INTRODUCTION TO COMPUTER SCIENCE – CS110

SAIDU POLYTECHNIC COLLEGE OF SCIENCE
B-Tech and BSc Engineering

By
Mr. Fazal Mabood
Lecturer Computer Science/IT Expert
Mobile No: 0301-5540084
www.facebook.com/fazalmaboodsw
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Q- WHAT IS COMPUTER ?
Ans: Computer is an electronic device which takes some input from the user, process it, and produce output.

Q- BRIEFLY DISCUSS HISTORY OF COMPUTERS & THEIR APPLICATION ?
Ans:
- Humans have always needed to perform arithmetic like counting and adding. During the pre-historic period, they counted either on their fingers or stone, pebble and beads.
- In 14th C. - Abacus - an instrument for performing calculations by sliding counters was the first computer.
- In 1642 - Masculine--a mechanical calculator built by Blaise Pascal,
- In 1804 - Jacquard loom - a loom programmed with punched cards invented by Joseph Marie Jacquard
- In 1850 - Analytical Engine was invented by Charles Babbage and use for different calculations.
- In 1940s - Colossus - a vacuum tube computing machine was invented and was used in World War 2.
- In 1946 - ENIAC - World's first electronic, large scale, general-purpose computer, built by Mauchly and Eckert, and activated at the University of Pennsylvania in 1946
- In 1950s -1960s - UNIVAC - "punch card technology" The first commercially successful computer, introduced in 1951 by Remington Rand.
- In 1960-1968 - transistor based technology. The transistor, invented in 1948, by Dr. John Bardeen, Dr. Walter Brattain, and Dr. William Shockley. It almost completely replaced the vacuum tube because of its reduced cost, weight, and power consumption and its higher reliability.
- In1969-1977 - integrated circuits (IC) based technology. The first integrated circuit was demonstrated by Texas Instruments inventor, Jack Kilby, in 1958. It was 7/16" wide and contained two transistors. Examples of early integrated circuit technology: Intel 4004,
- 1976 - CRAY 1 - The world's first electronic digital computer, developed in 1946.
- In 1976 - Apples/MACs - The Apple was designed by Steve Wozniak and Steve Jobs. Apple was the first to have a "windows" type graphical interface and the computer mouse. Like modern computers, early Apples had a peripheral keyboard and mouse, and had a floppy drive that held 3.5" disks. The Macintosh replaced the Apple
- In 1978 to 1986 - large scale integration (LSI) designed by Steve Wozniak and Steve Jobs. The PC and clone market begins to expand. This begins first mass market of desktop computers.
- In 1992 - Bill Gates' Microsoft Corp. released Windows 3.1, an operating system that made IBM and IBM-compatible PCs more user-friendly by integrating a graphical user interface into the software. In replacing the old Windows command-line system.
Q- WHAT ARE THE DIFFERENT CATEGORIES OF DIGITAL COMPUTERS?

Ans: We can divide digital computers as:

- Super Computer
- Mainframe Computer
- Mini Computer
- Micro Computer
- Personal Computer
  - Desktop computers
  - Laptop /Note Books

SUPER COMPUTER

Supercomputers are the largest, fastest, most powerful, and most expensive computers made. Like other large systems, supercomputers can be accessed by many individuals at the same time. Supercomputers are used primarily for scientific applications that are mathematically intensive. The first supercomputer was built in the 1960s for the United States Department of Defense.

This computer was designed to be the world's fastest and most powerful computer of that time. The commitment to create the fastest, most powerful computer in the world is still the driving force behind the development of supercomputers. Manufacturers produce relatively few of any one model of supercomputer, and they spend millions of dollars on research and development of new machines. Supercomputers derive much of their speed from the use of multiple processors. Multiprocessing enables the computers to perform tasks simultaneously—either assigning different tasks to each processing unit or dividing a complex task among several processing units.

EXAMPLE:
- Cray-1
- Cray-2

MAINFRAME COMPUTER

Mainframe computers are the most powerful computers. A mainframe computer may contain several microprocessors. A single mainframe computer can be used by hundreds of people at once. Each user has his own terminal that is connected to the mainframe. Mainframe computers are usually kept in a special cooled, clean computer room. Minicomputers are medium-sized computers which are more powerful than microcomputers but not as powerful as mainframes.

A mainframe computer system is usually composed of several computers in addition to the mainframe, or host processor.

FEATURES:
- Mainframe computer systems are powerful enough to support several hundred users simultaneously at remote terminals.
- Mainframe Computers are so much faster than people, the users never notice that the computer is handling other tasks.
MINI COMPUTER

The "age of the mini" started in the late 1960s. The creation of integrated circuits suitable for computers enabled designers to shrink the size of the computer. Minicomputers are frequently referred to as mid-range computers.

FEATURES:

- Like mainframes, most minicomputers are multiuser systems.
- Many of today's minicomputers can accommodate as many as 200 users working from individual terminals.
- Mini computers are a little slower than mainframe.
- Minicomputers have slightly less storage, and the printers are slightly slower.

