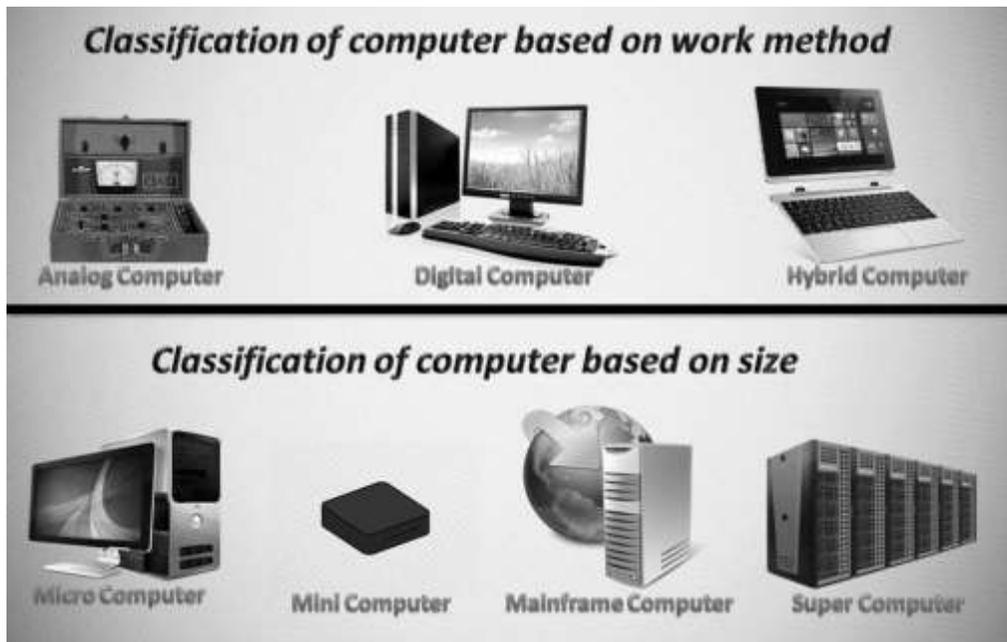


# CLASSIFICATION OF COMPUTER

## OBJECTIVE:

After completion of this chapter, the student will be able to describe:

- classify the computer on the basis of application, size, brand and model
- mobile computing





There are numerous plants and animals on the earth. They are classified into different groups or phyla to study their characteristics. Similarly, there are various types of computers in use. These computers are classified into different categories on the basis of their capacities and uses. We will describe them from smallest to the largest.

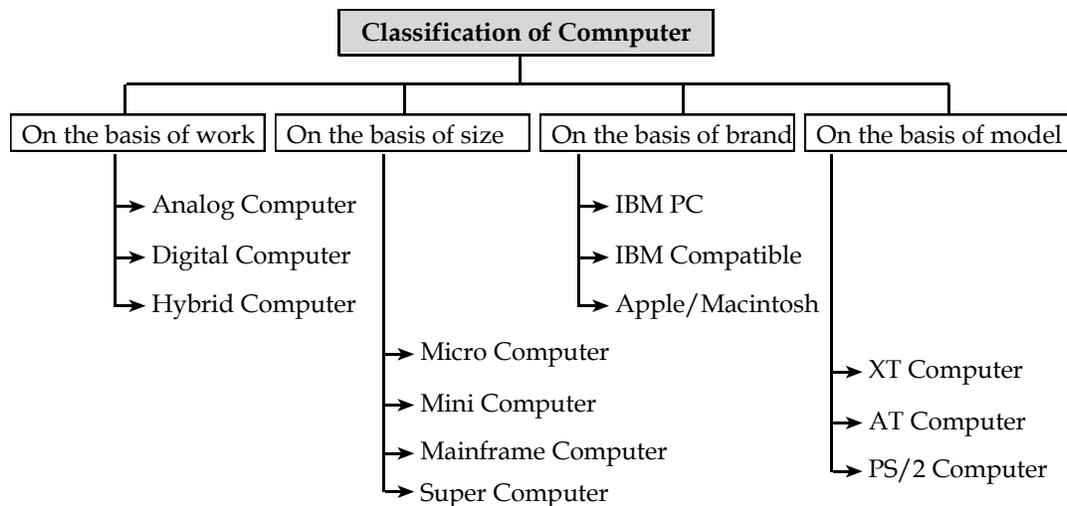
A computer is a machine that can be programmed to manipulate symbols. Its principal characteristics are:

