- The period 1963 to 1971 is roughly considered as the period of Third Generation of computers.
- The third generation computers were developed by using the Integrated Circuit (IC) technology.
- In comparison to the computers of the second generation, the size of the computers of the third generation was smaller.
- In comparison to the computers of the second generation, the computing time taken by the computers of the third generation was lesser.
- The third generation computer consumed less power and also generated less heat.
- The maintenance cost of the computers in the third generation was also low.
- The computer system of the computers of the third generation was easier for commercial use.

Third Generation

Fourth Generation

- The period 1972 to 2010 is roughly considered as the fourth generation of computers.
- The fourth generation computers were developed by using microprocessor technology.
- By coming to fourth generation, computer became very small in size, it became portable.
- The machine of fourth generation started generating very low amount of heat.
- It is much faster and accuracy became more reliable.
- The production cost reduced to very low in comparison to the previous generation.
- It became available for the common people as well.

Fourth Generation

Fifth Generation

- The period 2010 to till date and beyond, roughly considered as the period of fifth generation of computers.
- By the time, the computer generation was being categorized on the basis of hardware only, but the fifth generation technology also included software.
- The computers of the fifth generation had high capability and large memory capacity.
- Working with computers of this generation was fast and multiple tasks could be performed simultaneously.
- Some of the popular advanced technologies of the fifth generation include Artificial intelligence, Quantum computation, Nanotechnology, Parallel processing, etc.
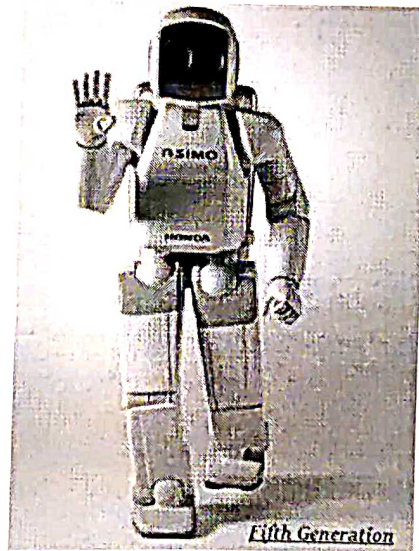

Fifth Generation

Presentation
on
Concept of Memories in Computer

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Definition

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.

Types of Memory
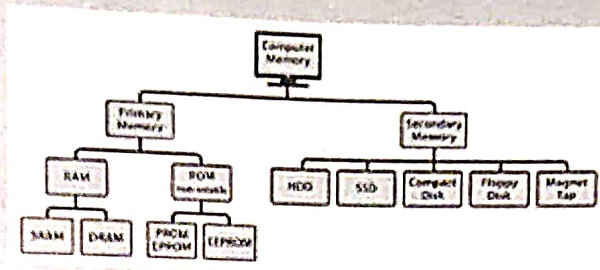
Primary memory

Primary memory includes ROM and RAM, and is located close to the CPU on the computer motherboard, enabling the CPU to read data from primary memory very quickly indeed. It is used to store data that the CPU needs imminently so that it does not have to wait for it to be delivered.

Secondary memory

Secondary memory by contrast, is usually physically located within a separate storage device, such as a hard disk drive or solid state drive (SSD), which is connected to the computer system either directly or over a network. The cost per gigabyte of secondary memory is much lower, but the read and write speeds are significantly slower.

EXAMPLES:

Primary Memory
- RAM
  - DRAM
  - SRAM
- ROM
  - PROM
  - EROM
  - EEROM

Secondary memory
- Magnetic tapes
- Hard Disc
- Compact Disk
- Pen drive
- Flash Drive
- SSDs
- Optical drives etc