EXAMPLE:

- IBM AS/400
- IBM SYSTEM 360

MICROCOMPUTER

When you are working on a multiuser computer, such as a mainframe or minicomputer, you can control the input and see the output on the display, but you control nothing else.

A single-user computer gives you control over all the phases of computer processing: input, processing, output, and storage. You can select the programs you want to use, and you don't have to compete with other users to gain access to the system. A single-user system is designed to meet the computing needs of an individual.

Single-user computers fall into two categories:

- Workstations
- Microcomputers.

WORKSTATION:

A workstation is a powerful desktop computer designed to meet the computing needs of engineers, architects, and other professionals who need detailed graphics displays. The workstation has sometimes
been called a "super micro." The workstation looks very much like a desktop microcomputer, but the chips inside make the difference

FEATURES:

- Workstations are small, powerful systems designed to drive networks of less powerful microcomputers and to create high-quality graphics.
- Workstations typically cost $5,000 to $20,000.
- Major competitors in this market include DEC, Hewlett-Packard, Sun, and Silicon Graphics, Inc.

MICROCOMPUTERS:

It is difficult to overstate the impact of the microcomputer on the computer industry. In 1975, the microcomputer did not exist. In 1995, sales exceeded $116 billion. Microcomputers are the fastest growing segment of the computer industry.

The microcomputer segment of the industry is complex; there are different types of microcomputer platforms with varying capabilities. The most common type of microcomputer is a desktop computer, which is a non portable personal computer that fits on top of a desk.

Microcomputers are the smallest and cheapest of these and are used at home, in schools and in some businesses. Mainframe computers are the most powerful computers

DESKTOP COMPUTER:

“A computer designed for desktop use; usually comprises, at a minimum, a central processing unit (CPU), a monitor, and a keyboard as separate units, connected by special cables. Most such computers now also include a Pointing Device.

A computer that could fit on a desk was considered remarkably small. Desktop computers come in a variety of types ranging from large vertical tower cases to small form factor models that can be tucked behind an LCD monitor.

"Desktop" can also indicate a horizontally-oriented computer case usually intended to have the display screen placed on top to save space on the desktop. Most modern desktop computers have separate screens and keyboards.

LAPTOP / NOTE BOOK COMPUTER:

“A laptop is a personal computer designed for mobile use, small and light enough to sit on a person's lap while in use.”

“A portable computer typically weighing less than 6 pounds (3 kilograms) that has a flat-panel display and miniature hard disk drives, and is powered by rechargeable batteries.”

Laptops are capable of many of the same tasks that desktop computers perform, although they are typically less powerful. Laptops usually have LCD displays.
Q- EXPLAIN TYPES OF COMPUTER ON THE BASIS OF FUNCTIONALITY?

Ans: According to functionality computer can be divided in to three types:

1. Analog
2. Digital
3. Hybrid

**ANALOG COMPUTERS:**

“An analog (spelled analogue in British English) computer is a form of computer that uses the continuously-changeable aspects of physical fact such as electrical, mechanical, or hydraulic quantities to model the problem being solved.”

**EXAMPLES:**
- Thermometer
- Analog clock
- Speedometer
- Tire pressure gauge

**DIGITAL COMPUTERS:**

“A computer that performs calculations and logical operations with quantities represented as digits, usually in the binary number system of “0” and “1”.

**EXAMPLES:**
- IBM PC
- Apple Macintosh
- Calculators
- Digital watches etc

**HYBRID COMPUTERS:**

“A computer that processes both analog and digital data”. “Hybrid computer is a digital computer that accepts analog signals, converts them to digital and processes them in digital form”

A hybrid computer may use or produce analog data or digital data. It accepts a continuously varying input, which is then converted into a set of discrete values for digital processing.

Examples:
- Hybrid computer is the computer used in hospitals to measure the heartbeat of the patient.
- Devices used in petrol pump.
- Hybrid Machines are generally used in scientific applications or in controlling industrial processes.
**Q- WHAT ARE THE MAJOR COMPONENTS OF A COMPUTER ?**

**Ans:**
All the general purpose computers requires the following hardware components

**CENTRAL PROCESSING UNIT (CPU):**

The CPU stands for Central Processing Unit, is the part of a computer system that is commonly referred to as the "brains" of a computer. The CPU is also known as the “processor” or “microprocessor". The CPU is responsible for executing a sequence of stored instructions called a program. The programs tells a computer what to do and how to do? This program will take inputs from an input device, process the input in some way and output the results to an output device

**MEMORY:** It enables a computer to store, at least temporarily, data and programs.

**INPUT DEVICE:**
Input is any data or instructions entered to the computer. Input can be in the form of audio, video, graphics and animations and instructions

Any hardware component used to enter data, programs, commands, and user responses into a computer

**Examples**
- Key Board
- Mouse
- Digital Camera
- Webcam
- Scanner etc

**OUTPUT DEVICE:**
An output is the data that has been processed in that form which is useful by user or machine for future processing. Output can be in two forms Soft Copy and Hard Copy.

