



S.P.M College, Udaipur

Bachelor Of Computer Application (BCA)

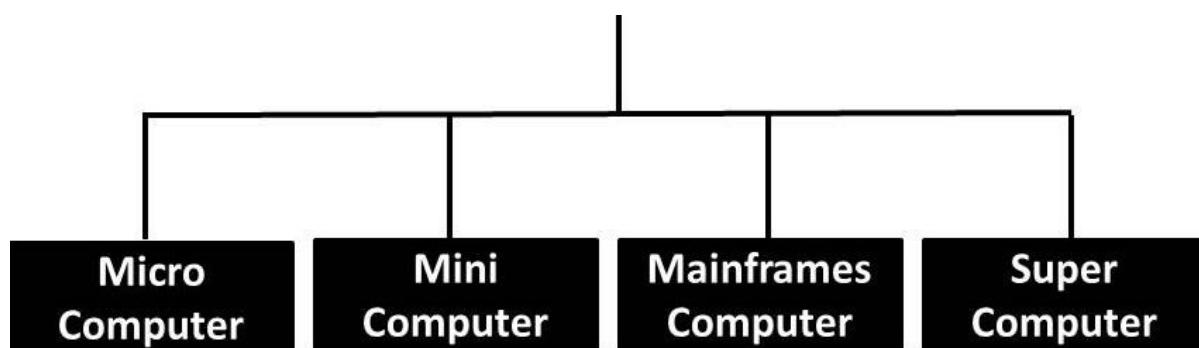
Part -1 (Paper-1)

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Computer Fundamental

Types of Computer

Based on Size, Data Processing & Speed

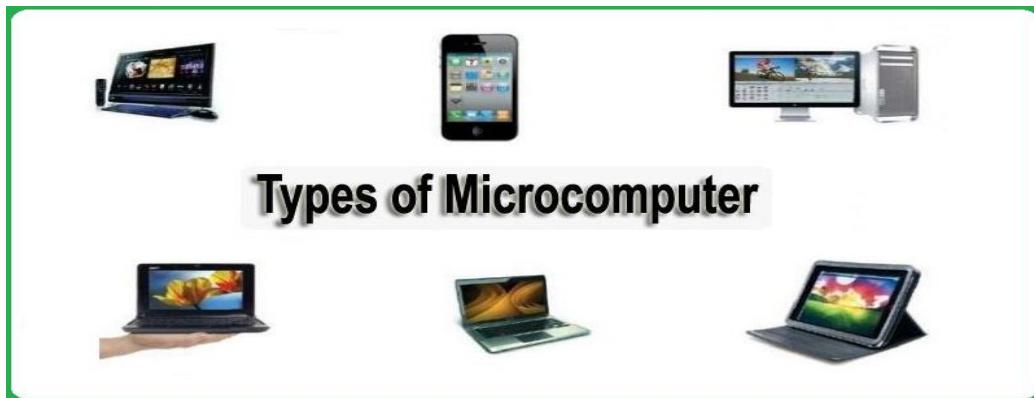


1. Micro Computer (माइक्रो कंप्यूटर)

- Micro computers are the computers with having a microprocessor chip as its central processing unit (CPU).
- First micro computer was built with 8 bit processor. Now days mostly used in 16bit, 32bit & 64 bit processor
- Microcomputer is known as personal computer.
- In 1970s after invention of Intel 4004 microprocessor, micro – Computer began to thrive.
- First Microcomputer = Micral-N (1973), processor – Intel 8008
- First Personal computer = Altair 8800 (1975), processor – intel 8008
- First Mass/Famous Market successful PC – IBM PC (1981), processor – intel 8088
- Small in size and affordable for general people.
- Capable of supporting only one users.
- This type of computer mostly used in Home, Office, Education, health, Entertainment,...
- Examples – Laptop(portable computer), Desktop, Smartphones, Tablets, altair, Micral-N, Raspberry Pi,...



IBM PC



2. Mini Computer (मिनी कंप्यूटर)

- Mini computers are originated in 1960s
- A mid sized computer, larger than a microcomputer but smaller than a mainframe computer.
- In 1970s it contains 8 bit or 12 bit processor.
- Mini computers were often used as servers but both are not the same.
- They are also used as servers in Local Area Networks (LAN)
- Capable of supporting 10 to 100 users simultaneously.
- The speed of minicomputer is between 10 to 30 MIPS (Million Instructions Per Second)
- First minicomputer was PDP-8.
- Example – PDP 11, IBM AS/400, HP 3000, VAX-11



PDP -8



IBM AS400

3. Mainframe Computer (मेनफ्रेम कंप्यूटर)

- Mainframes are very large & expensive computers with having larger internal storage capacity & high processing speed
- A very powerful computer which capable of supporting thousands of user simultaneously.
- It is capable to run multiple operating systems.
- Mainframes are used in the organization that need to process large number of transaction online
- Much bigger in size & needs a large rooms with closely humidity & temperature.
- It is capable to process 100 million instructions per second in starting time.