- It responds to a specific set of instructions in a well-defined manner.
- It can execute a prerecorded list of instructions (a program).
- It can quickly store and retrieve large amounts of data.
- It is easy to carry from source to destination.

Therefore computers can perform complex and repetitive procedures quickly, precisely and reliably. Modern computers are electronic and digital. The actual machinery (wires, transistors, and circuits) is called hardware; the instructions and data are called software.

The major classification of computer is:

1. On the basis of Work
2. On the basis of Brand
3. On the basis of Size
4. On the basis of Model



*Fig: Classification of Computer*

## 2.1 Classification of Computers according to Application/ Work/ Function/ Operating Principle/Data They Operate On

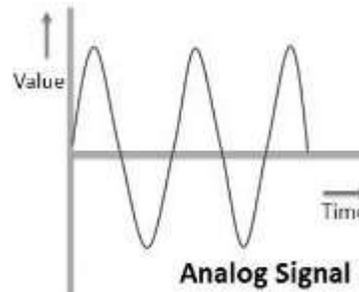
On the basis of operation performed and methods used to store and process the data and information, computers can be classified into the following categories:

- Analog computer
- Digital computer
- Hybrid computer

## Analog Computer

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Any device that uses analog signal is called Analog Device. The analog computers represent data in the form of continuous electrical signal having a specific magnitude. These computers are very fast in their operation and allow several other operations carried out at the same time. However, the results by these computers are not very accurate. Therefore, the computers are widely used in applications in which the of results is not a major concern. They are powerful tools differential equations.



to be produced analog accuracy to solve results are special

They produce their results very fast. But their approximately correct. All the analog computers are purpose computers. Analog computers are even less than 1% in use in Nepal. Example: Mercury thermometer, barometers, speedometer, Seismograph, Voltmeter, Pressure gauge, Ammeter etc. Speedometer in cars and motorcycles is another example of analog device. Analog computers works with analog signal (measurable physical quantities).

### Feature

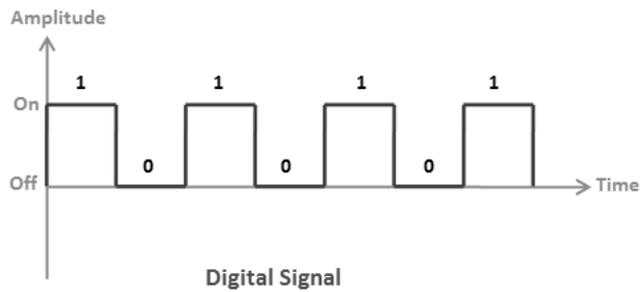
- Analog computers are faster in speed but its accuracy is poor.
- They are generally specific purpose computers dedicated to do a single job only. A Thermometer cannot be reprogrammed to do the job of Seismograph.
- There is less or even no storage capacity.
- It is used as controlling devices in factories, military.
- Analog computers were widely used in Scientific and Industrial application.
- The output generated by analog device is difficult to interpret as it is in curve, wave, or other graphical form.

## Digital Computer

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The digital computer, also known as the digital information processing system, is a type of computer that stores and processes data in the digital form. Therefore, each type of data is usually stored in these computers in terms of 0s and 1s. The output produced by these computers is also in the digital form. The digital computers are also capable of processing the analog data. However, the analog data should be first converted to the digital form, before being processed by these computers. Similarly, if we want the output in the analog form, then the digital information produced by these computers should be first converted to an analog form. These conversions are generally carried out by the in-built components of digital computers.

