Computer Application in Management

UNIT=1

Generations of computers is listed below:

(i) First Generation (1946-1954): In 1946 there was no 'best' way of storing instructions and data in a computer memory. There were four competing technologies for providing computer memory: electrostatic storage tubes, acoustic delay lines (mercury or nickel), magnetic drums (and disks?), and magnetic core storage.

The digital computes using electronic valves (Vacuum tubes) are known as first generation computers. the first 'computer' to use electronic valves (ie. vacuum tubes). The high cost of vacuum tubes prevented their use for main memory. They stored information in the form of propagating sound waves.

The vacuum tube consumes a lot of power. The Vacuum tube was developed by Lee DeForest in 1908. These computers were large in size and writing programs on them was difficult. Some of the computers of this generation were:

(ii) Second Generation (1955-1964): The second-generation computer used transistors for CPU components & ferrite cores for main memory & magnetic disks for secondary memory. They used high-level languages such as FORTRAN (1956), ALGOL (1960) & COBOL (1960 – 1961). I/O processor was included to control I/O operations.

Around 1955 a device called Transistor replaced the bulky Vacuum tubes in the first generation computer. Transistors are smaller than Vacuum tubes and have higher operating speed. They have no filament and require no heating. Manufacturing cost was also very low. Thus the size of the computer got reduced considerably.

It is in the second generation that the concept of Central Processing Unit (CPU), memory, programming language and input and output units were developed. The programming languages such as COBOL, FORTRAN were developed during this period. Some of the computers of the Second Generation were

1. IBM 1620: Its size was smaller as compared to First Generation computers and mostly used for scientific purpose.
2. IBM 1401: Its size was small to medium and used for business applications.

(iii) Third Generation (1964-1977): By the development of a small chip consisting of the capacity of the 300 transistors. These ICs are popularly known as Chips. A single IC has many transistors, registers and capacitors built on a single thin slice of silicon. So it is quite obvious that the size of the computer got further reduced. Some of the computers developed during this period were IBM-360, ICL-1900, IBM-370, and VAX-750. Higher level language such as BASIC (Beginners All purpose Symbolic Instruction Code) was developed during this period. Computers of this generation were small in size, low cost, large memory

and processing speed is very high. Very soon ICs Were replaced by LSI (Large Scale Integration), which consisted about 100 components. An IC containing about 100 components is called LSI.

Features:

1. They used Integrated Circuit (IC) chips in place of the transistors.
2. Semi conductor memory devices were used.
3. The size was greatly reduced, the speed of processing was high, and they were more accurate and reliable.
4. Large Scale Integration (LSI) and Very Large Scale Integration (VLSI) were also developed.
5. The mini computers were introduced in this generation.
6. They used high level language for programming.

Example: IBM 360, IBM 370 etc.

(iv) Fourth Generation: An IC containing about 100 components is called LSI (Large Scale Integration) and the one, which has more than 1000 such components, is called as VLSI (Very Large Scale Integration). It uses large scale Integrated Circuits (LSIC) built on a single silicon chip called microprocessors. Due to the development of microprocessor it is possible to place computer's central processing unit (CPU) on single chip. These computers are called microcomputers. Later very large scale Integrated Circuits (VLSIC) replaced LSICs. Thus the computer which was occupying a very large room in earlier days can now be placed on a table. The personal computer (PC) that you see in your school is a Fourth Generation Computer Main memory used fast semiconductors chips up to 4 M bits size. Hard disks were used as secondary memory. Keyboards, dot matrix printers etc. were developed. OS-such as MS-DOS, UNIX, Apple's Macintosh were available. Object oriented language, C++ etc were developed.

Features:

1. They used Microprocessor (VLSI) as their main switching element.
2. They are also called as micro computers or personal computers.
3. Their size varies from desktop to laptop or palmtop.
4. They have very high speed of processing; they are 100% accurate, reliable, diligent and versatile.
5. They have very large storage capacity.

v) Fifth Generation (1991- continued): 5th generation computers use ULSI (Ultra-Large Scale Integration) chips. Millions of transistors are placed in a single IC in ULSI chips. 64 bit microprocessors have been developed during this period. Data flow & EPIC architecture of these processors have been developed. RISC & CISC, both types of designs are used in modern processors. Memory chips and flash memory up to 1 GB, hard disks up to 600 GB & optical disks up to 50 GB have been developed. fifth generation digital computer will be Artificial intelligence.

