UNIT-2
Classification of Computer

Types of Computers

Work
Analog
Digital
Hybrid

Size
Mini, Micro
Mainframe
Super

Brand
IBM PC
IBM
Apple/Machintosh

Model
XT
AT
PS/2

Q.1 Classify the computers on the basis of work of function and explain briefly.

➢ According to the data types they operate and work, computers can be broadly categorized into three types. They are:

a. Analog Computer

b. Digital Computer

c. Hybrid Computer

➢ **Analog Computer:**

The analog computer solves problems by using continuously changing data such as temperature, pressure, speed, voltage, etc. These computers operate on continuous data. An analog computer is usually a special device dedicated to a single task. For example, speedometer, seismograph, analog watch etc.

- **Digital Computer:**

  The digital computer solves problems by using discrete or discontinuous data. Discrete are obtained by counting. All the digital computer perform task by using binary digits (i.e. 0s and 1s). Most of the computers we are going today are digital computers. Digital computers give more accurate value than analog. A digital computer can perform several tasks.

- **Hybrid Computer:**

  Hybrid computers process both continuous and discontinuous data. The hybrid computers can perform the tasks done by analog as well as digital computers. They are well equipped by analog and digital device so can convert the data from analog to digital and vice versa. For example, computers used in hospitals, jet planes, scientific labs, large industries, etc.

Q.2 What are general purpose computers and special purpose computers?

➢ General purpose computer:

The computers which are designed to handle a variety of common task at homes, offices, organizations, etc. are known as general purpose computers. These computers are fully digital computers, normal in size and are reasonable in price. Examples personal computer, laptop computers etc.

➢ Special purpose computer:

The computer which can handle only one particular data for specific purpose are known as special purpose computer. They are not common in use. The special purpose computers are more expensive and least in use. Example. Super computer, Analog computer etc.

Q.3 Distinguish between Analog and digital computers with example.

➢ **The following are the major differences between Analog and Digital computer:**

Analog computer	Digital computer
1. Analog computers measure the continuous and physical values such as pressure, temperature, voltage etc.	1. Digital computers processes discrete data such as numbers, letters etc.
2. They are based on analog mechanism and generate analog signals.	2. They are based on digital mechanism and generate digital signals.
3. They produce less accuracy rate.	3. They produce high accurate rate.
4. They are comparatively more expensive.	4. They are comparatively cheaper.
5. They are used for special purpose.	5. The yare used for general purpose.
6. Re-programming is not possible in these computers.	6. Re-programming is possible in these computers.
7. E.g.: Speedometer, Seismograph.	7. E.g.: IBM PC, IBM compatibles.

Q.4 Explain the types of computers on the basis of model.

➢ Computers on the basis of model are classified according to the following types.

✓ **XT Computer (Extended Technology):**

The computer which uses 8086 or 8088 microprocessor and having processing speed 4.77 MHZ is known as XT computers. These computer are already outdated and were comparatively slower and less flexible than AT and other models.

✓ **AT Computer (Advance Technology):**

The computer which uses 80286, 80386, 80486 or 80586 series of microprocessor is known as an AT computer. AT computers are faster than the XT computers. Their processing speed and memory capacity is also larger than the XT models.

✓ **PS/2 (Personal System-2):**

These types of computers came in the market after 1990 manufactured by IBM company. Most of the computers developed after 1990, including laptop computer belong to PS/2 model. These models of computers are faster and efficient than AT model and based on refined architectural design.

Q.5 What is micro computer? Explain the types of micro computers.

➢ The microcomputers are general purpose digital computer also known as home computers. They are small sized computer which use microprocessor as their CPU. They are designed to be used by one person at a time. So these computers are also known as single user computers. The most popular types of personal computers are the PC of IBM company and the Macintosh of Apple Corporation.

The microcomputers are further divided into the following categories.

i. Desktop Computer

ii. Laptop Computer

iii. Handheld (palmtop) Computer

✓ **Desktop Computer:**

Desktop computers are common type of single user micro computers. Since, they are designed to be fitted on a desktop so they are called desktop computers. These computers are mainly used for the desktop work such as book designing, graphics designing, document preparation etc.

- ✓ **Laptop Computer:**

  Laptop computers are small sized fully functional micro computers in briefcase size which are very much popular these days. Since they can be kept on the lap of the users, they are called laptop computers. They are portable and handy so, we can carry them easily anywhere we go. The laptop computers operate on a special rechargeable battery and need not to plug in regularly like desktop computers. The memory, storage capacity and processing speed of laptop computers are almost equivalent to the powerful personal computer. They contain built in keyboard and built in touchpad as pointing device.