Digital computers are generally faster and more reliable than analog computer systems and provide more accurate results. The used by a home user is a typical of digital computer. The digital computers are also employed in universities, and small and sized businesses.



computer example

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The digital computer is storing data as long as needed,

performing logical operations, editing input data, and printing out the results of its processing at high speed. Digital computer performs operation on binary digits (0s and 1s). It is a programmable device that process information according to logical rules. It is used in word processing, calculations, entertainment, bank, insurance, healthcare system, factories. **Examples:** IBM PC, Apple Macintosh, Digital watch, computers, calculators, etc.

### Features

- Digital computers are very accurate.
- It uses the binary digits(0 and 1) to represent all forms of information.
- It can perform mathematical calculation, organize and analysis data, control industrial.
- It has large storage capacity
- The output generated by digital computer is easily readable by ordinary people.
- They are general purpose computers as they can be reprogrammed to do various jobs.

### Hybrid Computer

The hybrid computer is a combination of analog and digital computer because it encompasses the best of both these computers. Therefore, the hardware components of hybrid computers are usually the of analog and digital computers. These features make hybrid computers very fast, efficient and reliable. In computers, data is generally measured and processed form of electrical signals and is stored with the help of components. However, these computers can also be perform various types of logical operations.



computer features

mixture the these in the digital used to

The input accepted by the hybrid computers is a continuously varying input signal. This input signal is then converted by them into a set of discrete values for performing different operations. These computers prove to be very cost-effective in performing complex simulations. The hybrid computers are also less expensive than the digital computers.

The computer used in hospitals to measure the heartbeat of the patient is a very good example of a hybrid computer. Apart from this, the hybrid computers are also used in scientific applications, various engineering fields and in controlling business processes.

## Features

- It has both features of analog and digital computer.
- They are special purpose machine as analog device.
- It usually has high cost compared to analog and digital for example hybrid watch.
- Hybrid computers are used in big industries, scientific research institution, airplanes etc.
- It may use or produce analog or digital data.
- Hybrid computer used in hospital to measure the heartbeat of the patient.
- These computer used in almost every field like business, research, medical, controlling industrial process.

## Difference between Analog and Digital Computer

SN	Analog Computer	Digital computer
1	Analog computers work on continuous values/physical.	Digital computers work on discrete value/digits.
2	Analog computers have low memory less storage capacity.	Digital computers have a very large memory and storage capacity.
3	The accuracy of analog computer is low.	The accuracy of digital computer is high.
4	Analog computers are less reliable.	Digital computers are more reliable.
6	Analog computers are used to calculate/measure analog quantities like speed and temperature.	Digital computers are used to calculate mathematical and logical operations. It can solve addition, subtraction, division, multiplication, and other mathematical and statistical operations.
7	Analog computers provide less accurate results.	Digital computers provide 100% accurate results.
8	Normally Analog computers are specific purpose.	Digital Computers are general purpose.
9	Analog computers are difficult to reuse the code.	Digital computers are easy to use the code.
12	Analog computers are cheaper.	Digital computer are high expensive.
13	Analog computers are faster than digital computer.	Digital computers are slower than analog computer.
14	Examples of Analog computers are: thermometer, analog clock, speedo-meter, Presley etc.	Examples of digital computers are: Personal Computer, laptops, smart phones etc.

## 2.2. On the basis of Size/Capability

Computers differ from each other in terms of their shape, size and weights. Each type of computers performs some unique functions and can be employed in the fields suited for them. These

computers also differ in terms of processing speed. Some of them are of moderate speed, whereas some others operate at a very fast speed. On the basis of size and capability, computers can be classified into the following categories:

1. Super Computer
2. Main Frame Computer
3. Mini Computer
4. Micro Computer

## Super Computer

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A super computer is the fastest type of computer that can perform complex operations at a very high speed. The super computers were first presented in the year 1960 by Seymour Cray Control Data Corporation (CDC). They are more expensive than other categories of computers and are specially designed for the applications in which large number of complex calculations has carried out to get the desired output. The main reason behind the speed of super computers is that they are designed only to execute small number of programs at a time rather than many programs simultaneously. Some of the manufacturers of super computers are IBM, Silicon Graphics, Fujitsu, Intel, etc. Examples of Super Computers are CRAY 3, Cyber 205, NEC SX-3, Blue Gene/L System, is the fastest supercomputer.