Introduction to Computers: Basic Anatomy

Central Processing Unit (CPU)

The central processing unit is an essential part of the computer. It controls and executes operations, interpreting input provided by the user and directing the output to complete a requested task. While it is generally a physical component of the computer, cloud computing can subdivide CPU operation into virtual central processing units (vCPU).

CPU's are distinguished by their computing speed, which is referred to as a clock rate. Depending on the speed, this is measured in hertz (Hz) or gigahertz (GHz) per second. Tasks like watching high-definition movies, simultaneous online gaming and streaming, manipulating graphics or other large programs generally require processors with higher speeds.

Random Access Memory (RAM)

Random access memory is just like it sounds: a computer's memory. More specifically, it stores the data and machine code currently being used. This allows the information to be read or written quickly regardless of where the physical location of the data is inside the complete memory.

The more RAM a computer has, the better it can manage several programs at once. It isn't difficult to add more memory after an initial build, but investing in more RAM is considered just as vital, if not more, than a good processor. A good starting point is at least 512 megabytes.

Hard Drive

While RAM could be regarded as short term memory, a hard drive is long term storage. It is a high-capacity, self-contained storage device with the ability to both store and recall data. It includes one or more hard disk inside a sealed unit, each of which can hold up to 12 terabytes of information.

All data created on the computer – from work files to installed programs – are stored on the hard drive. IBM compatible computers often labeled alphabetically, starting at "C:", with A and B reserved for removable media. Hard drives can also be external as well and are often used for backing up computer data or storing exceptionally large files.

Motherboard

The motherboard is the main printed circuit board in a computer. It holds and allows communication between essential electrical components of a system, such as the CPU and the memory, and provides input connectors. Without it, nothing else would work.

Selection of a motherboard depends mostly on size restrictions and the types of components that will be included. It is suggested that at least two USB ports be included, but more may be required depending on which attachments will be used internally and externally and how they connect.

Video, Graphics & Sound Cards

Most motherboards come with a integrated processors for these functions. If higher performance is required for graphics or audio, like for running games or multimedia programs, a dedicated processing unit comes highly recommended. They can also be upgraded over time fairly easily, with laptops being the exception, by plugging into the motherboard.

Keyboard & Monitor

A keyboard and monitor are required for inputting commands and receiving output. There is a large variety of monitors available, but the specs required are determined along the same lines as the graphics card. If large programs with high graphics are frequently used, a monitor to compliment that will make the dedicated processor worth the investment. Keyboards offer less of a variety, though there are some styles that provide specialized tools or additional buttons for various uses.

1 COMMENT

An operating system acts as an intermediary between the user of a computer and computer hardware. The purpose of an operating system is to provide an environment in which a user can execute programs in a convenient and efficient manner.

An operating system is a software that manages the computer hardware. The hardware must provide appropriate mechanisms to ensure the correct operation of the computer system and to prevent user programs from <u>interfering</u> with the proper operation of the system.

Operating System:

- An operating system is a program that controls the execution of application programs and acts as an interface between the user of a computer and the computer hardware.
- A more common definition is that the operating system is the one program running at all times on the computer (usually called the kernel), with all else being application programs.
- An operating system is concerned with the allocation of resources and services, such as memory, processors, devices, and information. The operating system correspondingly includes programs to manage these resources, such as a traffic controller, a scheduler, memory management module, I/O programs, and a file system.

Functions of Operating system: Operating system performs three functions:

1. **Convenience:** An OS makes a computer more convenient to use.
2. **Efficiency:** An OS allows the computer system resources to be used in an efficient manner.
3. **Ability to Evolve:** An OS should be constructed in such a way as to permit the effective development, testing and introduction of new system functions without at the same time interfering with service.

Operating system as User Interface:

1. User
2. System and application programs
3. Operating system
4. Hardware

Every general purpose computer consists of the hardware, operating system, system programs, and application programs. The hardware consists of memory, CPU, ALU, and I/O devices, peripheral device, and storage device. System program consists of compilers, loaders, editors, OS, etc. The application program consists of business programs, database programs.

Memory, Input/output Devices

A memory is just like a human brain. It is used to store data and instructions. Computer memory is the storage space in the computer, where data is to be processed and instructions required for processing are stored. The memory is divided into large number of small parts called cells. Each location or cell has a unique address, which varies from zero to memory size minus one. For example, if the computer has 64k words, then this memory unit has 64 * 1024 = 65536 memory locations. The address of these locations varies from 0 to 65535.