Any hardware component used to show results after processing to any user and it use to send the results of processing to the user. Output can be text, Audio, Video & graphics.

**Examples**
- Monitor
- Printer
- Plotter
- Projectors
- Speakers
- Headphone etc
**Mass Storage Device:**

A *Storage Medium* (media is the plural) is the physical material on which items are kept. A *storage device* is the computer hardware that records and retrieves items to and from a storage medium. Storage devices can function as sources of input and output.

When storage devices transfer items from a storage medium into memory – a process called *reading* – they function as sources of input. When storage devices transfer items from memory to a storage medium – a process called *writing* – they function as sources of output. Types of storage media include floppy disks, hard disks, compact discs, tape, PC Cards and microfilm etc.

**Q- Briefly explain some Peripheral Devices?**

Sol:

A computer peripheral, or peripheral device, is an external object that provides input and output for the computer.

A computer device, such as a CD-ROM drive or printer, that is not part of the essential computer, Peripheral devices can be external -- such as a mouse, keyboard, printer, monitor, external Zip drive or scanner -- or internal, such as a CD-ROM drive, CD-R drive or internal modem. Internal peripheral devices are often referred to as integrated peripherals.

**Keyboard:**

“Keyboard is an input device, that contain keys user press to enter data or instructions in to the computer”. You enter most input data into the computer by using a keyboard. This input method is similar to typing on a typewriter. Computer keyboards include keys that are designed to perform specific tasks. These keys enable the user to perform complex tasks easily when using the application. For example, many applications use a function key to access online help for the user.

*Keyboard keys consist of*

- **Alphabetic keys** contain alphabets from A-Z & a-z
- **Numerical keys** contain numbers 0-9
- **Symbols keys** contain many symbols like !, @, #, $, % etc
- **Functional keys** contain f1-f12, design for special purpose will discuss latter.
- **Extra keys** contain Esc, Alt, Ctrl, Backspace, Enter

**Pointing Device:**

A pointing device is an input device which is used to control a pointer on a screen. Pointer is a small symbol on a screen.

A *pointing device* is an input interface (specifically a human interface device) that allows a user to input spatial data to a computer. CAD systems and graphical user interfaces (GUI) allow the user to control and provide data to the computer using physical gestures — point, click, and drag — for example, by moving a hand-held mouse across the surface of the physical desktop and activating switches on the mouse. Movements of the pointing device are echoed on the screen by movements of the pointer (or cursor) and other visual changes.
**DIGITAL CAMERA** A digital camera can be used to take pictures. It can be hooked up to a computer to transfer the pictures from the camera to the computer. It uses a light-sensitive processing chip to capture pictures or images. We can save these images wherever we want; they can be on a CD, computer disk, USB drive or can be transferred from one computer to another computer device.

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**Q- EXPLAIN THE NEED OF PROCESSOR?**

**Sol:**

- Central processing unit (CPU) is an electronic circuit which executes computer programs, containing a processing unit and a control unit.
- A processor is the thinking mechanism of the computer. While a hard drive/disk holds the data of a computer, the processor is what ‘thinks’ and determines how to run whatever files are on your computer, as well as keeps them updated. Basically, if you have no processor, your computer will sit with a load of data and take no commands, do no thinking or display information. In simpler words, it is the heart of the machine without it you can't do anything.
- A computer processor, often considered the brains of the machine, has the most significant effect on performance and price. If you want a computer to be able to keep up with technology over the next few years, you should need a fast processor.

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**Q- WHAT IS COMPUTER SOFTWARE?**

**Ans:**

Software is the set of instructions (also called a program) that guides the hardware through its job. That tells the computer what to do? And how to do it? All components which are non-tangible (Not Touchable) are called software.

Examples: Ms Office, Operating Systems, Adobe photo shop etc

Without software, the hardware that is used to build a computer system would not be very useful. A software program contains the instructions that the computer must follow to carry out the task. Sometimes more than one program is required to complete a task. When this is the case, the group of programs which together complete the task are known as a software package.

Software programs are originally produced by computer programmers who will write the instructions that form the program in a programming language.

Example pieces of software are:

- A word processor.
- A multimedia encyclopedia.
- A spreadsheet.
Q- WHAT ARE THE DIFFERENT TYPES OF COMPUTER SOFTWARE’S ?

Ans:

TYPES OF SOFTWARE

A software is usually classified as being two types

1. Systems software
2. Applications software.

SYSTEM SOFTWARE

Systems software controls the operation of a computer. Without systems software a computer would not function. The most important piece of systems software is the operating system. The operating system will perform vital tasks such as:

- Managing communications between software and hardware.
- Allocating computer memory to other software programs.
- Allocating CPU time to other software programs.