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The various application areas of super computers are as follows:

- In petroleum industry - to analyze volumes of seismic data which are gathered during oil seeking explorations to identify areas where there is possibility of getting petroleum products inside the earth.
- In Automobile industry - to do crash simulation of the design of an automobile before it is released for manufacturing for better automobile design.
- Meteorological centers use super computers for weather forecasting and earth's atmosphere.
- For weapons research and development, sending rockets to space etc.
- They are found in many public and private research centers, such as universities and government laboratories.
- In Biomedical research - atomic nuclear and plasma analysis to study the structure of DNA.
- Super computers are used for highly calculation-intensive tasks such as climate research, molecular modeling, animated graphics, physical simulation such as simulation of airplanes and other scientific research, data mining and engineering research.
- Hollywood uses super computer for the creation of animation, car doing 360° jump.
- It is used to predict new diseases and predict illness behavior and treatment.

Super computers are manufactured with no special hardware, like the typical computer, they have CPU and memory as their major components. However, the CPU of super computer operates at faster speed, as compared to the other categories of computers. Super computers are the fastest computers because they employ thousands of processors, hundreds of gigabytes of RAM and thousands of gigabytes of secondary storage. These computers have multiple CPUs that can process

multiple instructions at a time, known as parallel processing. Normally, size of a supercomputer is nearly equivalent to the size of a room. They can support upto 1000 terminals at a time.

The designers of super computers use different methods for optimizing their performance. In this type of computing, a large and complex problem is first divided into smaller problem that are solved concurrently by the microprocessor of the computer.

## Mainframe Computer

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A mainframe computer is a very large computer that is employed by large business organizations for handling major applications, such as financial transaction processing, Enterprise Resource Planning (EPR), industry and consumer statistics, census. They are capable of handling almost millions records in a day. The mainframe computers can also used as the centralized computers with several user terminals connected to it. The mainframe computers actually considered as the predecessor of servers. computers are bigger and more expensive than other computers. The implementation of mainframe computers also requires large space with a closely monitored humidity and temperature levels. These computers are termed as mainframe because all the hardware units are arranged into a frame. The different manufacturers of mainframe computers are IBM, Amdahl, Hitachi, etc. Examples of mainframe computers are IBM 3000, VAX 8000 and CDC 6600.



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The mainframe computers can maintain large databases that can be accessed by remote users with a simple terminal. Therefore, the mainframe computers are also known as super servers or database servers. The processing speed of these computers is generally optimised by employing more than one microprocessor to execute millions of instructions per second. The mainframe computers also have large capacity of primary and secondary storage as compared with other types of computers.

### **Some of the characteristic features of mainframe computers are as follows:**

- A typical mainframe computer generally has a maximum of 16 microprocessors. However, some modern mainframe computers can have more than 16 microprocessors.
- They had massive data storage facility.
- They are able to run multiple operating systems, and therefore, termed 'virtual machines'.
- They have different cabinets for primary storage secondary storage and I/O units.
- They can handle huge amount of I/O operations at the same time.
- This computer supported about 100 users at a time. Each user could use different application.
- Mainframe computer used in organization like bank or companies where many people require frequent access to the same data.

- Because of single machine used by multiple users information could be shared among the users conveniently.
- It has high speed cache memory which enable them to process application at a faster rate than mini and micro computer.

### **Application**

- Used to process large amount of data at very high speed such as in the case of Banks/Insurance Companies/Hospitals/ Railways, which need online processing of large number of transactions and requires massive data storage and processing capabilities
- Used as controlling nodes in WANs (Wide Area Networks)
- Used to manage large centralized databases.
- It is used in airline reservation and railway reservation system.