Memory is primarily of three types:

- Cache Memory
- Primary Memory/Main Memory
- Secondary Memory

Cache Memory

Cache memory is a very high speed semiconductor memory which can speed up the CPU. It acts as a buffer between the CPU and the main memory. It is used to hold those parts of data and program which are most frequently used by the CPU. The parts of data and programs are transferred from the disk to cache memory by the operating system, from where the CPU can access them.

Advantages

The advantages of cache memory are as follows:

- Cache memory is faster than main memory.
- It consumes less access time as compared to main memory.
- It stores the program that can be executed within a short period of time.
- It stores data for temporary use.

Disadvantages

The disadvantages of cache memory are as follows:

- Cache memory has limited capacity.
- It is very expensive.

Primary Memory (Main Memory)

Primary memory holds only those data and instructions on which the computer is currently working. It has a limited capacity and data is lost when power is switched off. It is generally made up of semiconductor device. These memories are not as fast as registers. The data and instruction required to be processed resides in the main memory. It is divided into two subcategories RAM and ROM.

Characteristics of Main Memory

- These are semiconductor memories.
- It is known as the main memory.
- Usually volatile memory.
- Data is lost in case power is switched off.
- It is the working memory of the computer.
- Faster than secondary memories.
- A computer cannot run without the primary memory.

Secondary Memory

This type of memory is also known as external memory or non-volatile. It is slower than the main memory. These are used for storing data/information permanently. CPU directly does not access these memories, instead they are accessed via input-output routines. The contents of secondary memories are first transferred to the main memory, and then the CPU can access it. For example, disk, CD-ROM, DVD, etc.

Characteristics of Secondary Memory

- These are magnetic and optical memories.
- It is known as the backup memory.
- It is a non-volatile memory.
- Data is permanently stored even if power is switched off.
- It is used for storage of data in a computer.
- Computer may run without the secondary memory.
- Slower than primary memories.

Input/output Devices

Following are some of the important **input devices** which are used in a computer:

- Keyboard
- Mouse
- Joy Stick
- Light pen
- Track Ball
- Scanner
- Graphic Tablet
- Microphone
- Magnetic Ink Card Reader(MICR)
- Optical Character Reader(OCR)
- Bar Code Reader
- Optical Mark Reader(OMR)

Keyboard

Keyboard is the most common and very popular input device which helps to input data to the computer. The layout of the keyboard is like that of traditional typewriter, although there are some additional keys provided for performing additional functions.

Keyboards are of two sizes 84 keys or 101/102 keys, but now keyboards with 104 keys or 108 keys are also available for Windows and Internet.

The keys on the keyboard are as follows:

S.No	Keys & Description
1	**Typing Keys:** These keys include the letter keys (A-Z) and digit keys (09) which generally give the same layout as that of typewriters.
2	**Numeric Keypad:** It is used to enter the numeric data or cursor movement. Generally, it consists of a set of 17 keys that are laid out in the same configuration used by most adding machines and calculators.
3	**Function Keys:** The twelve function keys are present on the keyboard which are arranged in a row at the top of the keyboard. Each function key has a unique meaning and is used for some specific purpose.
4	**Control keys:** These keys provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down,

	Control(Ctrl), Alternate(Alt), Escape(Esc).
5	**Special Purpose Keys:** Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.

Mouse

Mouse is the most popular pointing device. It is a very famous cursor-control device having a small palm size box with a round ball at its base, which senses the movement of the mouse and sends corresponding signals to the CPU when the mouse buttons are pressed.

Generally, it has two buttons called the left and the right button and a wheel is present between the buttons. A mouse can be used to control the position of the cursor on the screen, but it cannot be used to enter text into the computer.

Advantages

- Easy to use
- Not very expensive
- Moves the cursor faster than the arrow keys of the keyboard.

Joystick

Joystick is also a pointing device, which is used to move the cursor position on a monitor screen. It is a stick having a spherical ball at its both lower and upper ends. The lower spherical ball moves in a socket. The joystick can be moved in all four directions.

The function of the joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

Light Pen

Light pen is a pointing device similar to a pen. It is used to select a displayed menu item or draw pictures on the monitor screen. It consists of a photocell and an optical system placed in a small tube.

