GENERATIONS OF COMPUTERS

1. From a toy to a super computer, computers also saw a bottom to top evolution.
2. The computers we see today are not build overnight. It is a result of nonstop development and dream of some brilliant minds. Almost from 16th century the computer started its journey.
3. If we consider the development as generations of computer then we have 5 generations of computers.
4. These generations have mechanical and technical differences between them.
5. Also, with each generation the efficiency was increased but the size was decreased.

Generations of Computers	Generations Timeline	Technology Used For Calculation
1st Generation	1940-1959	Vacuum Tube
2nd Generation	1956-1965	Transistor
3rd Generation	1964-1971	Integrated Circuit
4th Generation	1971-2000	VLS I+ Microprocessor
5th Generation	2000-the Present and The Future	ULSI + Artificial Intelligence + Parallel Processing

1st Generation

1	Operating system	: No OS
2	Main electronic component	: Vacuum tube
3	Main memory	: Magnetic drums and magnetic tapes with maximum internal storage capacity upto 20,000 characters.
4	Programming language	: Machine language
5	Power	: Consume a lot of electricity and generate a lot of heat.
6	Speed	: Very slow
7	Size	: Very large and heavy in size (almost covers a room).
8	Input/output devices	: Punched cards and paper tape.
9	Network	: No network
10	Cost	: Very expensive
11	Example	: ENIAC, UNIVAC1, IBM 650, IBM 701, etc.
12	Additional	: Von Neumann architecture was introduced

2nd Generation

1	Operating system	: Batch operating system
2	Main electronic component	: Transistor
3	Main memory	: Magnetic core and magnetic tape / disk
4	Programming language	: Assembly language
5	Power	: Low power consumption and generate less heat.
6	Speed	: Faster than 1st generation.
7	Size	: Smaller than 1st generation.
8	Input/output devices	: Punched cards and magnetic tape.
9	Network	: No network
10	Cost	: Very expensive
11	Example	: IBM 1401, IBM 7090 and 7094, UNIVAC 1107, etc.
12	Additional	: Core storage

3rd Generation

1	Operating system	: Yes
2	Main electronic component	: Integrated circuits (ICs), transistors were miniaturized and placed on silicon chips, called semiconductors increase the speed.
3	Main memory	: Large magnetic core, magnetic tape / disk
4	Programming language	: High level language (FORTRAN, BASIC, pascal, COBOL, C, etc.)
5	Power	: Low power consumption and generate less heat.
6	Speed	: Faster than 2nd generation.
7	Size	: Smaller than 2nd generation.
8	Input/output devices	: Magnetic tape, keyboard, monitor, printer, etc.
9	Network	: No network
10	Cost	: Little expensive
11	Example	: IBM 360, IBM 370, PDP-11, UNIVAC 1108, etc.
12	Additional	: Core storage. Also called minicomputers

4th Generation

1	Operating system	: Yes
2	Main electronic component	: Very large-scale integration (VLSI) and microprocessor. (VLSI– thousands of transistors on a single microchip.)
3	Main memory	: Semiconductor memory (such as RAM, ROM)
4	Programming language	: High level language (python, C#, java, javascript, rust, kotlin, etc.).
5	Power	: Low power consumption and generate very less heat.
6	Speed	: Faster than 3rd generation.
7	Size	: Smaller than 3rd generation even like handheld devices.
8	Input/output devices	: Keyboard, pointing devices, optical scanning, monitor, printer, etc.
9	Network	: A group of two or more computer systems linked together.
10	Cost	: Less expensive
11	Example	: IBM PC, STAR 1000, APPLE II, apple macintosh, etc.
12	Additional	: Multiprocessing, multiprogramming, time-sharing, operating speed, and virtual memory. Also called microcomputers due to microprocessors(computer on a small chip)

5th Generation

1	Operating system	: Yes
2	Main electronic component	: Artificial intelligence, uses the ultra large-scale integration (ULSI) technology and parallel processing method (use two or more microprocessors to run tasks simultaneously).
3	Main memory	: Semiconductor memory (such as RAM, ROM, cache and virtual memory)
4	Programming language	: Understand natural language (human language).
5	Power	: Low power consumption and generate very less heat.
6	Speed	: Very fast like super computer.
7	Size	: Very small and portable, and have a huge storage capacity
8	Input/output devices	: Keyboard, monitor, mouse, trackpad (or touchpad), touchscreen, pen, speech input (recognize voice / speech), light scanner, printer, etc.
9	Network	: N numbers of devices can be joined in network
10	Cost	: Variable cost
11	Example	: Desktops, laptops, tablettes, smartphones, etc.
12	Additional	: Capable of almost each and everything