### **Mini Computer**

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A mini computer was first introduced in the year 1960 by Digital Equipment Corporation (DEC). They were called mini computers because of their smaller size than the other computers of those times. They can handle more data and more input and output than micro computers. Mini computers are less powerful than mainframe computers but more powerful than micro computers. Therefore, they are referred to as the midrange computers. They are able to cater to the needs of multiple users at a single instant of time. The number of users supported by mini computers may range between 4 and 50. These computers are generally designed for small and medium sized business environments.

Mini computers are generally used in business environments as the centralized computer or the network server. After implementing the mini computer as the network server, hundreds of desktop computers can be connected to it. Mini computers can also be used as the web servers that can handle thousands of transactions in a day. These computers are less expensive than mainframe computers and hence suitable for those organizations that cannot afford high priced servers. The different examples of mini computers are PDP 11, IBM (8000 series), VAX7500, etc.

### **Characteristics:**

- It is also multiuser. This computer had up to 50 terminals.
- They were used by mid range organization business personal, colleges, bank, engineering, industrial process for monitoring and controlling.
- These computers are used when the volume of processing is large for e.g. Data processing for a medium sized organization.
- Used to control and monitor production processes.
- To analyze results of experiments in laboratories.
- Used as servers in LANs (Local Area Networks)

## Microcomputer

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A microcomputer is a full-fledged computer system that uses a microprocessor as its CPU. These are also called personal computer. Microcomputer is small, low cost and cheap, single user digital computer. It consists CPU, input unit, output unit, storage unit and software. A microcomputer is a small and cheap digital computer that is designed to be used by individuals. It is built around a microprocessor, a storage unit and I/O channel. Apart from these components, the other parts that a microcomputer includes are supply, connecting cables, keyboard, mouse, printer, and scanner. These computers also include several software programs such as operating system, system software and utility software.

A microcomputer uses a microprocessor as its central Processing Unit. Microcomputers are tiny computers that can vary in size from a single chip to the size of a desktop model. The computers are generally available in the form of PCs, workstations and notebook computers. These computers are cheaper than other computers so they are mostly available in market. E.g.:- IBM PC, PS/2 and Apple Macintosh



### Characteristics:

- Used in the field of desktop publishing, accounting, statistical analysis, graphic designing, investment analysis, project management, teaching, entertainment etc.
- Smallest bin size, can be kept on top of our palm, lap or desk, size is decreasing day by day.
- Price of computer is drastically decreased so that ordinary people can also purchase this type of computer.
- Their power consumption is very low in comparison to other types of computers.
- These computers support multitasking, multimedia and networking.

### 2.3. On the basis of Brand

There are many brands of computers. Hundreds of companies are involved in computer manufacturing and they give their own brand name. Brands are specific names that companies use to identify their product against others in the market. There are many companies involved in computer manufacturing. However there are two classes of computers very different in principle itself – the IBM and the Macintosh. There are many other companies that follow the principle of IBM and are called IBM Compatible computers

According to the brand computer is divided into 3 groups. They are:

1. IBM PC
2. IBM Compatible
3. Apple/ Macintosh

## 1. IBM PC

IBM (International Business Machines) corporation was established in 1924 in the USA. IBM started to manufacture mainframe computers in 1945. The computers manufactured by this company are called IBM computers. The microcomputers of IBM Company are called IBM PC (IBM Personal Computer). IBM is one of the leading companies in computer manufacturing. IBM computers are reliable, strong, and they possess high speed processing. In 1975 IBM introduced their first personal computer (PC) which was called the Model 5100. It is called IBM branded computers because whole parts are developed by IBM Company itself. It is more expensive than other computers. What identifies IBM computers is because of the CPU design. IBM computers use CISC (Complex Instruction Set Computing) CPUs. It uses the Intel chips for its PCs and relied to Microsoft for operating system. Example: IBM PC 5150



## 2. IBM Compatible

Compatible means principles or ideas that can exist together and the computers manufactured based on IBM principles are called IBM compatible computers. Computer which is manufactured by other company having same features and technology of IBM computer. IBM compatible computers can perform all the tasks that an IBM computer does. It is also referred to as duplicate IBM. The architectural designs of these computers are similar to that of IBM computers. The software's which can run in IBM computers can be equally operated in IBM compatible computers. They are very cheaper than branded PC or IBM PC.



