

Holiday Assessment (August)

Grade 12

GIT

Question:

1. What are the five generations of computers?

- 1st Computer Generation
- 2nd Computer Generation
- 3rd Computer Generation
- 4th Computer Generation
- 5th Computer Generation

Question

2. Briefly describe the characteristics of each generation

1st Computer Generation

The period of first generation was 1946-1959. The computers of first generation used vacuum tubes as the basic components for memory and circuitry for CPU (Central Processing Unit). These tubes, like electric bulbs, produced a lot of heat and were prone to frequent fusing of the installations, therefore, were very expensive and could be afforded only by very large organizations. In this generation mainly batch processing operating system were used. Punched cards, paper tape, and magnetic tape were used as input and output devices. The computers in this generation used machine code as programming language.

The main features of first generation are:

- **Vacuum tube technology**
- **Unreliable**
- **Supported machine language only**
- **Very costly**
- **Generated lot of heat**
- **Slow input and output devices**
- **Huge size**
- **Need of A.C.**
- **Non-portable**
- **Consumed lot of electricity**



Some computers of this generation were:

- ENIAC, EDVAC ,UNIVAC

2nd Computer Generation

The period of second generation was 1959-1965. In this generation transistors were used that were cheaper, consumed less power, more compact in size, more reliable and faster than the first generation machines made of vacuum tubes.

In this generation, magnetic cores were used as primary memory and magnetic tape and magnetic disks as secondary storage devices. In this generation assembly language and high-level programming languages like FORTRAN, COBOL were used. The computers used batch processing and multiprogramming operating system.

The main features of second generation are:

- Use of transistors
- Reliable in comparison to first generation computers
- Smaller size as compared to first generation computers
- Generated less heat as compared to first generation computers
- Consumed less electricity as compared to first generation computers
- Faster than first generation computers
- Still very costly
- Supported machine and assembly languages



Some computers of this generation were:

- IBM 1620 ,IBM 7094 ,CDC 1604,CDC 3600

3rd Computer Generation

The period of third generation was 1965-1971. The computers of third generation used integrated circuits (IC's) in place of transistors. A single IC has many transistors, resistors and capacitors along with the associated circuitry. The IC was invented by Jack Kilby. This development made computers smaller in size, reliable and efficient. In this generation remote processing, time-sharing, multi-programming operating system were used. High-level languages (FORTRAN-II TO IV, COBOL, PASCAL PL/1, BASIC, ALGOL-68 etc.) were used during this generation.

The main features of third generation are:

- IC used
- More reliable in comparison to previous two generations
- Smaller size
- Generated less heat
- Faster



- Lesser maintenance
- Still costly
- A.C needed
- Consumed lesser electricity
- Supported high-level language

Some computers of this generation were:

- IBM-360 series ,Honeywell-6000 series ,PDP(Personal Data Processor) ,IBM-370/168 ,TDC-316

4th Computer Generation

The period of fourth generation is 1971-today. The computers of fourth generation use Very Large Scale Integrated (VLSI) circuits. VLSI circuits having about 5000 transistors and other circuit elements and their associated circuits on a single chip made it possible to have microcomputers of fourth generation. Fourth generation computers became more powerful, compact, reliable, and affordable. As a result, it gave rise to personal computer (PC) revolution. In this generation time sharing, real time, networks, distributed operating system were used. All the high-level languages like C, C++, DBASE etc., are used in this generation.

The main features of fourth generation are:

- VLSI-(very large scale integrated circuit) technology used
- Very cheap
- Portable and reliable
- Use of PC's
- Very small size
- Pipeline processing
- Concept of internet was introduced
- Great developments in the fields of networks
- Computers became easily available



Some computers of this generation were:

- DEC 10 ,STAR 1000,PDP 11,CRAY-1(Super Computer),CRAY-X-MP(Super Computer)

The period of fifth generation is today and will be the future. In the fifth generation, the VLSI technology became ULSI (Ultra Large Scale Integration) technology, resulting in the production of microprocessor chips having ten million electronic components. This generation is based on parallel processing hardware and AI (Artificial Intelligence) software. AI is an emerging branch in computer science, which interprets means and method of making computers think like human beings. All the high-level languages like C and C++, Java, .Net etc., are used in this generation.

AI includes:

- Robotics
- Neural Networks
- Game Playing
- Development of expert systems to make decisions in real life situations.
- Natural language understanding and generation.

The main features of fifth generation are:

- ULSI technology
- Development of true artificial intelligence
- Development of Natural language processing
- Advancement in Parallel Processing
- Advancement in Superconductor technology
- More user friendly interfaces with multimedia features
- Availability of very powerful and compact computers at cheaper rates



Question

3. Briefly describe the classification of computers based on the size

Super Computers:

Super computers are the fastest, largest and costliest computers available. The speed is in the 100 million instructions per second range. They tend to be used for specific applications in weather forecasting, aircraft design and nuclear research. Super computers are sometimes used for time sharing as well. Memory size is in hundreds of megabytes.



These are special purpose computers.

2. Mainframe Computers:

Mainframes are the traditional medium and large scale computer systems used in most business organizations for information processing.

A mainframe typically has an advanced control system and is capable of linking up with dozens of input/output units and even minis for additional computer power. It can usually perform from 16 MIPS to onward. Memory size is from 2 MB to onward. Examples are IBM 4300 and 3300 series, Honeywell 700 series and NCR 800 series.



These are the largest general purpose computers used for business applications.

3. Mini Computers:

Mini computers have been very popular in business. Minis are frequently used to add computer power with mainframes. Sometimes an organization decides to decentralize or distribute its computer power to various stations or locations within user's departments. Mini computers are ideal for processing data in a decentralized mode since they are small. Moreover mini has also made it possible for many smaller organizations to afford a computer for the first time. The input/output devices are lesser as compared to mainframe. The speed is usually from 10 MIPS to onward. RAM is from 2 MB to onward.



Mini computers are also general purpose computers and function as mainframes in smaller scale.

4. Micro Computers:

The increasing use of micros in home, school, business and professional offices has been even more revolutionary. Although these computers have limited memory and speed, their cost makes them very attractive for applications that would otherwise not be feasible.



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