- ✓ **Handheld Computers:**

  The handheld computers are small sized latest micro computers which can be easily hold and operated on hand. These computers are also referred to as palmtop computers or sometimes called Mini-Notebook computers because they can be placed in the palm of one hand and operated by other hand. Because of their reduced size, the screen of handheld computer is quite small. Similarly, they also have small keyboard. Mobile employee, such as meter readers, uses these computers.

  The examples of handheld computers are:

  i. Personal Digital Assistance (PDA)   ii. Cellular Phones

Q.6 What are super computers? Explain their applications in real life situation.

➢ Super computers are the most powerful and expensive computers in the world till date. They are primarily used for the processing of complex applications. The supper computers have large number of processors connected parallelly. Some of the applications of super computer in real life situations are described below.

✓ **Automobile industries:**

The automobile industries use super computers to do crash simulation of the design of an automobile, before it is released for manufacturing. Doing crash simulation of an automobile on computer screen is less expensive, more revealing and safer than crashing a real model of the automobile. This helps in producing better automobile design.

✓ **Meteorological centers:**

The Meteorological centers use super computers for weather forecasting. In this method, weather data supplied by a worldwide network of space satellite, airplanes and ground stations are fed into super computers. These data are then analyzed by a series of computer programs to arrive at the actual forecasting.

- ✓ **Structural mechanics industries:**

  The Structural mechanics industries use super computers to solve complex structure engineering problems, in which designers of various types of civil and mechanical structures deal to ensure safety, reliability and cost effectiveness.

- ✓ **Petroleum industries:**

  The petroleum industries use super computers to analyze volume of seismic data, which are gathered during oil-seeking explorations, to identify areas where there is possibility of getting products inside the earth.

- ✓ **Aerospace industries:**

  The aerospace industries use super computers to stimulate air flow around an aircraft at different speed and altitude. This helps in producing an effective aerodynamic design, to develop aircrafts with superior performance.

Q.7 Differentiate between minicomputers and mainframe computers.

➢ The following are the major differences between mini and mainframe computers.

Mini computer	Mainframe computer
1. They are smaller than mainframe computers and can work around with hundreds of terminals.	1. They are bigger than mini computers and can work with thousandths of terminals.
2. They are cheaper than mainframe computers.	2. They are more expensive than mini computers.
3. They are less powerful than mainframe computers.	3. They are more powerful than mini computers.
4. They are used in small scale offices, organizations etc.	4. They are used in large scale and multinational industries.
5. They can be used as servers at limited network system.	5. They are specially used servers at world wide web.
6. E.g. PDP-II	E.g. CDC 3600

Q.8 Explain the types of digital computers in brief or classify the computers on the basis is size with short description.

➢ The digital computers are classified on the basis o f following types. They are:

✓ **Micro computer:**

The microcomputers are general purpose digital computer also known as home computers. They are small sized computer which use microprocessor as their CPU. These computers are single user computers because they are designed to be used by one person at a time. Micro computers support networking environment, internet system, and advance software therefore used in most of the fields. The most popular types of micro computers are the PC of the IBM and the Macintosh of Apple.

✓ **Mini computer:**

Mini computers are medium sized computers which are more powerful than microcomputers. They have higher processing speed and also have higher cost than microcomputers. Many users can use one minicomputer at the same time. These computers are commonly used a server in network and hundreds of personal computers can be connected with it. The minicomputers are used in business, education and many other fields. For example PDP-II.

✓ **Mainframe computers:**

Mainframe computers are more powerful than minicomputers. They are larger in size, have higher processing speed larger storage capacity and expensive than mini computers. These computers specially require a large room with air conditioner. They have multiple processors so that thousands of users can use single mainframe computer at a time. The mainframe computers are specially used as servers on the World Wide Web. These computers are used in large organizations such as a Banks, Airlines, Universities, etc, where many users need frequent access to the same data. The examples of mainframe computers are IBM 1401, CDC 6600, etc.

✓ **Super Computers:**

Super computers are the most powerful computers in the world. They are huge in size, have highest processing speed and the most expensive than other computers. These computers are used to process large amount of data to solve the complicated scientific problems. The super computer can perform more than one trillion calculations per second. They have large number of processors connected parallelly so that thousands of users can work at the same time in a single super computer.