When the tip of a light pen is moved over the monitor screen and the pen button is pressed, its photocell sensing element detects the screen location and sends the corresponding signal to the CPU.

Networking Advantages, Types

Computer network is defined as a set of interconnected autonomous systems that facilitate distributed processing of information. It results in better performance with high speed of processing.

Advantages of Network:
These are main advantages of Computer Networks:

1. **Central Storage of Data:**

   Files can be stored on a central node (the file server) that can be shared and made available to each and every user in an organization.

2. **Anyone can connect to a computer network:**

   There is a negligible range of abilities required to connect to a modern computer network. The effortlessness of joining makes it workable for even youthful kids to start exploiting the data.

3. **Faster Problem solving:**

   Since an extensive procedure is disintegrated into a few littler procedures and each is taken care of by all the associated gadgets, an explicit issue can be settled in lesser time.

4. **Reliability:**

   Reliability implies backing up of information. Due to some reason equipment crash, and so on, the information gets undermined or inaccessible on one PC, another duplicate of similar information is accessible on another workstation for future use, which prompts smooth working and further handling without interruption.

5. **It is highly flexible:**

   This innovation is known to be truly adaptable, as it offers clients the chance to investigate everything about fundamental things, for example, programming without influencing their usefulness.

6. **Security through Authorization:**

   Security and protection of information is additionally settled through system. As just the system clients are approved to get to specific records or applications, no other individual can crack the protection or security of information.

7. **It boosts storage capacity:**

Since you will share data, records and assets to other individuals, you need to guarantee all information and substance are legitimately put away in the framework. With this systems administration innovation, you can do the majority of this with no issue, while having all the space you requirement for capacity.

Networking Devices and Network Connection

Characteristics of a Computer Network

- Share resources from one computer to another.
- Create files and store them in one computer, access those files from the other computer(s) connected over the network.
- Connect a printer, scanner, or a fax machine to one computer within the network and let other computers of the network use the machines available over the network.

1. **Repeater**: A repeater operates at the physical layer. Its job is to regenerate the signal over the same network before the signal becomes too weak or corrupted so as to extend the length to which the signal can be transmitted over the same network. An important point to be noted about repeaters is that they do not amplify the signal. When the signal becomes weak, they copy the signal bit by bit and regenerate it at the original strength. It is a 2 port device.
2. **Hub**: A hub is basically a multiport repeater. A hub connects multiple wires coming from different branches, for example, the connector in star topology which connects different stations. Hubs cannot filter data, so data packets are sent to all connected devices. In other words, collision domainof all hosts connected through Hub remains one. Also, they do not have intelligence to find out best path for data packets which leads to inefficiencies and wastage.

Types of Hub

- **Active Hub:** These are the hubs which have their own power supply and can clean, boost and relay the signal along the network. It serves both as a repeater as well as wiring center. These are used to extend maximum distance between nodes.
- **Passive Hub:** These are the hubs which collect wiring from nodes and power supply from active hub. These hubs relay signals onto the network without cleaning and boosting them and can't be used to extend distance between nodes.

3. **Bridge**: A bridge operates at data link layer. A bridge is a repeater, with add on functionality of filtering content by reading the MAC addresses of source and destination. It is also used for interconnecting two LANs working on the same protocol. It has a single input and single output port, thus making it a 2 port device.

Types of Bridges

- **Transparent Bridges:** These are the bridge in which the stations are completely unaware of the bridge's existence i.e. whether or not a bridge is added or deleted from the network,

reconfiguration of the stations is unnecessary. These bridges makes use of two processes i.e. bridge forwarding and bridge learning.

- **Source Routing Bridges:** In these bridges, routing operation is performed by source station and the frame specifies which route to follow. The hot can discover frame by sending a special frame called discovery frame, which spreads through the entire network using all possible paths to destination.

4. **Switch:** A switch is a multi-port bridge with a buffer and a design that can boost its efficiency (large number of ports imply less traffic) and performance. Switch is data link layer device. Switch can perform error checking before forwarding data, that makes it very efficient as it does not forward packets that have errors and forward good packets selectively to correct port only. In other words, switch divides collision domain of hosts, but broadcast domain remains same

5. **Routers**: A router is a device like a switch that routes data packets based on their IP addresses. Router is mainly a Network Layer device. Routers normally connect LANs and WANs together and have a dynamically updating routing table based on which they make decisions on routing the data packets. Router divide broadcast domains of hosts connected through it.

