

I N D E X

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Evolution of Computer

* 1st Generation (1942-55.)

Vacuum tubes were used as main component due to large size of vacuum tubes, these computers were very large in size with limited memory.

Its features :-

- Vacuum tubes were the electronic circuit used
- They were the fastest calculating device at that time.
- Low operation speed, high electricity consumption & large heat generation
- Air conditioning required.
- Unreliable & non-portable.
- Limited programming capabilities (Machine assembly language)

* 2nd Generation (1955-65)

Features :-

- Transistor was the electronic circuit used
- Due to their small size, more reliable & portable
- Computational time is in microsecond.
- Frequent maintenance was required.
- Less heat was generated.
- Required power to operate.
- Faster than 1st Gen.
- High level language were used.

* 3rd Generation (1964-1975)

Features:-

- Integrated circuit (IC) came into use.
- Smaller in size.
- Increased in speed & reliability.
- A very low heat was generated.
- Computational time reduced to nanosecond.
- Maintenance cost is low.
- portable
- Self power management
- More and advance high level language Pascal, Cobol, Fortran were used.

* 4th Generation (1975 onwards)

Features:-

- VLSI (Very Large Scale Integrated Circuit) used.
- Smallest in size.
- Heat generation is minimum.
- Very reliable and much faster, compared to those previous Gen.
- No air condition required.
- Minimal maintenance reqd cause hardware failure is negligible.
- Easily portable due to smaller size.

* 5th Gen. (1989-?)

Features:-

- ULSI (Ultra large scale Integration)
- Availability of very powerful and compact computers at cheaper rate.

- Development of true AI
- Development of Natural language processing
- More user friendly with multimedia features.

* Classification of computers :-

→ By Size

- Super Computer
- Main-Frame Computer
- Mini Computer
- Micro Computer

→ By Purpose

- General Purpose
- Special Purpose

→ By type (Data Handling)

- Analog Computer
- Digital Computer
- Hybrid Computer

* Super Computers: They are the most high performing system. It gives high level performance compared to general computers. FLOPS (Floating Point Operations Per Second) entrusted instead of MIPS (Million instruction per second). It uses linux based operating system.

* Mainframe Computers: It is used by big organization for both bulk data processing and are used as stations, transaction processing and are used as servers, since those system has higher processing capability.

* Mini Computers: They are designed for instrumentation control human
It is sold at much cheaper rate than Main-frame
Eg:- PC, Personal laptop

* Analog Computers: Any thing that is variable with respect to time and continuous

* Digital Computers: Any class of devices capable of solving problems by processing information in discrete form. It operates on data, including letters & symbols, that are expressed in binary code.

* Hybrid Computers: Process both analog & digital data. It is a digital computer that accepts analog signals & converts them to digital later processing them in digital form.

* General Computer: Designed to perform variety of tasks when loaded appropriate programme.

* Special Computer: Designed to accomplish a single task.

* Computers are generally classified into two criteria :

- ① Logic used by the computers.
- ② With respect to its size

→ Logic

Analog Computer: The analog computer are use to measure the physical quantities like pressure, temp^o, speed. These computers accept computer data in form of signal and convert them to numerical values.

For eg: a thermometer doesn't perform any calculation but measures the temp^o of a given body. Analog computers are mainly use for scientific and engineering because they deals with quantities constantly. They give only approximate result.

Digital Computer: These deal with counting rather than the physical quantities. There are high speed programming, mathematical either of high voltage state or low voltage state of electricity. They are mainly use for counting calculation, compare & values & desires. They recognise data by counting distinct signals representing either a (1)high or (0)low voltage state of electricity. They are mainly use for counting. They accept the input data and instruction in the form of digit (0-9) and alphabets (a-z) or special character like (+,-, ÷, ×) and also produce

in the same. These can be further classified on the basis of their use.

→ General purpose — They can theoretically be used for any kind of operation. These can be used to solve a business problem as well as mathematical problem with some accuracy and consistency. All the PCs used for household purpose are all general purpose digital computer.

→ Special purpose — These are designed, made & used for any particular specific job. Usually used for those purposes which are critical and need great accuracy & response like satellite launching, weather forecasting, etc.

