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COMPUTER GENERATIONS

Computer generation is classification of computers into different groups according to their manufacturing date and the memory device and other hardware and software technology used in them. When computer generation goes higher i.e. from 1st to 2nd, 2nd to 3rd and so on, then we find that the processing or operating speed, processing capability and storage capacity are increasing but size, energy consumption, heat generation, cost and complexity are decreasing gradually.

There are five generations of computers which are as follows:-

1. First Generation of Computers (1940-1956) VTC MDM 1st

The first computers used vacuum tubes for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms. They were:-

i. based on vaccum tube technology which required great amount of energy and generated much heat, therefore air-conditioning was essential.

ii. large in size, ~~and~~ required a lot of space, and were non-portable.

iii. Processing or operating time was in millisecond i.e. very slow processing.

iv. Punched cards were used as input device.

v. Binary or Machine language, in the form of 0s and 1s was used for programming; difficult to program & use.
Eg: ~~IBM~~, ENIAC, EDVAC, UNIVAC ~~etc~~, IBM 700 series.

2. Second Generation of Computers

Transistors replaced vacuum tubes in the second generation of computers. They were:-

i. based on transistor technology.

ii. smaller, faster, more reliable, accurate and more energy efficient as compared to first generation computer.

iii. Processing or operating speed was increased to microseconds from milliseconds.
iv. still relied on punched cards for input printout for output.
v. Assembly languages was used to program and hence programming became more time efficient and less cumbersome.
Eg: IBM 1401, IBM 7090, PDP-8 etc.

3. Third Generation of Computers
They were:-
i. based on integrated circuit (IC) technology.
ii. smaller, more reliable, accurate, less power consuming and less heat generating than the previous generation of computers. and they were portable.
iii. Processing or operating speed was increased to nanoseconds from microseconds.
iv. Keyboard and monitor were used as input and output device respectively.
v. Extensive use of high level languages became possible.
Eg: NCR 395, B6500 etc.

4. Fourth Generation of Computers
Fourth Generation computers are the modern day nowadays latest computers. The size started to go down with the improvement in the integrated circuits. It reduced the size and price of the computers at the same time increasing power, efficiency and reliability. They are:-
i. based on microprocessor.
ii. powerful, compact, affordable, portable, totally reliable and as well as cheapest among all the other generations
iii. Processing speed increased upto piposeconds.

iv. Graphical user interface and further refinement in input and output devices introduced.
v. Multi-programming, multi-processing, multi-media and distributed computing are possible.
Eg: Apple II, Altair 8800, CRAY-1 etc.

5. Fifth Generation of Computer
The computers of this generation which are still in development stage, are based on artificial intelligence. Artificial Intelligence is the branch of computer science concerned with making computers behave like humans.
i. These computers will be fully parallel processing capacity.
ii. Computers will be intelligent and knowledge base because of AI.
iii. Instead of HLL, natural languages like English, Japanese will be used for giving instruction to the computer and making computer program.
iv. The input and output for the machines will be in the form of graphic images or speeches.