

3. Third Generation (1964-1971 AD) → The development of Integrated Circuits (IC) signaled the beginning of the third generation. Transistor were replaced with integrated circuit known popularly as chips. Scientists managed to fit many components on a single chip; as a result, computers became ever smaller as more component were squeezed on the chip. IC was first designed and fabricated by Jack S. Kilby at Texas Instruments and by Robert Noyce at Fairchild independently.

4. Fourth Generation (1971 AD-Present) → The invention of microprocessor chip marked the beginning of the fourth generation of computers. MSI yielded to LSI, VLSI and ULSI. Semiconductor memories replaced magnetic core memories. The invention of microprocessors led to the development of microcomputer or the personal computers. The development of chips diminishes the size and price of computers. The first microprocessor called Intel 4004 was developed by American Intel Corporation in 1971. Development in fourth-generation language and application software for microcomputers became popular and allowed home and business user to adapt their computers for word processing, spreadsheet manipulating, file handling and graphics.

2. Mainframe Computer → The mainframe is large in size, one of the powerful computer system. The processing speed of the mainframe computer is slower than supercomputers but faster than mini and personal computers. The largest mainframe computer can handle the processing needs of the number of users (more than hundreds) at any given moment. It is designed for large-scale data processing and a huge amount of data storage. They are a general computer with large memory and excellent processing capabilities. In a mainframe environment, each user access the mainframe's resources through a device called a terminal.

3. Minicomputer → First released in the 1960s, minicomputer got its name because of its smaller size and cost compared to a mainframe computer. The capabilities of a minicomputer are somewhere between mainframe and microcomputer. For this reason, a minicomputer is often called a midrange computer. This computer is useful for medium-sized business organizations, industries, universities and bank due to cheap and easy to operate than mainframe computers. Users can access a central minicomputer through a terminal or a standard PC.

2. Digital Computer → The computer which works on discrete data (discontinuous data, binary system or 0 and 1) is known as a digital computer. The binary system is such a system of numbering in which only 2 digits are used 0 and 1 where 0 represents off and 1 as on. so, the basic principle of these computers is either present or absence of an electric pulse in the signals. It is high cost, fast processing, more accurate and has higher memory capacity. It is usually a general purpose computer.

3. Hybrid Computer → A computer which has a combined best feature of both analog and digital computers is called a hybrid computer. Thus they have usually the speed of analog computers and the accuracy of digital computers. It can perform the tasks of an analog computer as well as a digital computer. It can convert data from analog to digital and vice-versa. They are usually used for special problems, thus it is a special purpose computer, in which input data derived from measurements is converted into digits and processed by computer. Generally, it has a high cost.

The features of computer are given below:-

- i. Speed.
- ii. Accuracy.
- iii. Word length.
- iv. Automation.
- v. Diligence.
- vi. Reliability.
- vii. Versatility.
- viii. Storage capacity.

10. Explain client server concept in Networking. Explain different types of network topologies with diagram.  
→ In this type of networking, there are two of computer client and the servers. A server is a special computer that provides services to the client. It provides services like data, Internet, e-mail, files etc. A client is a user's computer that receives services from the server. Internet is an example of client server network. Its features are:-  
\* It is complex and expensive to establish.  
\* Skilled manpower is required to operate.  
\* Higher security can be maintained through server.  
\* The administration of the network and computer will be easier through server.  
\* It is appropriate for large organization with large number of computers.

11. What are Computer network? Explain about LAN, MAN, and WAN with suitable example.  
→ A Computer network is a group of interconnected nodes or computing devices that exchange data and resources with each other. Explain the LAN, MAN and WAN with suitable example are listed below:-

i. LAN → Local Area Network (LAN) is the interconnection of computers in a limited geographical area like in single room, rooms within a building, or buildings on one site. It is smaller, simpler and cheaper than other network. In a typical LAN there is a server which consists of additional software and hardware. A LAN is useful for sharing resources like files, software programs, printers, plotters, disk drivers, games or other applications. LAN can operate at a speed 100 mbps. Network operating systems is required for Local Area Network. For example - Microsoft Windows provide a software package called Internet Connection sharing (ICS) that supports controlled access to LAN resources.

22. What are the advantages and disadvantages of Computer network?  
→ The advantage of Computer network are given below:-  
1. Resource sharing → Sharing resource is an important area in which a network exceeds stand-alone computer. Most institutions cannot afford enough laser printers, fax machines, MODEMs, scanners, and CD-ROM players for each computer.  
2. Centralized control and management → Network provides the centralized control and management. The entire computers in the network are normally connected to a server, which define the policy and security measure for the resources used by the network members.  
3. Speedy and cost effective communication → Since, the entire computers are connected, message can be send from one computer to another within few seconds.  
4. Backup and recovery → Data are securely handled by the server and provide the mechanism for the backup in other devices with the use of network. Network is also used to recover data and system in case of system crash using backup or through server.  
5. Flexible access.

(6) Workgroup computing.

23. What are the advantages and disadvantages of internet?  
→ The advantages of Internet are given below:-  
1. The fastest, cheaper and easier medium of communication.  
2. Information sharing and browsing.  
3. File transfer facility.  
4. Online services like banking, shopping, education.  
5. Email communication for sending and receiving electronic documents.  
6. Creation of new job opportunities related with Internet.  
7. Source of Internet.  
The disadvantages of Internet are given below:-  
1. It is the most common medium for spreading malicious software like viruses, worm.  
2. It has increased piracy.  
3. Stealing, modifying or destroying authentic data.  
4. Piracy of software, audio, video or other intellectual contents.  
5. Hacking of organizational system website, database.  
6. Unemployment problem for the individuals not having knowledge about the Internet.  
7. It has increased the digital divide.