④ Hybrid (Analog & Digital): There are a lot of applications, on which one can observe the variations in the signals and according to these variations, he wants to take an action. Most of these variations are such that, it may not be possible to check it manually. On the other hand the action to be taken is so fast that it is impossible for human beings to perform the action in required time. Hybrid computers handle such application. They have the features of both digital and analog computers. They accept two types of input —

① Signals whose variations are to be monitored.

② Instruction for monitoring the variation in signals.

* Classification as per size

(a) Micro Computers: When people use the term micro-computer, PC, they mean the small computers that are commonly found in offices, class rooms & homes. These computers come in many shapes, sizes & brands they use. very little power & hence remain cool. In these computers micro processor performs the function of ALU (Arithmetic & Logic Unit) & CU (Control Unit). These micro processor is associated with primary memory (RAM, ROM, input-output & secondary storage devices). They are generally of single user operating system as their hardware design has been oriented to take care of single user needs. They are very popular for following reasons:-

i) inexpensive

ii) easy to use

(b) Mainframe Computers: These are big general purpose computers capable of handling all kinds of problem whether scientific or commercial as they can process large amounts of data very quickly, they are used in huge organizational setup as their main computer. They can accept all type of high-level languages. They have a very high storage capacity. Most of these computers price varies from 5 - 25 Lakhs. They can support more than hundred users, in time sharing mode. They are mainly used for applications such as:-

i) Railway and Airline reservation

ii) Banking Application

③ Mini Computer: They lie somewhere betⁿ PC & Mainframe computers. They are more expensive than micro computers. They also use micro processor as CPU & can handle the needs of multi user environments. They can support support I/O devices. Most commonly used operating system is Linux or Unix. They are small in size thus portable.

④ Super Computer: These are the biggest & the fastest computers. These are mainly designed for complex scientific applications. It has many CPUs, which operates in parallel to make it as fast as possible. These are capable in executing MMIPS (Multi-Million Instruction Per Second) along with a very high memory capacity & completes the data processing within a very short period.

India's first is PARAM.

These are very powerful & expensive too. But very sensitive to the temp, humidity, dust, etc. These are typically used for following applications:

- ① Weather forecasting
- ② Defence System
- ③ Airflow Control Traffic

* Computer File Systems

- ① The computer file system decides that one file, how can be stored in our computer system.
- ② The structure & logic rules used to manage the groups of data & their names is called a file-system.

* Difference betw FAT 32 & NTFS

FAT System	NTFS System
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→ By Features

	File Allocation Table	New Technology File System
<u>File size</u>	Single file can't be larger than 4GB.	Maximum single file size is 16 GB.
<u>Security</u>	It provides security only for network.	If provides security for both network & local.
<u>Fault tolerance</u>	Doesn't support auto repair.	It supports auto repair.
<u>Conversion</u>	Conversion allowed i.e. FAT 32 to NTFS	Conversion not allowed.
<u>Compression</u>	No file compression is allowed.	No file compression is allowed.
<u>Encryption</u>	No, encryption	Yes, encryption
<u>OS</u>	XP, Windows 2000, Vista, etc	All the new versions

Processor: The processor or CPU is the brain of the computer executes instructions, allowing a computer to perform all kinds of task. Processor consists of two parts -

① Arithmetic unit (ALU), which performs mathematical & logical operations &

② Control Unit which decodes instruction, generate control signal & sync the operation of different components.

Over the yrs processor have become extremely fast. AMD & intel are the two primary manufacturers.

* Technical Specification of Intel Processor

Intel 80386

- ① This micro processor has 8 to 33 mega Hz top speed
- ② Up to 64 MB of RAM.
- ③ Supports 1.44 MB floppy Disk Drives.
- ④ Up to 350 MB of Hard Disk.
- ⑤ 14 to 20 inch CGA/VGA colour memory
- ⑥ 64 KB external cache memory

Intel 80486

- ① 25-120 MHz top speed
- ② Up to 120 MB of RAM
- ③ 512 KB external cache memory
- ④ Up to 640 MB of Hard Disk
- ⑤ Supports CD drive, 2 serial port & 1 parallel port

supports advanced system buffering

* P4

P4 was released in 2000.

It is the fastest processor in the Intel's micro processor family.

It consists of 20 stage pipeline uses 300 MHz System bus, enhancing the processing speed.