SN	IBM PC	IBM Compatible
1.	It is developed by IBM company itself.	It is developed by other than IBM company.
2.	It is branded/original computer.	It is duplicate or assembled computer.
3.	It is more durable and reliable.	It is less durable and reliable.
4.	It is expensive but reliable compared to IBM Compatible.	It is cheaper but less reliable than IBM PC.
5.	It is usually used by large organization which can afford high cost and requires high security.	It is usually used by small organization which cannot afford high cost and higher security is not required.
6.	Parts are not easily available in the market.	Parts are easily available in the market.
7.	<b>Example:</b> IBM PC Model 5150, IBM 3084.	<b>Example:</b> NCR Decision Mate, Olivetti M20, Wang PC, Zenith Z-100.

### 3. Apple/ Macintosh

In late 1970s, Apple company was established in the USA. It has the determination to develop different types of computers, more than that of IBM in architecture and system configuration as well. Apple Corporation is one of the largest computer manufacturing companies. The software's used in Apple/Macintosh is not compatible to IBM. The software's are much better because they are friendly and easy to handle. It has made many PCs with good quality and user friendly. It uses MAC operating system. It is usually used for animation and graphic designing. It is expensive than IBM computers.



## 2.4. On the basis of Model

We can still classify computers based on another aspect model. There are three different models of computers already available:

1. Extended Technology or XT computer
2. Advanced Technology or AT computer
3. Personal System or PS/2 computer.

### 1. Extended Technology or XT computer

Originally the XT computers had a processing speed of 4.77 MHZ. These computers were based with the processor named 8086. Later, some changes were made in the main processor of the computer (CPU) and new model of processor was developed-8088. The computers that used microprocessor of 8080, 8086,8088 series of processors, are known as XT machines. Example: IBM PC XT (IBM 5160), Typewriter.

#### Features

- It is comparatively less flexible and slower than other model.
- It doesn't have large storage capacity and fast processing speed so complex calculation and large data processing can't be done.
- XT computers can't run latest version of software and program such as GUI based software like windows.

### 2. Advanced Technology or AT computer

Advanced Technology (AT) computers are faster than XT computers; they have higher capacity of RAM and can do more tasks than XT. Compared to XT, AT machines are expensive. AT computers may have 80286 SX or 80387 DX, 80486SX, 80486 DX or even Pentium (80586) processors. The AT computers support Co-processor that enhances the processing speed and capability of the main processor to perform large and computations within a short period. The computer that used microprocessor of 80286, 80386,, 80486 series is called AT computer. Example: IBM PC AT.

#### Features

- They are faster in processing (more than 2GHZ) and can run any types of software.
- It has additional math co-processor which solve complex mathematical problem
- Large storage capacity and large data processing can be done.

### 3. Personal System or PS/2 computer

In early 1990s, IBM developed another model of computers called Personal System-2 (PS-2). PS/2 model computers are much faster than IBM or IBM compatible computers because its architectural design is advanced. Most of the laptop computers manufactured by IBM and IBM compatible computers are based on PS/2 architectural design. The PS/2 processors used VLSI (Very Large Scale Integration) for chip fabrication and their clock speed range from 85 MHz to 1GHz. Generally, PS/2 Computers use 3.5 inch floppy disks and OS/2 operating system. PS/2 computers are widely used in general purpose computation such as word processing, Database arrangement, controlling accounts etc.

#### Features

- Faster and flexible I/O device.
- GUI based software can be run in these computers.
- It has much advanced architectural design than AT called PS/2.

### Different types of micro computer

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Micro computer is also further categorized into following types:-

1. Portable computer
2. Non-portable computer

#### 1. Portable computer

1. Laptop
2. Notebook
3. PDA
4. Tablet PC

##### 1. Laptop

It is portable computer that can be taken from one place to another at any time very easily. It is also known as notebook computer, notepad or mobile computer. The laptop computer is small in size that incorporates all the features of a typical desktop computer. Laptop combines the features of desktop computer including display screen, speaker, keyboard, and pointing device such as touch pad into a single device. These computers are provided with a rechargeable battery that removes the need of continuous external power supply.