TYPES

- Operation systems
- Utility program
- Programming languages
- Device drivers

APPLICATION SOFTWARE

“Application software consists of programs designed to perform specific tasks for users”. Application software can be used as a productivity/business tool; to assist with graphics and multimedia projects; to support home, personal, and educational activities; and to facilitate communications.

TYPES:

- Word Processor
- Presentation Software
- Database
- Spreadsheet
- Communication software
- Desktop Publisher
- Graphics Package
Q- EXPLAIN THE DIFFERENCES BETWEEN END USER APPLICATIONS AND SYSTEM SOFTWARE'S?

Solution:

1. Application Software are user written program developed to solve a particular application or problem that is unique to that organization while system software are manufacturer supplied programs for controlling the operation of the entire system.

2. System software is computer software designed to operate the computer hardware and to provide a platform for running application software. Application software, also known as an application or an "app", is computer software designed to help the user to perform singular or multiple related specific tasks.

3. The computer that controls your VCR needs software to tell it how to use the display screen and what to do when the buttons are pressed etc.. The software that handles this is known as system software. Application software is written to perform a specific task (or a group of related tasks). "Microsoft Word" for example is Application software.

4. System software is an essential part of computer operations. The function of the system software is to manage the resources of the computer, automate its operation and facilitate program development. It is generally provided by the computer manufacturer or a specialized programming firm (for example: Microsoft is a company that specializes in system software). While, the Application software are designed to perform specific data processing or computational tasks for the user. These programs are specifically designed to meet end-user requirements. (e.g: spreadsheets, word processors, media players and database applications).

5. System software is the Operating System which handles devices, etc., whereas Application Software is third party software that seeks help from the system software.

6. System software or Operating System is the software that allows the computer to boot. Applications are programs that run inside of or on top of the Operating System and allows you to do things like email or word processing.

Q- WHAT IS THE PURPOSE OF INFORMATION SYSTEMS ?

Ans: Information systems are basically implemented in organization or institutions for the purpose of improving the efficiency and effectiveness of that organization in terms of performances. Information systems is a combination of software, hardware, infrastructure and skilled personnel organized to aid planning, control, coordination, and decision making within an organization.

Q- WHAT ARE THE DIFFERENT TYPES OF INFORMATION SYSTEMS?

Ans: The different types of information systems are:

- DATA WAREHOUSES
- ENTERPRISE RESOURCE PLANNING
- ENTERPRISE SYSTEMS
Q- EXPLAIN OFFICE AUTOMATION SYSTEM?

Ans:
Office automation refers to the use of computer and software to digitally create, collect, store, manipulate, and relay office information needed for accomplishing basic tasks and goals. The use of computer systems to do a variety of office operations, such as word processing, accounting, and e-mail. Raw data storage, electronic transfer, and the management of electronic business information comprise the basic activities of an office automation system. Office automation helps in optimizing or automating existing office procedures. The backbone of office automation is a LAN, which allows users to transmit data, mail and even voice across the network. All office functions, including dictation, typing, filing, copying, fax, Telex, microfilm and records management, telephone and telephone switchboard operations, fall into this category.

Components of Office Automation System:

Microsoft Word provides everything to produce professional-looking documents, communicate your ideas, and share information with others.

Microsoft Excel makes it easy to build spreadsheets and then use, share, and analyze the data, as well as provide reports and present the data graphically.

Microsoft PowerPoint allows you to organize, illustrate, and present your ideas in a multimedia presentation. It gives you the tools to communicate with impact, whether in the classroom, to parents, or to colleagues.

Microsoft Access lets you develop and use databases to store, manipulate, and share information.

Q- WHAT IS AN OPERATING SYSTEM ? EXPLAIN WITH EXAMPLE?

Ans:
The operating system is a very special piece of software. All the other applications software such as databases and spreadsheets communicate with the computer hardware through the operating system. The operating system controls the overall operation of the computer.

“An operating system (or OS) is a computer program which controls the entire operation of the computer. Computer software applications communicate with the computer hardware via the operating system”

Example Operating Systems

When you buy a computer it is usually supplied with an operating system already installed. You will not be able to use a computer without an operating system. Different operating systems are available for different types of computer and different purposes. Some popular operating systems are:
- Microsoft windows
- Disk Operating System (DOS)
- Linux

The choice of operating system will affect how a computer works. It will probably determine the type of user interface (command line, menu driven or graphical) that the computer uses and the types of processing (batch, transaction or real-time) that the computer can carry out.

**Q- WHAT ARE THE DIFFERENT TASK PERFORM BY AN OPERATING SYSTEM ?**

Ans: There are several tasks which are performed by practically all operating systems, regardless of the complexity of the computer the operating system is being used on. These tasks include:

1. Managing communications between software and hardware.
2. Allocation of computer memory.
3. Allocation of CPU time.
4. Run and Manage program
5. Managing files
6. Configure Software and Devices
7. Configure Network
8. Coordinating Tasks
9. Performance Management

**Q- EXPLAIN TYPES OF OPERATING SYSTEM ?**

Ans:

An operating system is a software component of a computer system that is responsible for the management of various activities of the computer and the sharing of computer resources.