6. **Gateway**: A gateway, as the name suggests, is a passage to connect two networks together that may work upon different networking models. They basically works as the messenger agents that take data from one system, interpret it, and transfer it to another system. Gateways are also called protocol converters and can operate at any network layer. Gateways are generally more complex than switch or router.

7. **Brouter**: It is also known as bridging router is a device which combines features of both bridge and router. It can work either at data link layer or at network layer. Working as router, it is capable of routing packets across networks and working as bridge, it is capable of filtering local area network traffic.

Wireless Networking

Wireless networks are computer networks that are not connected by cables of any kind. The use of a wireless network enables enterprises to avoid the costly process of introducing cables into buildings or as a connection between different equipment locations. The basis of wireless systems are radio waves, an implementation that takes place at the physical level of network structure.

Wireless networks use radio waves to connect devices such as laptops to the Internet, the business network and applications. When laptops are connected to Wi-Fi hot spots in public places, the connection is established to that business's wireless network. There are four main types of wireless networks:

- **Wireless Local Area Network (LAN):** Links two or more devices using a wireless distribution method, providing a connection through access points to the wider Internet.
- **Wireless Metropolitan Area Networks (MAN):** Connects several wireless LANs.
- **Wireless Wide Area Network (WAN):** Covers large areas such as neighboring towns and cities.

- **Wireless Personal Area Network (PAN):** Interconnects devices in a short span, generally within a person's reach.

Virus and Firewalls

A virus is a computer code or program, which is capable of affecting your computer data badly by corrupting or destroying them.

Computer virus has the tendency to make its duplicate copies at a swift pace, and also spread it across every folder and damage the data of your computer system.

A computer virus is actually a malicious software program or "malware" that, when infecting your system, replicates itself by modifying other computer programs and inserting its own code.

Infected computer programs may include data files, or even the "boot" sector of the hard drive.

Types of Virus

Following are the major types of computer virus:

Worms

This is a computer program that replicates itself at a swift pace. Unlike a computer virus, it is self-contained and hence does not need to be part of another program to propagate itself.

Trojan Horse

A Trojan Horse is also a sort of destructive program that remains disguised in a normal software program. It is not exactly a virus, as it cannot replicate itself. However, there is possibility that virus program may remain concealed in the Trojan Horse.

Bombs

It is similar to Trojan Horse, but Logic bombs have some specialty; these include a timing device and hence it will go off only at a particular date and time.

How Does Virus Affect?

Let us discuss in what ways a virus can affect your computer system. The ways are mentioned below −

- By downloading files from the Internet.
- During the removable of media or drives.
- Through pen drive.
- Through e-mail attachments.
- Through unpatched software & services.
- Through unprotected or poor administrator passwords.

Impact of Virus

Let us now see the impact of virus on your computer system −

- Disrupts the normal functionality of respective computer system.
- Disrupts system network use.
- Modifies configuration setting of the system.
- Destructs data.
- Disrupts computer network resources.
- Destructs of confidential data.

Virus Detection

The most fundamental method of detection of virus is to check the functionality of your computer system; a virus affected computer does not take command properly.

However, if there is antivirus software in your computer system, then it can easily check programs and files on a system for virus signatures.

Virus Preventive Measures

Let us now see the different virus preventive measures. A computer system can be protected from virus through the following −

- Installation of an effective antivirus software.
- Patching up the operating system.
- Patching up the client software.
- Putting highly secured Passwords.
- Use of Firewalls.

Most Effective Antivirus

Following are the most popular and effective antivirus from which you can choose one for your personal computer −

- McAfee Antivirus Plus
- Symantec Norton Antivirus
- Avast Pro Antivirus
- Bitdefender Antivirus Plus
- Kaspersky Anti-Virus

- Avira Antivirus
- Webroot Secure Anywhere Antivirus
- Emsisoft Anti-Malware
- Quick Heal Antivirus
- ESET NOD32 Antivirus

Firewalls

Almost every medium and large-scale organization has a presence on the Internet and has an organizational network connected to it. Network partitioning at the boundary between the outside Internet and the internal network is essential for network security. Sometimes the inside network (intranet) is referred to as the "trusted" side and the external Internet as the "un-trusted" side.

