

1.

Initially Generation (1940–1950)

The primary electronic component was made of vacuum tubes.

As the primary memory, magnetic drums and magnetic tapes were employed.

The primary programming language was machine language.

These computers required a lot of electricity and were very huge and expensive.

Computers from the first generation include the ENIAC, EDVAC, and UNIVAC I.

(1950–1960) Second Generation

The primary electronic component was a transistor.

The primary memory was made up of magnetic cores.

There have been established high-level programming languages like FORTRAN and COBOL.

These machines were less expensive, smaller, and more effective than those from the previous generation.

Computers from the second generation include the IBM 7090 and IBM 1401.

(1960–1970) Third Generation

The primary electronic component employed was an integrated circuit (IC).

The primary memory was stored on magnetic disks.

Operating systems were created to make using computers easier.

These machines were even more compact, more effective, and more reasonably priced than computers from the previous generation.

Computers from the third generation include the IBM 360 and UNIVAC 1108.

4th Generation (1970-present)

Microprocessors were used as the main electronic component.

Random access memory (RAM) was used as the main memory.

Graphical user interfaces (GUIs) were developed to make computers more user-friendly.

These computers are even smaller and more powerful than 3rd generation computers, and they are also very affordable.

Examples of 4th generation computers include Apple II, IBM PC, and Macintosh.

5th Generation (present future):

Artificial intelligence (AI) and machine learning (ML) are being integrated into computers. Quantum computers are being developed. These computers are still in the early stages of development, but they have the potential to revolutionize the way we use computers.

2.

Computer Architecture

Computer architecture is the way in which a computer's components are organized and interact with each other. It includes the design of the CPU, memory, and I/O devices.

3.

The Three Categories of Computer Architecture

There are three main categories of computer architecture:

Von Neumann architecture is the most common type of computer architecture. It is characterized by a central processing unit (CPU), memory, and input/output (I/O) devices. The CPU fetches instructions from memory, executes them, and then stores the results back in memory.

Harvard architecture is like Von Neumann architecture, but it separates the memory for instructions and data. This can improve performance, as the CPU does not have to wait for instructions to be fetched from memory.

RISC (Reduced Instruction Set Computing) architecture uses a simple instruction set that is easy to implement in hardware. This can improve performance, as the CPU can execute instructions more quickly.