Users and application programs access the services offered by the operating systems, by means of system calls and application programming interfaces. Users interact with operating systems through Command Line Interfaces (CLIs) or Graphical User Interfaces known as GUIs as defined above.

In short, operating system enables user interaction with computer systems by acting as an interface between users or application programs and the computer hardware.

The types of Operating systems are here under:

1) Single user/personal computer operating system
2) Multiuser/network operating system
3) Embedded operating system

1) **SINGLE USER/PERSONAL COMPUTER OPERATING SYSTEM:**

The most basic type of operating system can only carry out one task at a time and can only be used by one person at a time. More sophisticated multi-tasking and multi-user operating systems can appear to carry out more than one task and be used by more than one user at the same time.

It has further types

- DOS
- MAC OS
- Windows

2) **MULTIPLE USER/NETWORK OPERATING SYSTEM:**

Multi-user operating systems are used on large mainframe computers. A mainframe computer system has one very powerful processing unit. Many users will all share this processing unit. They use terminals (a keyboard and a screen) to access the mainframe computer.

A multi-user operating system lets more than one user work on a mainframe computer at the same time.

Operating systems that are used on computers connected to networks usually have to carry out some additional tasks. Probably the most important of these is managing system security. Important aspects of systems security that an operating system might manage are:

- Controlling who has access to which files.
- Keeping a log of all of the files that a user changes.
- Automatically backing up important files.

These operating systems are more complicated and require faster hardware and more memory to work than more basic operating systems.

It has further types

- WINDOWS NT SERVER
- WINDOWS 2000 SERVER
- UNIX
- SOLARIS/LINUX

3. **EMBEDDED OPERATING SYSTEM**

- An embedded operating system is an operating system for embedded computer systems. Due to the very nature of embedded systems, the operating system has different constraints compared to other desktop OS.
These devices have operating system in ROM. Many handheld devices have the embedded operation systems like PDA, palm device, tablet pc etc.

Q- EXPLAIN UTILITY PROGRAMS ?

Ans: A program that performs a specific task related to the management of computer functions, resources, or files, as password protection, memory management, virus protection, and file compression. It is part that is used to provide services for the hardware and software but it is not absolutely required to run programs and, if it didn't come with the operating system, you could perhaps add it. In other usages, a utility is an application that is very specialized and relatively limited in capability. Examples of some utilities are here under:

- Virus scanning software
- Backup software
- Scandisk
- Disk defragmenter

Q- WHAT ARE PROGRAMMING LANGUAGES ?

Ans:
A language in simple word is a way of communication for any person to other person in order to understand his talk. The language is very important medium of communication like linguistics of human. Like human languages, each programming language has its own grammar and syntax. There are many components of the same language Computer also need a language so that it can communicate to the hardware and other important components of computer.

Definition:
A language used to write instructions for the computer. That is the way of representation any program in to that form which is understandable by CPU. Programs are written by using any language and these languages set the procedures & rules to write computer programs. Programmers have to follow that rules which is set by programming languages.

TYPES OF PROGRAMMING LANGUAGES

According to structure, interface and procedure computer languages can be divided in to two major types.  
1. Low Level Language  
2. High Level Language

1) LOW LEVEL LANGUAGE

Low level language is also called machine language. That types of languages are close to machine and easily understand by machine as, it is majorly in binary form (0 & 1).low level language types are

- Machine language
- Assembly language

2) HIGH LEVEL LANGUAGE

High level programming languages is languages program than use languages or syntax which closes to human languages so; it is easy to understanding the languages. This type of language is machine-independent, and uses similar language as English, which is easily understandable by human.
This type of language’s processing is slow as compared to high level languages. As, it need any translator between interface on computer and human. So, that both can understand their languages.

**TYPES OF HIGH LEVEL LANGUAGES**

Types of high level languages are:
- Procedural Languages
- Functional & Non procedural Languages
- Object Oriented Languages

**Q- WHAT ARE THE DIFFERENT TYPES OF LANGUAGE PROCESSOR/TRANSLATOR?**

**Ans:**

As, computer can understand only machine language; that’s why we need an interface between user and computer so that both can understand its instructions.

Some types of language processors and translator are here under
- Compiler
- Interpreter
- Assembler

**COMPILER**

A compiler is a computer program that transforms human readable complete code of another computer program into the machine readable code that a CPU can execute.

**INTERPRETER**

An interpreter is a computer program that reads the source code of another computer program and executes that program.

Because it is interpreted line by line, it is a much slower way of running a program than one that has been compiled but is easier for learners because the program can be stopped, modified and rerun without time-consuming compiles.

**ASSEMBLER**

Assembler converts code written in assembly language into machine language. It works same like interpreter and compiler.

