**HISTORY OF COMPUTER SCIENCE**

The most restless branch of science is- *Computer Science,* where efforts to reach to perfection has given us a huge history of computer science. Each time something new and better is tried and put to use; and so we are today in the world that has the capacity to model the real world and humans as well using the- *Fifth Generation: Artificial Intelligence,* that is a wonder in itself.

The pursuit to achieve more has been continuing since the early 80’s. But the history of computer science is rather very distinctly distributed in *Five Generations of computing* or *Five Generations of computer.*

Each generation is defined by a significant technological development that changes fundamentally how computers operate – leading to more compact, less expensive, but more powerful, efficient and robust machines.

1. **– 1956:  First Generation – Vacuum Tubes**

* These computers used vacuum tubes as circuitry and magnetic drums for memory.
* They were enormous, and costing a fortune to run. These were inefficient materials which generated a lot of heat, sucked huge electricity
* These computers were limited to solving one problem at a time. They gave input and output on printouts.
* Machines of this era are: UNIVAC and ENIAC

1. **– 1963: Second Generation – Transistors**

* Replacement of vacuum tubes with transistors, a huge improvement was observed.
* They still subjected computers to damaging levels of heat. However, they were hugely superior to the vacuum tubes, making computers smaller, faster, cheaper and less heavy on electricity use. They still relied on punched card for input/printouts.
* Transistor-driven machines were the first computers to store instructions into their memories – moving from magnetic drum to magnetic core ‘technology’.

**1964 – 1971: Third Generation – Integrated Circuits**

* The earlier used transistors were now miniaturised and put on silicon chips often called semiconductors.
* It increased the speed and efficiency of the machines massively.
* These computers interacted with keyboard and mouse and operating system was used, this was a significant transition from punched cards to give outputs.
* These computers simulated multi-tasking feature in them.
* This made machines cheaper, portable and smaller and a new mass following of computers hence started in 60’s.

**1972 – 2010: Fourth Generation – Microprocessors**

* This revolution can be summed in one word: Intel. The chip Intel 4004 was introduced that set the dawn of microprocessors.
* These microprocessors positioned all components like CPU, memory, Input / Output controls on one single chip.
* The year 1981 saw the first ever computer (IBM) specifically designed for home use and 1984 saw the MacIntosh introduced by Apple.
* This ultimately led to the development and rapid evolution of the Internet, Graphical user interface (GUI), the mouse and more recently the astounding advances in lap-top capability and hand-held devices.

**2010 - till date: Fifth Generation – Artificial Intelligence**

* Today’s time is the “*Period of Artificial Intelligence”.* Computer Devices with AI are still developing that involves the features of Voice recognition.
* AI is a reality made possible by using parallel processing and superconductors.
* It marks the dawn of nano technology, the essence of the fifth generation is to model human behaviour to the extent of perfection in all respect.

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**Above was the overview of all five generations of computers.**

**Let us talk specifically of the fourth generation of computers:**

**FOURTH GENERATION OF COMPUTERS**

**The fourth generation of computers** was introduced in 1971. They used the very large scale integrated (VLSI) circuits, which developed from small integrated circuits. Very large-scale integration is a process where a thousand transistors are combined into a chip to create an integrated circuit. They were invented in 1970 using a microprocessor. The microprocessor was invented by [Ted Hoff](http://ethw.org/Ted_Hoff) and named it Intel 4004, the first ever computer on a chip. The chips allowed computers to fit on a desktop.

It also introduced office automation, word processing, report writing, spreadsheets and also query languages

**The main features of the fourth generation of computers include:**

**1.The used the technology of very large scale integrated (VLSI) circuits  
2.They do not require an AC   
3. They got introduced to the concept of the Internet  
4.They were very cheap**  
**5. They were very fast and reliable**  
**6.They also introduced the mouse**  
**7.They were easily available to everyone.**  
**8. The main memory increased in the form of EPROM and SRAM  
9.The software was simpler to use and was very convenient  
10.The external storage was the floppy disk and hard disks.**

**Here are some examples of the fourth generation of computers:**

1.[ALTAIR 8800](http://oldcomputers.net/altair-8800.html)– it was the first microcomputer. It was invented in 1975 by Ed Roberts who was the head of Micro Instrumentation Telemetry System (MITS) and named it a personal computer. He designed it with An Intel 8080 CPU and a sleek case made of metal. When the keyboard and monitor was introduced the sales increased worldwide. It could also run basic language.

2.[Apple Computers](https://www.edn.com/electronics-blogs/edn-moments/4410979/Apple-Computer-is-formed--April-1--1976)– The first original apple computer was invented by Steve Wozniak in 1976. It was the first product of apple and was produced as a personal computer. Eventually Steve jobs and Steve Wozniak were the co-founders of Apple. In 1994 apple introduced Macintosh that was also very successful which is now being used in publishing the desktops.

Some more examples: IBM PC, STAR 1000, CRAY, VAX9000  
In the fourth-generation computers micro-soft was introduced. Microsoft was invented by Bill Gates and Paul Allen. It started out as making the operating systems and the programming languages. They collaborated with many companies and eventually created different systems for the different computers in that time.

**Some of the advantages of the fourth generation of computers include:**

**1**.It was the cheapest  
**2**.It was reliable and powerful compared to the other generations  
**3**.It was smaller in size  
**4**.It did not require cooling systems  
**5**.It could be used for commercial production  
**6**.It is fast in computation

**Some of the disadvantages of fourth generation of computers include:**

**1**.Technology was a problem because most countries did not have ICs.  
**2**. It required high skilled staff for manufacturing.

The major differences between the third generation of computers and the fourth generation of computers include:-  
**1**.The [third generation](http://www.pixuffle.net/third-generation-of-computer/) of computers used integrated circuits; while the fourth generation of computers used the very large scale integrated (VLSI) circuits.  
**2**.The third generation of computers measured the operating speed in nanoseconds while the fourth generation of computers measured the operating speed in Picoseconds and MIPS(Millions of instruction per second)  
**3**.The third generation of computers did not have the Internet while the fourth generation of computers had the Internet.  
**4**.The third generation of computers did not use the operating system while the

fourth generation of computers used the operating system.  
**6**. The third generation of computers used the magnetic disks for external storage while the fourth generation of computers used the floppy disks and hard disks.

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