Types of Firewall

Firewall is a network device that isolates organization's internal network from larger outside network/Internet. It can be a hardware, software, or combined system that prevents unauthorized access to or from internal network.

All data packets entering or leaving the internal network pass through the firewall, which examines each packet and blocks those that do not meet the specified security criteria.

Deploying firewall at network boundary is like aggregating the security at a single point. It is analogous to locking an apartment at the entrance and not necessarily at each door.

Firewall is considered as an essential element to achieve network security for the following reasons:

- Internal network and hosts are unlikely to be properly secured.
- Internet is a dangerous place with criminals, users from competing companies, disgruntled ex-employees, spies from unfriendly countries, vandals, etc.
- To prevent an attacker from launching denial of service attacks on network resource.
- To prevent illegal modification/access to internal data by an outsider attacker.

Firewall is categorized into three basic types:

- Packet filter (Stateless & Stateful)
- Application-level gateway
- Circuit-level gateway

These three categories, however, are not mutually exclusive. Modern firewalls have a mix of abilities that may place them in more than one of the three categories.

Unit 2

Introduction to information Technologies, WWW, Search engines

The terms "**information technology**" and "IT" are widely used in business and the field of computing. People use the terms generically when referring to various kinds of computer-related work, which sometimes confuses their meaning.

- Computer tech support
- Business computer network and database administration
- Business software deployment
- Information security

Especially during the dot-com boom of the 1990s, Information Technology also became associated with aspects of computing beyond those owned by IT departments. This broader definition of IT includes areas like:

- Software development
- Computer systems architecture
- Project management

Information Technology Jobs and Careers

Job posting sites commonly use IT as a category in their databases. The category includes a wide range of jobs across architecture, engineering and administration functions. People with jobs in these areas typically have college degrees in computer science and/or information systems. They may also possess related industry certifications. Short courses in IT basics can be also be found online and are especially useful for those who want to get some exposure to the field before committing to it as a career.

A career in Information Technology can involve working in or leading IT departments, product development teams, or research groups. Having success in this job field requires a combination of both technical and business skills.

Computer Networking and Information Technology

Because networks play a central role in the operation of many companies, business computer networking topics tend to be closely associated with Information Technology. Networking trends that play a key role in IT include:

Network capacity and performance: The popularity of online video has greatly increased the demand for network bandwidth both on the Internet and on IT networks. New types of software applications that support richer graphics and deeper interaction with computers also tend to generate larger amounts of data and hence network traffic. Information technology teams must plan appropriately not just for their company's current needs but also this future growth.

Mobile and wireless usages: IT network administrators must now support a wide array of smartphones and tablets in addition to traditional PCs and workstations. IT environments tend to require high-performance wireless hotspots with roaming capability. In larger office buildings, deployments are carefully planned and tested to eliminate dead spots and signal interference.

Cloud services: Whereas IT shops in the past maintained their own server farms for hosting email and business databases, some have migrated to cloud computing environments where third-party hosting providers maintain the data. This change in computing model dramatically changes the patterns of traffic on a company network, but it also requires significant effort in training employees on this new breed of applications.

WWW

WWW stands for **World Wide Web.** A technical definition of the World Wide Web is: all the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).

A broader definition comes from the organization that Web inventor **Tim Berners-Lee** helped found, the **World Wide Web Consortium (W3C).**

The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge.

In simple terms, The World Wide Web is a way of exchanging information between computers on the Internet, tying them together into a vast collection of interactive multimedia resources.

Evolution

World Wide Web was created by **Timothy Berners Lee** in 1989 at **CERN** in **Geneva.** World Wide Web came into existence as a proposal by him, to allow researchers to work together effectively and efficiently at **CERN.** Eventually it became **World Wide Web.**

Search Engines

A search engine is software, typically accessed on the Internet that searches a database of information according to the user's query. The engine provides a list of results that best match what the user is trying to find. Today, there are many different search engines available on the Internet, each with their own abilities and features. The first search engine ever developed is considered Archie, which was used to search for FTP files and the first text-based search engine

is considered Veronica. Today, the most popular and well-known search engine is Google. Other popular search engines include AOL, Ask.com, Baidu, Bing, and Yahoo.

Web Browsers, IP Addressing

Web Browsers

A web browser is a software program that allows a user to locate, access, and display web pages. In common usage, a web browser is usually shortened to "browser." Browsers are used primarily for displaying and accessing websites on the internet, as well as other content created using languages such as Hypertext Markup Language (HTML) and Extensible Markup Language (XML).