The assembler program takes each program statement in the code and generates a corresponding bit stream or pattern (a series of 0's and 1's of a given length).
Q- DISCUSS THE ADVANTAGES AND DISADVANTAGES OF DATABASE SYSTEM

A database management system (DBMS) is a collection of programs that manages the database structure and controls access to the data stored in the database. A database resembles a very well-organized electronic filing cabinet in which powerful software, known as a database management system, helps manage the cabinet’s contents.

ADVANTAGES OF THE DBMS:

The DBMS serves as the intermediary between the user and the database. The database structure itself is stored as a collection of files, and the only way to access the data in those files is through the DBMS. The DBMS receives all application requests and translates them into the complex operations required to fulfill those requests. The DBMS hides much of the database’s internal complexity from the application programs and users.

The different advantages of DBMS are as follows.

1. Improved data sharing.
   The DBMS helps create an environment in which end users have better access to more and better-managed data. Such access makes it possible for end users to respond quickly to changes in their environment.

2. Improved data security.
   The more users access the data, the greater the risks of data security breaches. Corporations invest considerable amounts of time, effort, and money to ensure that corporate data are used properly.

   Wider access to well-managed data promotes an integrated view of the organization’s operations and a clearer view of the big picture. It becomes much easier to see how actions in one segment of the company affect other segments.

4. Improved decision making.
   Better-managed data and improved data access make it possible to generate better-quality information, on which better decisions are based. The quality of the information generated depends on the quality of the underlying data. Data quality is a comprehensive approach to promoting the accuracy, validity, and timeliness of the data. While the DBMS does not guarantee data quality, it provides a framework to facilitate data quality initiatives.

5. Increased end-user productivity.
   The availability of data, combined with the tools that transform data into usable information, empowers end users to make quick, informed decisions that can make the difference between success and failure in the global economy.
**DISADVANTAGES OF DATABASE:**

Although the database system have considerable advantages, database systems do carry significant disadvantages as well. For example:

1. **Increased costs.**
   Database systems require sophisticated hardware and software and highly skilled personnel. The cost of maintaining the hardware, software, and personnel required to operate and manage a database system can be substantial. Training, licensing, and regulation compliance costs are often overlooked when database systems are implemented.

2. **Management complexity.**
   Database systems interface with many different technologies and have a significant impact on a company’s resources and culture. The changes introduced by the adoption of a database system must be properly managed to ensure that they help advance the company’s objectives. Given the fact that database systems hold crucial company data that are accessed from multiple sources, security issues must be assessed constantly.

3. **Frequent upgrade/replacement cycles.**
   DBMS vendors frequently upgrade their products by adding new functionality. Such new features often come bundled in new upgrade versions of the software. Some of these versions require hardware upgrades. Not only do the upgrades themselves cost money, but it also costs money to train database users and administrators to properly use and manage the new features.

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**Q- WHAT IS THE IMPORTANCE OF NETWORKING IN DAILY LIFE? DISCUSS IN DETAIL ?**

**Solution:**

Information and communication are two of the most important strategic issues for the success of every enterprise. While today nearly every organization uses a substantial number of computers and communication tools (telephones, fax, personal handheld devices), they are often still isolated. While managers today are able to use the newest applications, many departments still do not communicate and much needed information cannot be readily accessed.

To overcome these obstacles in an effective usage of information technology, computer networks are necessary. They are a new kind (one might call it paradigm) of organization of computer systems produced by the need to merge computers and communications. At the same time they are the means to converge the two areas; the unnecessary distinction between tools to process and store information and tools to collect and transport information can disappear. Computer networks can manage to put down the barriers between information held on several (not only computer) systems. Only with the help of computer networks can a borderless communication and information environment be built.

Computer networks allow the user to access remote programs and remote databases either of the same organization or from other enterprises or public sources. Computer networks provide communication possibilities faster than other facilities. Because of these optimal information and communication
possibilities, computer networks may increase the organizational learning rate, which many authors declare as the only fundamental advantage in competition.

Besides this major reason why any organization should not fail to have a computer network, there are other reasons as well:

- Cost reduction by sharing hard- and software resources
- High reliability by having multiple sources of supply
- Cost reduction by downsizing to microcomputer-based networks instead of using mainframes
- Greater flexibility because of possibility to connect devices from various vendors

Because of the importance of this technology, decisions of purchase, structure, and operation of computer networks cannot be left to technical staff. Management as well has a critical need for understanding the technology of computer networks.

Q-6: DISCUSS THE IMPORTANCE OF INTERNET IN DETAIL?

Solution:
Internet Plays a vital role in our life, following are the importance of Internet.

1. **FASTER COMMUNICATION**
The foremost target of Internet has always been speedy communication and it has excelled way beyond the expectations. Newer innovations are only going to make it faster and more reliable. Now, you can communicate in a fraction of second with a person who is sitting in the other part of the world. For more personal and interactive communication, you can avail the facilities of chat services, video conferencing and so on.

