The Five Generations of Computers System | 1st to 5th

The Five Generations of Computers can be described as the overall development of computer technology respective to their size, power, memory, cost, and application.

Compared to the first generations of the computer modern-day computers are faster, smarter, stronger, and cheaper and can store a huge amount of data

Due to vast development and huge improvement of the modern computer, the work of mankind has been made much easier than ever before with the development of high-speed and advanced processors (CPU).

The speed of computers has increased drastically, the modern-day personal computer requires less space for its installation.

Prior to some time, they were differentiated by their development in hardware technology but nowadays they are classified by the development of hardware technology and the software application used in them.

As software and application play an important role in the functions of computers, we cannot deny the factor of software and application in the Advancement of computer technology.

The Five Generations of Computer in Tabular Form

#	Computer Generations	Timeline	Hardware
1	First Generation of Computer	1940-1956	Vacuum Tubes
2	**Second Generation of Computer**	**1956-1963**	**Transistor**
3	Third Generation of Computer	1964-1971	Integrated Circuit (I.C.)
4	**Fourth Generation of Computer**	**1971-1980**	**Microprocessor**
5	Fifth Generation of Computer	1980- Till Now	Artificial Intelligence

First Generation of Computer (1940-1956)

The First Generation of computers used vacuum tubes in their hardware circuit and magnetic drum for their memory.

They were gigantic in size and were kept in an enormous room.

The heat or warmth generated by them was high in numbers, therefore malfunctioning or breaking down on some occasions, as well as their consumption and utilization of electricity and power was very huge.

A vacuum tube was a substantial delicate glass device that utilizes fibers as a source of electrons and was able to control intensified electronic signals.

They were able to easily understand low-level programming languages, therefore, they relied on ***"Machine Language"*** so they could take care of or solve one operation or problem and issues at a single time.

The input was given to them with the assistance and help of punch cards and paper tapes and gathered outputs on ***"printouts"***.

`Following are the Example of First Generation of Computer`

- ENIAC:: Electronic Numerical Integrator and Computer.

- EDVAC:: Electronic Discrete Variable Automatic Computer
- UNIVAC 1:: Universal Automatic Computer 1

Second Generation of Computers (1956-1963)

The second generation of computers utilized ***"Transistors"*** instead of huge vacuum tubes. The transistor was designed and invented in 1947 by three physicians Bardeen, Brattain, and Shockley.

The Transistor was better than vacuum tubes they allowed PC to become smaller, faster cheaper, and produced less energy,

Consumption of energy was far lower as compared to the first generation of computers. They were exceptionally dependable and reliable.

They were damaged often as the transistor generated heat and were very warm in nature, but it was considerably less than vacuum tubes, still, it was a step ahead in development compared to vacuum tubes.

The second generation of computers used high-level Programming languages as well as binary and assembly languages.

They used languages like ***FORTRAN (Formula Translator)*** AND ***COBOL (Common Business Oriented Language)*** They used punched cards and paper tapes for input and Printouts for Outputs.

They were also the first computer that stored instruction and information in their memory using magnetic core technology.

Computer Generations were utilized as a part of the industry of nuclear energy and their examples are

- IBM 7030/7094
- Honeywell 400 Philco

Third Generation of Computers (1964-1971)

The Third Generation of Computers used Integrated circuits (IC) rather than vacuum tubes and transistors. Jack Kilby 1958 created the Integrated Circuit.

A number of other components and segments were used in a single silicon chip like Transistors, resistors, and capacitors, and were called ***"Semiconductors"*** which drastically improved and enhanced the speed, reliability, efficiency, and dependability.

The Second Generation of computers used punched cards and paper tapes for input.

While the Third Generation used keyboards and monitors and the operating system was built to help them to interact and communicate with each other.

The operating system allowed many applications to run at one single time with the help of a central program with Computer memory.

1. Small Scale Integration (SSI)

Just 10 to 20 component like Transistor, Capacitor, and Resistor was Integrated with the ***"Integrated Circuit" (IC)*** Within a Silicon Chip.

2. Medium Scale Integration (MSI)

More than 100 components were integrated into the silicon chip. Integrated Circuit (IC) Was much better compared to Vacuum tubes and Transistors.

It was broadly used at that time since it converted computers into smaller, less expensive, efficient, proficient, and reliable ones.

The energy produced by them was very less compared to vacuum tubes and transistors.

The energy consumption was less compared to the second generation of Personal computers.

They had a principal or main memory which was capable and well equipped of storing data inside the scope of 10 MB And a magnetic disk storing a few MB of data.

It used binary, assembly, and high-level languages like **FORTRAN, COBOL, PASCAL, and BASIC.**

`Example :: PDP8,IBM360,PDP11.`

Fourth Generations of Computers (1971-To Present Day)

`The Fourth Generations of computers used a “Microprocessor” Instead of vacuum tubes and transistors. The PC that uses Microprocessor [CPU] is called as “Micro-Computers”.`

Microprocessors or Microchips are developed using Large scale Integration.

- LSI:: (Large Scale Integration)
- LSI Stands for Large Scale Integration This is an innovative technology where hundreds and thousands of parts such as Transistors, Capacitor, and Resistor are integrated into a small silicon chip
- VLSI:: (Very Large Scale Integration)
- ULSI:: (Ultra Large Scale Integration)

In this technology, hundreds and thousands of components are integrated into the silicon chip. The first main Microprocessor was produced by Intel in 1971.

Which had all central processing units, memory, and output controls further many developments came into existence such as the IBM computer which came in 1981, and after a couple of years, Apple came with Macintosh Microprocessors in 1984.

The Awesome processing power incorporated in a tiny silicon chip significantly reduced the cost, size, and consumption of energy and the heat produced by them reduced enormously.

Importantly as the size and the handling processing power were integrated into a small chip it became very easy to connect this **types of computers** to other computers and more importantly,

they used a new feature called GUI (Graphical User Interface) with the help of this feature users felt free to use the mouse and other pointing devices and gadgets.

`Examples`

- Intel Pentium
- AMD
- Apple II

Fifth Generations of Computers (Present and Beyond)

The Fifth generation of computers is in a development face that uses AI (Artificial Intelligence).

This types of computer will be very smart they will take their own decision.

When given a condition they will also have the ability of reasoning as human beings do with the use of parallel processing and superconductors working together to develop **"Artificial Intelligence".**

They will communicate with humans with the help of languages, pictures, sign language, speech, and writing.

They will have a huge amount of knowledge stored in their memory so that they can respond to the inputs given by humans and take appropriate action whenever found necessary.

They will be extremely intelligent machines. You can get an idea of (AI) which is used in the Voice recognization system.

Many big Internet companies have started their research work on AI and within a span of a few years, they will be able to come up with advanced and innovative techniques and ideas.

Google has almost completed there work on AI which will be responsible for accurate search results [SERP].

`Example`

- PARAM 10000
- INTEL IPSC-1

For More Details, Please Do Visit.

1. https://www.chtips.com/computer-fundamentals/the-five-generations-of-computer/