However, these computers systems are more expensive than desktop computers. It uses powerful processor. It has DVD writer and hard disk. The different manufacturers of laptop computers are Acer, Apple, Panasonic, Sony and HP.

##### 2. Notebook

It is an extremely lightweight personal computer. Notebook computers come with battery packs that enable you to run them without plugging them in. However, the batteries need to be recharged every few hours. It doesn't contain CD/DVD drive due to small size. Notebook computers use a variety of techniques, known as flat-panel technologies, to produce a light weight and non-bulky display screen. It uses SSD card. It can be used in libraries, class, office, meetings, airplane, bus. Most notebook computers have WIFI and Bluetooth connections.



### 3. PDA (Personal Digital Assistant)

It is also known as hand held PC. The hand-held computer is a very small size computer that can be kept in pocket. It generally has a very small display screen and the input devices for these computers are pen or an electronic stylus. The storage capacity of hand-held computer is not very large. They generally use small cards to store data and programs instead of disk drives. Therefore, they are less powerful as compared to the desktop and laptop computers. PDA has virtual display unit to enable web browser. Most PDA employ touch screen technology. The different examples of hand held computers are Apple Newton, Casio Cassiopeia, Franklin eBookMan, etc.



### 4. Tablet PC

Tablet Computers are ultra-portable computers that are even smaller than traditional laptops. Their low cost means they're cheaper than almost any brand new laptop. Recent improvements to tablet computers have allowed users to view HD video, get high quality sound, great photo capabilities, and the ability to share information, photos, and videos with anyone. It is wireless, portable personal computer with a touch screen interface. It is mobile computer. It allows user to view display screen in portrait or landscape.



## 2. Non-portable computer

The micro computers in non-portable are:

### a) PC (Personal Computer)

it is multi-purpose computer whose size, capabilities and price make it for individual use. It is also known as Desktop computer. The personal computer systems are designed to be used by an individual at a single location. The typical components of a personal computer are keyboard, mouse, monitor, hard disk storage, peripheral devices and a system unit. These computers are very cheap and an individual can easily purchase them for home or business use. The different manufacturers of desktop computers are Apple, IBM, Dell and Hewlett-Packard (HP).



### b) WC (Workstation Computer)

Workstations are expensive, powerful machines used by engineers, scientist and other professionals who process lots of data. Person who needs to run complex programs and display both work in progress and result graphically, also used workstations.

They have sophisticated display screen with high resolution graphics and operating system such as UNIX. It requires faster microprocessor, a large amount of RAM. Some examples: Sun Apollo, Hewlett- Packard, IBM etc.



## Mobile Computing

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Mobile is someone or something can moved easily and quickly from place to place. Computing is operation of the computer. Mobile computing refers to the use of small and portable computing devices in wireless enabled networks that provide wireless connection. Nowadays small handheld devices such as PDA, sophisticated mobile phones, MID (Mobile Internet device), Wearable computer are available. These portable devices can be used anywhere while on the move, so termed as mobile computing.

Mobile computing is a form of human computer interaction by which a computer is expected to be transported during normal usage. Mobile computing has three aspects: mobile communication, mobile hardware, and mobile software. The first aspect addresses communication issues in ad- hoc and infrastructure networks as well as communication properties, protocols, data formats and concrete technologies. The second aspect is on the hardware, e.g. mobile devices or device components. The third aspect deals with the characteristics and requirements of mobile applications.

Mobile computing is "taking a computer and all necessary files and software out into the field." It has facilities such as colored screen, scientific calculator, digital diary for storing telephone number and address, web browser, cell phone for communication, audio and video games. So it is termed as mobile computing. Example Smartphone, PDA (Personal Digital Assistant), Tablet PCs, UMPC (Ultra Mobile PC).