Q.9 Differentiate between the following types of computers:

a. **IBM PC and IBM compatible computer**

The major differences between IBM PC and IBM Compatible computers are:

IBM PC	IBM Compatible
1. They are original and branded computers manufactured by IBM Company itself.	1. They are duplicates and assembled computers developed by Local Company with the permission of IBM Company.
2. They are more expensive than IBM compatible.	2. They are cheaper than IBM PC.
3. They are comparatively stronger.	3. They are comparatively less strong.
4. They use original and genuine software.	4. They use genuine and pirated software both.
5. The yare more reliable than IBM compatible computers.	5. They are less reliable than IBM PCs.
6. They are difficult to maintain since their parts are not easily available all over the world.	6. They are easy to maintain since their parts are easily available all over the world.

b. IBM PC and Apple / Macintosh computers

The major differences between IBM PC and Apple / Macintosh computers are:

IBM PC	Apple / Macintosh
1. These computers use both GUI and CUI programs.	1. These computers use only GUI programs.
2. They are manufactured by IBM Company USA.	2. They are manufactured by Apple Corporation USA.
3. Mouse or pointing input device is optional to these computers.	3. Mouse or pointing input device is compulsory to these computers.
4. In IBM PC, the VDU and CPU are separated.	4. In Apple / Macintosh computers the VDU and CPU are attached together.
5. In IBM PC, the mouse is connected to CPU.	5. In Apple / Macintosh computers, the mouse is connected to keyboard.
6. The yare comparatively less expensive.	6. They are comparatively more expensive.

Q.10 What is mobile computing? Why mobile computing devices are popular these days?

➢ Mobile computing is the process or method of using the latest portable computing technology that allows to use and access internet and other application services when we are on move. It is the latest technology that allows the transmission of data via computer, without having the fixed physical connection links.

Nowadays, small and portable handheld computing devices and advanced mobile phones are popularly used. These devices are very much popular and common for every users. These are different types of mobile computing devices such as Personal Digital Assistance (PDAs), Smart phone, Blackberry phone, I-phone, Internet tablet, HSPDS (High Speed Packet Data Access) and other 3G mobiles etc. The developments of mobile computing devices have changed the human life in indispensable way. They are very much useful and important for each and every person because they are portable, handy and support all the latest technologies such as Virtual network Wi-Fi, Cloud storage etc.

Q.11 How are computers classified on the basis of brand? Explain in brief.

➢ The computers on the basis of brand are classified as the following:

✓ **IBM PC (IBM Personal Computer):**

The computers developed by International Business Machine Company (IBM) are called IBM PCs. The technology used in IBM PC is designed by the engineers of IBM Company. IBM Company was developed in 1924. IBM is one of the leading computer manufacturing companies in today's market. In 1945, IBM Company started manufacturing digital computers. IBM PCs are more reliable, durable and have better quality.

✓ **IBM Compatible Computer:**

IBM Compatible computers are developed by other than IBM companies using the technology of IBM PC. They have the same functional and operational characteristics of IBM PC. All the programs used in IBM PC are compatible with IBM Compatible. So they are also known as duplicates of IBM. IBM compatible computers are cheaper than IBM PCs. The yare easily available. Most of the micro computers used in Nepal are IBM compatibles computers. Examples of IBM compatibles are Compaq, NEC (Nippon Electronics), ALR (Advance Logic Research), AST, SCAN, IT 2000 etc.

✓ Apple / Macintosh Computers:

Apple computers are developed by Apple Corporation which was established in late 1970s, in the USA. The architectural design of the apple computers in different from the IBM and IBM compatible. Most of the software used in IBM computers are not compatible with the Apple computers. They need different software. Apple Corporation developed a most popular micro computer named Macintosh. This computer is used mainly for desktop publishing work. Keyboard is a main peripheral device in Macintosh. Apple computers are costlier than the IBM computers. They are available in different capacity, cost and sizes.

Q.12 What is digital computer? Why do digital computers use binary number system for data processing?

➢ Digital computers are such type of general purpose computers which process discrete data and based on binary digits. They solve problems by using discrete data in terms of ON (high) and OFF (low). The digital computers count the qualities rather than measurement. All the digital computers perform task by using binary digits (i.e. 0s and 1s). Digital computers give more accurate result than analog computers. They can perform several tasks and provide high data processing rate.

Digital computers use binary number system because they only recognize two states, on or off. They use electronic circuits which exist in only one of two states i.e. the binary number system. The binary number system is a method of representing numbers that counts by using combinations of only two numerals; zero (0) and one (1). The binary numbering system is also the basis for storage, transfer and manipulation of data in digital computer systems. Thus, Binary Numbers is the flow of information in the form of zeros and ones which is compulsorily used by digital computers.

Thank You!