P4 micro-processor enable the hyper threading technology, HTT.

HTT is a technique which enable a single CPU to act like multiple CPU's.

This enables different part of CPU to work on different task at a common time. In this way a CPU with hyper threading appears to be more than 1 CPU.

- Intel Pentium I
- ① 75-232 MHz top speed
 - ② Up to 256 MB of RAM
 - ③ Up to 256 KB to 1 MB cache memory.
 - ④ 4 HDD, each HDD larger than 584 MB & upto 8.4 GB
 - ⑤ Biased^{BIOS}, supports plugging IDE controllers on board
 - ⑥ IDE

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* Pentium II

The pentium I developed in 1997 offers clock rate from 233 MHz to 266 MHz. The system bus speed of 66 MHz to 100 MHz. Dual independent bus architecture uses one bus from processor to the main memory & another bus from processor to level case.

The processor can access both the bus simultaneously

* Pentium III

It was introduced in 1999, loaded with 133 or 100 MHz system bus & the clock speed is 800 MHz.

In this processor intel introduced processor serial no. for security & it embedded on the chip.

New version of pentium III has inbuilt advance transfer cache memory & it

~~H/W~~ WORK

classmate

Date

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* Disk Cleanup: Disk Cleanup is a Microsoft software utility first introduced with Windows 98 and included in all subsequent releases of Windows. It allows users to remove files that are no longer needed or that can be safely deleted.

Removing unnecessary files, including temporary files, helps speed up and improve the performance of the hard-drive and computer.

Running Disk Cleanup at least once a month is an excellent maintenance task and frequency.

It can delete temporary Internet files, downloaded program files, & offline webpages also lets you empty the Recycle Bin, & delete thumbnails.

* Disk Defragmentation: The process of consolidating fragmented files on the user's hard drive. Files become fragmented when data is written to disk, and there is not enough contiguous space to hold the complete file. Storage algorithms break the data apart so that it will fit into the available space.

Defragmentation, The process of defragmentation moves the data blocks on the hard drive around to bring all the parts of a file together. It reduces file system fragmentation, increasing the efficiency of data retrieval and thereby improving the overall performance of the computer. At the same time, it cleans the storage and provides additional storage capacity.

* Formatting a Hard-disk Drive:

Disk formatting is a process to configure the data-storage such as hard-disk, floppy disk and flash drive. It means reallocating tracks, sectors, & file systems on a selected hard disk drive or hard disk drive partition. Formatting deletes the entire data stored on a hard disk drive. Therefore, before starting the formatting process make sure that you have saved your data carefully on ~~HDD~~ some other location. Like another computer, HDD, or burn (write) it on a CD or DVD.

Process - Computer → Right click on desired HDD → format → quick format → start

* Adding an Additional HDD:

Installation:

Remove the side panel of the CPU.

Remove the old drive if necessary.

Transfer the HDD to the hard drive slot or enclosure to the new hard drive and secure it with the screws.

Place the hard drive in the hard drive slot on the expansion slot for a new hard drive.

* Attach the drives to the mother board using SATA cables or IDE cables.

Connect the power supply to the hard drive.

Replace the case sides of the CPU and reconnect the cables.

Plug back in and turn back your computer.

Install an operating system to use the computer again.

* Exploring new trends in Hard Disk Drives

Various trends in HDD are - external HDD, pocket HD, & SATA, among which SATA is the most popular one. It is a new format of HDD, which is easier to use & manage as compared to IDE HD drives. SATA drives are designed in such a way that more than one SATA drives can be connected directly to the mother board of the computer. We can also set the primary drive by specifying the settings in the computer BIOS.

* Optical Media

Media, in the computer world, refers to various types of data storage. Eg: HDs, CDs, DVDs, & USB drives are all different types of media.

Optical media refers to discs that are read by a laser. This includes CD-ROMs, DVD-ROMs, and all the variations of the two formats —

CD-R

CD-RW

DVD-R

DVD+R

Blu-ray, etc

Optical media typically does not have as fast of a seek time as hard drives, but it has other advantages. They are less likely to lose their data and have long shelf life as not based on magnetic charge. Around seven times longer than magnetic media. More durable, much cheaper, great for back ups & transferring small amount of data between diff computers.