Browsers translate web pages and websites delivered using Hypertext Transfer Protocol (HTTP) into human-readable content. They also have the ability to display other protocols and prefixes, such as secure HTTP (HTTPS), File Transfer Protocol (FTP), email handling (mailto:), and files (file:). In addition, most browsers also support external plug-ins required to display active content, such as in-page video, audio and game content.

IP Addressing

An Internet Protocol address (IP address) is a logical numeric address that is assigned to every single computer, printer, switch, router or any other device that is part of a TCP/IP-based network.

The IP address is the core component on which the networking architecture is built; no network exists without it. An IP address is a logical address that is used to uniquely identify every node in the network. Because IP addresses are logical, they can change. They are similar to addresses in a town or city because the IP address gives the network node an address so that it can communicate with other nodes or networks, just like mail is sent to friends and relatives.

The numerals in an IP address are divided into 2 parts:

- The network part specifies which networks this address belongs to and
- The host part further pinpoints the exact location

An IP address is the most significant and important component in the networking phenomena that binds the World Wide Web together. The IP address is a numeric address assigned to every unique instance that is connected to any computer communication network using the TCP/IP communication protocols.

Network nodes are assigned IP addresses by the Dynamic Host Configuration Protocol server as soon as the nodes connect to a network. DHCP assigns IP addresses using a pool of available addresses which are part of the whole addressing scheme. Though DHCP only provides addresses that are not static, many machines reserve static IP addresses that are assigned to that entity forever and cannot be used again.

IP addresses falls into two types:

- Classfull IP addressing is a legacy scheme which divides the whole IP address pools into 5 distinct classes—A, B, C, D and E.
- Classless IP addressing has an arbitrary length of the prefixes.

Internet applications in business

Importance of internet in business: You can understand the importance of the internet in business by the inventions of Digital Marketing, Internet banking and eCommerce business models. The Internet is providing great benefits for business communication. The Internet is the easiest way for a business to connect with customer and clients. The business organisation is using the high-speed internet to speed up the production.

Uses of the internet in business: Companies are getting customer data and buying habits and creating marketing strategies based on the analysis. New and innovative online business models are coming. Everyone is searching online business ideas. People are working from home for companies around the world. Business information is fastest than ever. So, you can see from all of this is that internet is now the backbone of offline business to sell online. And the internet is a heart for online business.

Inventions of new internet technologies for businesses: Internet technology invented new methods of doing business. Internet is important for business development. Internet technology provides powerful communication and marketing tools. The Internet is a new Bazaar in which you can find online shops, online degree programs and a lot more. You can browse various educational and business development websites, management service platforms anytime & anywhere.

Internet is in role of business successor: important to make business successful. Internet helps businesses to grow, achieve goals and become successful in this competitive market. Marketing is important in business and in this case internet is the first and most important marketing tool business owners are looking for. Internet provides great benefits for entrepreneurs to create business infrastructure based on customer's data and information.

Chatting and e-mailing

1. **Email** is a way of sending individual messages to people using an email server to relay the message. Because the server holds the messages for a person until he or she retrieves them, email can be sent whether or not a person is online. One way to send or receive email is to use a mail program such as Microsoft Outlook or Apple Mail that will communicate with your mail server. Another method is called Webmail (such as Hotmail or Gmail) that allows you to send messages using a Web-based interface. To send someone an email message using either of these methods, you simply need to know their email address.
2. **Chatting** is a way of talking online in real-time with many people at once. Some chat rooms are available via the Web, while others require a separate software program to chat with other users. Online chat rooms allow multiple users to join in a conversation and see what all the other people are typing. Typically chat rooms are based around certain themes, such as Teen Chat, Macintosh Chat, or Religious Chat. Using online chat, you can meet new people in an anonymous environment. You will need to choose a "screen name" to join a chat room, but the screen name can be whatever you would like it to be. I usually choose something that describes me well, like "Hot Guy."

Computer Applications: Advantages and limitations

Computer has making human life faster because of its incredible speed, Accuracy and storage, with which human can save anything and search it out easily when needed. We can say computer a versatile machine because it is very flexible in performing their jobs, but Computers have several important advantages and disadvantages.