2. **INFORMATION RESOURCES**
Information is probably the biggest advantage that Internet offers. Internet is a virtual treasure trove of information. Any kind of information on any topic under the sun is available on the Internet. The search engines like Google, Yahoo are at your service on the Internet. There is a huge amount of information available on the Internet for just about every subject known to man, ranging from government law and services, trade fairs and conferences, market information, new ideas and technical support, the list is simply endless. Students and children are among the top users who surf the Internet for research..

3. **ENTERTAINMENT**
The Internet has become quite successful in trapping the multifaceted entertainment industry. Downloading games or just surfing the celebrity websites are some of the uses people have discovered. Even celebrities are using the Internet effectively for promotional campaigns. Besides, there are numerous games that can be downloaded for free. The industry of online gaming has tasted dramatic and phenomenal attention by game lovers.
4. **SOCIAL NETWORKING**
One cannot imagine an online life without Facebook or Twitter. Social networking has become so popular amongst youth that it might one day replace physical networking. It has evolved as a great medium to connect with millions of people with similar interests.

5. **ONLINE SERVICES**
The Internet has made life very convenient. With numerous online services you can now perform all your transactions online. You can book tickets for a movie, transfer funds, pay utility bills, taxes etc., right from your home. Some travel websites even plan an Itinerary as per your preferences and take care of airline tickets, hotel reservations etc.

Q- **WRITE SHORT NOTES ON THE FOLLOWING**

I. **E-COMMERCE**
Solution:
The concept of e-commerce is used for any type of commercial maneuvering or business deals that involves the transfer of information across the globe via the Internet. It has become a phenomenon associated with any kind of shopping, business deal etc. You name a service, and e-commerce with its giant tentacles engulfing every single product and service will make it available at your doorstep. Websites such as eBay allow you to even bid for homes, buy, sell or auction stuff online.

II. **COMPUTER GRAPHICS AND DESIGN**
Solution:
Computer graphics are graphics created using computers and, more generally, the representation and manipulation of image data by a computer with help from specialized software and hardware. The development of computer graphics has made computers easier to interact with, and better for understanding and interpreting many types of data. Developments in computer graphics have had a profound impact on many types of media and have revolutionized animation, movies and the video game industry.

Graphic design is a creative process—most often involving a client and a designer and usually completed in conjunction with producers of form (i.e., printers, signmakers, etc.)—undertaken in order to convey a specific message (or messages) to a targeted audience. The term "graphic design" can also refer to a number of artistic and professional disciplines that focus on visual communication and presentation. The field as a whole is also often referred to as Visual Communication or Communication Design. Various methods are used to create and combine words, symbols, and images to create a visual representation of ideas and messages.
Q- WHAT ARE THE DIFFERENT TYPES OF NETWORKING?

Ans: There are three main types of network:

1. LAN
2. MAN
3. WAN

LOCAL AREA NETWORK (LAN):
Definition: “A network which is located entirely on one site such as an office, school or within a group of buildings that are in close area, that are connected together.”

A METROPOLITAN AREA NETWORK (MAN) IS A COMPUTER NETWORK THAT USUALLY SPANS A CITY or a large campus. A MAN usually interconnects a number of local area networks (LANs) using a high-capacity backbone technology, such as fiber-optical links, and provides up-link services to wide area networks (or WAN) and the Internet.

WIDE AREA NETWORK (WAN):
- “A network which connects together computers on a number of sites in different areas”.
- A WAN or Wide Area Network is a group of widely dispersed computers that are connected together. These could be across the same town, or across a country or even across the world”.
- Apart from distance, the other feature that distinguishes as WAN from a LAN is that the WAN would make use of a range of communication technologies such as telephone, microwave and satellite links.
- Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of minutes, without paying enormous phone bills. A WAN is complicated.

Q- WHAT DO YOU KNOW ABOUT NETWORK TOPOLOGY

Ans: Network topology refers to the layout used to wire the computers together.

TYPES OF TOPOLOGY

There are three main topologies that are used.

1. BUS
2. STAR
3. RING

BUS TOPOLOGY

Each computer is connected to a single cable which connects all of the computers. All nodes (file server, workstations, and peripherals) are connected to the linear cable.
Advantages of Bus Topology

- Easy to connect a computer or peripheral to a linear bus.
- Requires less cable length than a star topology.

**STAR TOPOLOGY**

“All communication takes place via a central computer or HUB device.”

A star topology is designed with each node connected directly to a central network hub, switch, or concentrator.

Data on a star network passes through the hub, switch before continuing to its destination. The hub, switch, or concentrator manages and controls all functions of the network. It also acts as a repeater for the data flow.

Advantages of a Star Topology

- Easy to install and wire.
- No disruptions to the network then connecting or removing devices.
- Easy to detect faults and to remove parts.

**RING TOPOLOGY**

Each computer is connected to the two computers on either side of it. The last computer is linked to the first to form a ring.

