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Q,   Explains briefly Mainframe, Minicomputer & Supercomputer (2018-S)

How can we classify computer according to their size and working?

Ans:

Classification/Categories of Computers:

Computers are classified according to size, speed and memory as under:

1. Supercomputer.

2. Mainframes.

3. Minicomputers.

4. Micro / Personal / Desktop Computers

5. Laptop

1. SUPERCOMPUTERS:

Definition:
 "Super computers are the largest, fastest and the most expensive computer systems in the world"

Performance:
The fastest supercomputers are capable of processing more than 100 trillions of instructions in a single second.

Size:
Supercomputers are manufactured using thousands of processors. Its size is equal to full room.

Structure:
They are considered to be the resources of any nation. Unlike other computers, super computers are based on the concept of parallel processing i.e. to perform millions of Instructions at the same time.

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Cost:

Super computers are very expensive. Its price varies from $ 500,000 to more than 85 million dollars.

Manufacturer:

Very few companies in the world produce super computers.

- Cray research and ETA systems Inc are the two primary manufactures of super computers in the united states.
- Fujitsu, Hitachi, NEC are the companies in Japan which produce super computers.

Models:

Famous supercomputers are:

➢ Cray-I
➢ cray XMP
➢ Cray-2
➢ Cray-3
➢ ETA-IO

Uses of Super Computers:

Application requiring complex, sophisticated mathematical calculations uses super computer.

For example:

✓ Application in medicine
✓ Aerospace
✓ Online banking
✓ Weather forecasting
✓ Nuclear energy research

2. MAIN FRAME COMPUTERS:

Definition:

Mainframe is a large, expensive, very powerful computer that can handle hundreds or thousands of connected users simultaneously.

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Performance:
Mainframe computers are capable of processing data at very high speed. Millions of instructions per second and have access to billions of characters of data.

Size:
The size of the mainframe is equal to door size or half room size.

Structure:
Mainframes store large amounts of data, instructions and information. Mainframe is based on the concept of multiprocessing. Mainframe also can act as servers on a network environment. Many people can make use of the same machine at the same time.

Cost:
The prize of these systems can vary from several hundred thousand to many millions of dollars.

Manufacturer:

- IBM (International Business Machine)
- NEC (National Electronics Corporation)
- DEC (Digital Equipment Corporation)
- HP (Hewlett Packard)

Models:
Following are the different models of Mainframe computers available in the market

- Mark 1
- Whirlwind
- IBM 701
- IBM 360

Uses:
These computers are used by

1. Banks

2. Educational Institutions

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3. Financial Institution

4. Airlines

5. Insurance Companies

Characteristics:
Their main characteristics are:

1) They are sensitive to temperature, humidity, dust etc and are kept in air-conditioned rooms.
2) Qualified programmers are required for their operations.
3) They support a wide range of Secondary Devices.
4) They have a large storage capacity
5) They can make use of a wide variety of software.

3. MINICOMPUTERS:

Definition:
Minicomputers were introduced in the 1960s. Minicomputer is a multi-user computer It's processing speed between mainframe and microcomputer.

Performance:
A minicomputer is a multiprocessing system capable of supporting from 4 to about 200 users simultaneously.

Size:
Minicomputers are large but they are smaller than mainframe computers. It has a size of a small cabinet.

Structure:
Minicomputer is based on the concept of multi-user and they can run multi-tasking operating system.

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Cost:

It is less expensive than Mainframe computers i.e its price ranges from $5,000 to $850,000

Manufacture:

Minicomputer is manufactured by several companies but the famous companies are.

1. IBM

2. DELL

3. HP

Models:

Following are the models of minicomputers

1. DELL

2. HP3000 Series

3. IBM

Characteristics:

Some of the characteristics of minicomputers in relation to main frame computers are

1. They offer a limited range of secondary storage devices.

2. Limited software can be used.

3. Air conditioning is not necessary for minicomputers.

Uses:

These computers are often used by

❖ Small and medium-sized companies
❖ University Departments

For handling database or other commercial, programs and running scientific or graphical applications.

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4. MICRO / PERSONAL / DESKTOP COMPUTERS:

1. Computer Definition:

Desktop
Desktop computer or PC is most commonly used computer. It is small in size same as desk size.

Laptop
These computers are small in size and weight than desktop computers. It is portable as you can carry it with you while traveling It operates on batteries and consumes less power.

2. Computer Structure:

Desktop
It is single user computer. There is only main board inside the machine called the system board or mother board.

Laptop Computer Structure:
Laptop is a portable device therefore only one user can work at once

3. Size:

Desktop
These computers are small in size and equal to desk size.

Laptop
Laptop fits on your lap or in your, hand. These are also called Notebook PCs because their thickness is about 01 inch.

4. Cost:

These are the less expensive computers. It has affordable prices. Almost everyone can afford it.

5. **Speed:**
   Speed of these computers depends on the speed of processors.
6. **Manufacturer:**
   There are several manufacturers of Desktop computers, the famous are as follows.

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- Intel
- IBM
- Compaq
- Acer

Models:

Different models of desktop computers are available in the market.

- 486
- Pentium I
- Pentium Il, Ill, IV
- AMD 500
- Core i3
- Core i5
- Core i7
- AMD A8
- AMD A10
- AMD A6
- AMD Ryzen

7. Uses:

These computers are used in different businesses such as

- Stock Exchange
- Banking Companies
- Educational Institutes
- Hospitals etc.
- Personal Home Computers.

While Laptops are preferred to be used in outdoor or portability workloads and are best suited as person computers.

8. Characteristics:

Some of the features are:

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1) They are cheap and easy to use.
2) They have wide variety of input and output Devices.
3) Storage capacity of these computers going up to 80 GB.
4) They are designed to be used by one person at a time.
5) Hard disk and floppy disk drives are used to store data and programs.
6) A monitor or printer is used to get the output.

Students Note:

1) Line, Paragraph, Headings and Examples or models that have been colored are important.
2) RED means Very Important.
3) Blue Means Necessary knowledge.
4) Purple Means Important (Less priority than Red).