Advantages of Computer

Multitasking
Multitasking is one of the major advantage of computer. Person can perform multiple task, multiple operation, calculate numerical problems within few seconds. Computer can perform trillion of instructions per second.

Speed
Now computer is not just a calculating device. Now a day's computer has very important role in human life. One of the main advantages of computer is its incredible speed, which helps human to complete their task in few seconds. All the operations can be performed very fast just because of its speed elsewise it takes a long time to perform the task.

Cost/ Stores huge amount of data
It is a low cost solution. Person can save huge data within a low budget. Centralized database of storing information is the major advantage that can reduce cost.

Accuracy
One of the root advantage of computer is that can perform not only calculations but also with accuracy.

Data Security

Protecting digital data is known as data security. Computer provide security from destructive forces and from unwanted action from unauthorized users like cyberattack or access attack.

Disadvantage of Computer

Virus and hacking attacks

Virus is a worm and hacking is simply an unauthorized access over computer for some illicit purpose. Virus is being transferred from email attachment, viewing an infected website advertisement, through removable device like USB etc. once virus is transferred in host computer it can infect file, overwrite the file etc.

For example: Huge portion of internet was going down including Twitter, Netflix, Reddit and CNN in October 2016 because the largest DDoS attack was launched on service provider DYN using IoT Botnet.

Online Cyber Crimes

Online cyber-crime means computer and network may have used in order to commit crime. Cyberstalking and Identity theft are the points which comes under online cyber-crimes. For example: one may get the access of the access to your shopping account like amazon account now that person will be able to know your personal details like debit card or credit card number which can be than misused.

Reduction in employment opportunity

Mainly past generation was not used of the computer or they have the knowledge of computer they faced a big problem when computer came in field. As we have seen in banking sector senior bank employees faced this problem when computer came to the banking sector.

Above were the main disadvantage of computer, no IQ, Dependency, No feeling, Break down are the basic disadvantages of computer.

Computer Applications: Use in office, Education, institution, Healthcare

Business

A computer has high speed of calculation, diligence, accuracy, reliability, or versatility which has made it an integrated part in all business organizations.

Computer is used in business organizations for:

- Payroll calculations
- Budgeting

- Sales analysis
- Financial forecasting
- Managing employee database
- Maintenance of stocks, etc.

Banking

Today, banking is almost totally dependent on computers.

Banks provide the following facilities:

- Online accounting facility, which includes checking current balance, making deposits and overdrafts, checking interest charges, shares, and trustee records.
- ATM machines which are completely automated are making it even easier for customers to deal with banks.

Insurance

Insurance companies are keeping all records up-to-date with the help of computers. Insurance companies, finance houses, and stock broking firms are widely using computers for their concerns.

Insurance companies are maintaining a database of all clients with information showing:

- Procedure to continue with policies
- Starting date of the policies
- Next due installment of a policy
- Maturity date
- Interests due
- Survival benefits
- Bonus

Education

The computer helps in providing a lot of facilities in the education system.

- The computer provides a tool in the education system known as CBE (Computer Based Education).
- CBE involves control, delivery, and evaluation of learning.
- Computer education is rapidly increasing the graph of number of computer students.
- There are a number of methods in which educational institutions can use a computer to educate the students.
- It is used to prepare a database about performance of a student and analysis is carried out on this basis.

Marketing

In marketing, uses of the computer are following:

- **Advertising**: With computers, advertising professionals create art and graphics, write and revise copy, and print and disseminate ads with the goal of selling more products.
- **Home Shopping**: Home shopping has been made possible through the use of computerized catalogues that provide access to product information and permit direct entry of orders to be filled by the customers.

Healthcare

Computers have become an important part in hospitals, labs, and dispensaries. They are being used in hospitals to keep the record of patients and medicines. It is also used in scanning and diagnosing different diseases. ECG, EEG, ultrasounds and CT scans, etc. are also done by computerized machines.

Following are some major fields of health care in which computers are used.

- **Diagnostic System**: Computers are used to collect data and identify the cause of illness.
- **Lab-diagnostic System**: All tests can be done and the reports are prepared by computer.
- **Patient Monitoring System**: These are used to check the patient's signs for abnormality such as in Cardiac Arrest, ECG, etc.
- **Pharma Information System**: Computer is used to check drug labels, expiry dates, harmful side effects, etc.
- **Surgery**: Nowadays, computers are also used in performing surgery.