- These types of computers are generally 32-bit & 64-bit computers.
- They are also used as controlling nodes in Wide Area Network (WAN).
- IBM & DEC are major vendors/Seller of mainframes Computer.
- Example of mainframes are IBM, HITACHI, FUJITSU etc.



Mainframe Computers



4. Super Computer (सुपर कंप्यूटर)

- Most powerful & most expensive computer.
- It has high processing speed compared to other computers.
- They also have multiprocessing technique to perform the calculation very speedy.
- Hundreds of microprocessors are connected together in supercomputer.
- Supercomputer is mainly used for weather forecasting, biomedical research, remote sensing, aircraft design and other areas of science and technology.
- The speed of modern computer is measured in gigaflops, teraflops and petaflops.
- FLOPS (Floating point operations)= measure of speed/performance
 - ✓ 1 FLOPS = 1 floating point operation/sec.
 - ✓ 1Megalops = 10^6 arithmetic operation per second.
 - ✓ Gigalops= 10^9 arithmetic operation per second.
 - ✓ Teraflops= 10^{12} arithmetic operation per second.
 - ✓ Petaflops= 10^{15} arithmetic operation per second
- Example – PARAM-10000 , Anupam, EKA (Indian) CRAY-1, P, CRAY XMP ,CRAY-2,..etc
- **1st Super Computer CRAY-1 (World Level-US-1976), speed – 80 MFLOPS**
- **1st Super Computer India Level – PARAM 8000 (1991) by C-DAC company Vijay Bhatkar, speed – 1 GFLOPS**



PARAM 8000



CRAY-1

- ✓ 1st Electronic general purpose computer in world = ENIAC (Electronic Numerical integrator and computer)
- ✓ Now very fast computer in world = Frontier (2023)
- ✓ 1st computer in india = IBM 1620 in 1950's-60's not indigenous.

- ✓ 1st Super computer of india = PARAM 8000 by C-DAC, Pune in 1991. Speed – 1GFLOPS
- ✓ 1st Very fast super computer of india = PARAM Siddhi in 16 Nov 2020. Speed -1.3 PFLOPS (Ranking in world - top 100)
- ✓ India 1st Computer = TDC-12 (Tata Data computer) in 1960's by TIFR(Tata institute of Fundamental research) and C-DAC (**Centre for Development of Advanced Computing**)
- ✓ Siddhartha(सिद्धार्थ) in 1970 was the first indigenous (स्वदेशी) computer developed in India.
- ✓ India fastest computer – EKA (Embedded Karmarkar Algorithm) in 2007, now PARAM Siddhi- AI in 2020's

❖ Difference between Micro, Mini, Mainframe & Super Computer

	Micro Computer	Mini Computer	Mainframe Computer	Super Computer
Definition	A small,affordable computer designed for individual use.	A mid sized computer, larger than a micro-computer but smaller than a mainframe	A large powerful computer designed for handling large amounts of data and supporting hundreds of users simultaneously.	The most powerful type of computer, designed for extreme computational tasks.
Application (Use - प्रयोग)	Personal use, Education, Small business,.....	Medium sized businesses, Research labs, Manufacturing processes,...	Banks, Government agencies, large enterprises,....	Weather forecasting, Molecular modeling, astrophysics,....
Size	Small	Medium	Large	Very Large
Users	Single	Multiple(10-100)	Thousands +	Specialized users / research tasks
Processing Power	Low to Moderate (मध्यांतर/मध्य)	Moderate to High	High	Extremely High
Cost	Affordable	Moderate	Expensive	Very Expensive
Example	PC, Laptop	PDP-11	IBM Z	PARAM,FRONTIER

❖ General Purpose Computer (सामान्य उद्देशीय कंप्यूटर)

- This computer use normal work. Through this, for general work like preparing documents, printing them, making documents, preparing letters, Entertainments like song, game, movie etc.



Desktop



Laptop



Smartphone

General Purpose Computer



Smartwatch



Tablet PC

❖ Special Purpose Computer (विशेष उद्देश्यीय कंप्यूटर)

- This computer use for Space science(अंतरीक्ष विज्ञान), meteorology (मौसम विज्ञान), satellite operations, traffic control, engineering, agricultural science, research...



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