Advantages of a Ring Topology

- Easy to install and wire.
- Equal Access to devices no one computer will use all the bandwidth
- Easy to detect faults and to remove parts.
Q- WHAT IS MODEM?
A device which convert analog signals to digital signals and digital signals to analog for transmitting data over internet.

Q- WHAT IS WEB BROWSER?
Web Browser is Software used to display the Web pages. Internet explorer is an example of web browser
Here are some types of web browser:
- Internet explorer
- Firefox
- Chrome
- Safari
- Opera

Q- WHAT ARE THE ADVANTAGES OF COMPUTERS IN AN OFFICE ?

Ans: The outstanding advantages of computers are:

(a) It helps in keeping of records and therefore serve as a substitute of filing.
(b) It prepares salary statement of the employees in the organization after processing.
(c) It is helpful to exercise a control over stock, receipts, issue and finding balance of stock.
(d) It is helpful for valuation of stock and thereby leads to financial savings.
(e) It is used for book keeping and accounting records. Ledger accounts and cash books are recorded through computers.
(f) It is helpful for analyzing, comparing and evaluating various projects.
(g) It is helpful to write standard letters and forms.

Q- DESCRIBE THE USE OF COMPUTERS IN INDUSTRY ?

Computers are used in industry in different types of systems. Robots are used to control many complex tasks. A robot is an automatic programmable machine. It moves and performs mechanical tasks. It is used in different applications. Some applications of robots are as follows:

1. Assembling and spray-painting of cars.
2. carrying out maintenance on overhead power cables
3. testing blood samples
4. outer space experimental programs

Computer can be used in industry in the following ways:
1. **AUTOMATED PRODUCTION SYSTEMS**

Many car factories are completely computerized. Cars are assembled by computer-controlled robots. These systems work quickly than human beings and becoming popular.

2. **DESIGN SYSTEMS**

Many products are designed using CAD (computer aided design). Computer programs are used to design the model of a product on the computer. After the design is complete, the actual product is produced.

**Q: WHAT IS THE USE OF COMPUTER-AIDED DESIGN (CAD)?**

Ans: Computer-aided design is used to display designs and build production models using software. It is also used to test these models.

The test is also used to test these models.

1. Compile the parts and quantities lists
2. Outline the procedures for production and assembling of the parts
3. Transmit the final design directly to the machines

CAD is used in designing new cars, aircrafts, bridges and buildings. CAD systems require high-resolution monitors, input devices like mouse, keyboard, graphic tables and scanners. They also require output devices like printers and plotters. CAD systems can display 3-dimensional design of an object.

**Q: WHAT IS THE ROLE OF COMPUTERS IN EDUCATION? WHAT ARE THE BENEFITS OF INTRODUCING COMPUTERS EARLY IN EDUCATION?**

Ans:

Computers have changed the way we work, be it any profession. Therefore, it is only natural that the role of computers in education has been given a lot of importance in recent years. Computers play a vital role in every field. They aid industrial processes, they find application in medicine; they are the reason why software industries developed and flourished and they play an important role in education. This is also why the education system has made computer education a part of school curriculum. Considering the use of computer technology is almost every sphere of life, it is important for everyone to have at least the basic knowledge of using computers. Let's look at what role computer technology plays in the education sector.

**COMPUTERS IN EDUCATION**

Computer technology has had a deep impact on the education sector. Owing to memory capacities of computers, large chunks of data can be stored in them. They enable quick processing of data with very
less or no chances of errors in processing. Networked computers aid quick communication and enable web access. Storing documents on computers in the form of soft copies instead of hard ones, helps save paper. The advantages of computers in education primarily include:

- Storage of information
- Quick data processing
- Audio-visual aids in teaching
- Better presentation of information
- Access to the Internet
- Quick communication between students, teachers and parents

Computer teaching plays a key role in the modern education system. Students find it easier to refer to the Internet than searching for information in fat books. The process of learning has gone beyond learning from prescribed textbooks. Internet is a much larger and easier-to-access storehouse of information.

Q- WHAT ARE THE MAJOR CHARACTERISTICS OF MULTIMEDIA

Ans: Multimedia presentations may be viewed by person on stage, projected, transmitted, or played locally with a media player. A broadcast may be a live or recorded multimedia presentation. Broadcasts and recordings can be either analog or digital electronic media technology. Digital online multimedia may be downloaded or streamed. Streaming multimedia may be live or on-demand.

Multimedia games and simulations may be used in a physical environment with special effects, with multiple users in an online network, or locally with an offline computer, game system, or simulator.

The various formats of technological or digital multimedia may be intended to enhance the users' experience, for example to make it easier and faster to convey information. Or in entertainment or art, to transcend everyday experience

Q- WHAT DO YOU KNOW ABOUT WWW?

Ans: It is a vast collection of information that’s connected like a web. It is accessible through the Internet using connections called hyperlinks. If we want to view the WWW resources through a program called a Web Browser, such as: Netscape Navigator and Internet Explorer

The End