"Mobile computing: being able to use a computing device even when being mobile and therefore changing location. Portability is one aspect of mobile computing." "Mobile computing is the ability to use computing capability without a pre-defined location and/or connection to a network to publish and/or subscribe to information."

Mobile Computing is a variety of wireless devices that has the mobility to allow people to connect to the internet, providing wireless transmission to access data and information from where ever location they may be.

### Feature:

- Voice Communication
- Downloadable Applications
- Portability
- Connectivity
- Entertainment
- Ease of Research

- Enhanced Productivity
- It saves time.
- Location aware services. Eg. google map
- Entertainment, mail.

**Differentiate between 'mini' and 'Mainframe' computers.**

SN	Mini Computer	Mainframe Computer
1	They are smaller in size than mainframe computers.	They are larger in size than mini computers.
2	This computer has up to 50 terminals and hence supports 50 users at a time.	This computer supports about 100 users at a time.
3	It is less powerful than mainframe.	It is more powerful than mini computer.
4	It occupies less area than mainframe computer.	It occupies more area than mini computer.
5	It has comparatively low storage capacity than mainframe computers.	It has comparatively large data storage facility.
6	It is used by mid-range organizations.	It is used by large organizations.
7	It is slower than mainframe computer.	It is faster than mini computer.
8	It is cheaper than mainframe computer.	It is expensive compared to minicomputer.
9	<b>Examples:</b> PDP 11, Vax 36, HP 3000 Series	<b>Examples:</b> IBM 1370, DEC 10, NEC 610

## Differentiate between mainframe computer and personal computer.

SN	Mainframe Computer	Personal Computer
1	They are larger in size.	They are smaller in size.
2	This computer supports about 100 users at a time.	It is designed to be used by a single person at a time.
3	It is more powerful than personal computer.	It is less powerful than mainframe computer.
4	It occupies more area than personal computer.	It occupies very less area than mainframe computer.
5	It is expensive.	It is cheaper.
6	It is used by large organization.	It is used by small offices.
7	It has comparatively large data storage facility.	It has comparatively less storage facility.
8	It is faster.	It is comparatively slower.
9	<b>Examples:</b> IBM 1370, DEC 10, NEC 610	<b>Examples:</b> IBM PC, Apple Macintosh, etc.

## Exercise

### Short Answer Questions

1. Compare and contrast Analogue and Digital computers with appropriate examples. [HSEB 2057]
2. Differentiate between analog and digital computer. [HSEB 2060,65,69,70]
3. What are super computers? Explain their application in real life situation. [HSEB 2061,67]
4. Describe the application area of supercomputer. [HSEB 2070]
5. Describe the major features of super computer. [HSEB 2071]
6. Describe the Mainframe computer in detail. [HSEB 2070]
7. Compare mini and mainframe computers in terms of speed, memory and storage. [HSEB 2062,64,66]
8. Differentiate between Mini and Mainframe computer. [HSEB 2071]
9. Classify the computers on the basis of size. [HSEB 2069]
10. What is mobile computing? Explain. [HSEB 2069]
11. List out the major features of mobile computing.
12. Differentiate between mini and mainframe computer. [HSEB 2072 SET E]
13. Differentiate between micro computer and super computer. [HSEB 2072 set C]
14. Differentiate between IBM PC and IBM compatible computers. [HSEB 2072 SET D]
15. What is Mobile Technology? Give the advantages and disadvantages of mobile technology. [HSEB 2072 SET D]
16. What is Mobile Computing? List the advantages of Mobile Computing. [HSEB 2072 SET E]
17. What is Mobile Computing? Explain Why It Is Becoming More Popular These Days.

[HSEB 2072 SET C]

18. What do you mean by mobile computing? [HSEB 2073 SET C] [HSEB 2069,70,71]
19. Explain the advantages of mobile computing. [HSEB 2070]
20. Explain the importance of mobile computing. [HSEB 2070,71]
21. Write short notes on:
  - (a) Microcomputer
  - (b) Super Computer
  - (c) Analog Computer
  - (d) IBM PC and IBM Compatibles
  - (e) Digital Computers