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LONG Questions

Question # 1: What is information technology, describe it applications?

Information Technology:

IT is a broad term which based on computer based technologies which is the combination of software, hardware, user or people, protocols and telecommunication networks. IT includes the concept of:

- High Speed Links
- Global Village
- Role of Information
- Digital Convergence

Information technology is used for computing with high speed communication links like telecommunication network are used to spreads information from one place to another. The communication networks or links are also used to interact with various people in the whole word. For example, the information can be any form like text, sound, images, videos etc. are transmitted to each other use computer network.

Nowadays world has shape to a global village due to advancement in information technology. It means that peoples living in the world know one another as if they are living in a village or town. It has become possible due to fast communication network or links. Information can be forward from one place to another place easily and quickly. Digital convergence means various organizations, industries and institutions are now days merged electronically to exchange information to each other in the form of text, audio, video and text etc.

Applications of Information Technology:

In modern age, information technology has a broad acceptance in all fields of our life. It has brought a big revolution in our life style. We may call it the computing revolution, information revolution or internet revolution. Use of mobile phone, computers, fax machines, fibre optics and satellite links brought a big change in our life style. Some important filed of computer/IT utilization are as follows:

- *Web-Site Based Application:*

  The information on the web is proved by worldwide software programs. These programs are helpful to gain worldwide information. Various types of software application that is available on the web.

- *E Commerce:*

E-commerce means carry out financial transaction and business dealing through internet. We can build our business on international basis.

- *Mobile Commerce:*

  The process of buying merchandizes, goods and services using mobile phone according to interest of users.

- *Image processing or Computer Animation:*

  Image processing is a group of software programs that are used to create , maintain and modify high quality graphical images.

- *Artificial Intelligence:*

  To develop machines i.e. Robotics with humanlike qualities such as learning, reasoning, communicating, seeing and hearing. Expert systems to help persons solving in problems and problem solving.

- *Multimedia and Hypermedia:*

  The collection of graphics animations, audio and video presented by computer is called multi-media. Hypermedia is a process of creating web site written or animations. Multimedia software programs brought a big change in sound creation and movies management.

- *Distributed Computing:*

  In distributed computing, information is created on multiple computers. The process of running one task on multiple computers. The modern enhancement in information technology can also be expressed as computer revolution, information revolution or communication or telecommunication revolution.

Question # 2 Define software, also describe different types of soft wares used today?

Software:

Software is set of instructions use to solve different problems and use for particular tasks and fulfil the user requirements.

Different Types of Soft wares:

Software can be divided into two types:

- System Soft wares

  System software is set of programs required to implement certain functions in a computer system. It controls the operations of a computer system. It also controls the different devices, usage and allocation of resources like software/hardware components. It enables other applications programs to execute properly.

  Software system use for:

  - Built network environment and security.
  - Overall maintenance of computer system.
  - Making printer task and printing queue.
  - Controlling the hardware devices.
  - Saving data on hard disk.

  Examples of System Software are:

- Operating System (like Windows, UNIX, Linux, Mac OS etc.)
- Utility Programs (like Antivirus, disk compression and scan etc.)
- Device Drivers (like Printer, modem, scanner etc.)

- Application Soft wares

  Application software is used to fulfil user requirements, performing different tasks or applications on the computer. It helps a computer user to perform specific tasks like preparing notes or application. It is also known as application package like MS-Word. For example, it provides audio, video and multimedia entertainment to the users.

  Main concept of application software is:

  - User for specific task like preparing presentation.
  - Meet or fulfil user requirements.
  - Use all over the word for performing daily activities.

Type of Applications Software:

- Customized Software

  Customized software is a group of application software that is designed for a particular customer or organization. It is design and developed to meet the exact requirements of a particular customer or company. The cost of customized software is more than packaged software.

  - A software that is developed for a particular university or college (like admission, fee, payroll and accounts etc.) is an example of customized programmers like in software house.
  - Sales/purchase/accounting/ticket reservation system of any company.

- Package Software

  Package software is an application software that is design and developed for sale or demand of the general public, it is also known as off-the shelf software which means not fixed on any place. It facilitates the people to perform day-to-day daily activities. Package software is normally developed by experienced programmers.

  Examples of package software are as follows:

  - Word processors (used for documentation like MS-Word)
  - Datasheet (for calculation and chart comparison like MS-Access etc.)
  - Database (record information like ORACLE and MS-Access etc.)
  - Graphics (for desktop publishing like Adobe photo shop and Corel-draw etc.)
  - Communication programs (like internet explorer, Mozilla etc.)

Question # 3: What are pointing devices, Explain any four pointing devices in detail?

An input device used to control a pointer on the screen is called pointing device. A pointer is a small symbol that appears on the screen in graphical user interface. Some important pointing devices are as follows:

- *Mouse*

  Mouse is a small handy device. Mouse is the most widely used pointing device. It has a ball at its bottom. Mouse is moved on a flat surface to control the movement of the cursor (pointer) on a screen. The mouse is attached

to the computer by a cable or wireless connection. A mouse usually has two or three buttons. These buttons are used to perform different tasks. The mouse contains a small ball at the bottom. The movement of the cursor depends on the movement of ball. A mouse is very easy to use. It is mostly used in graphic applications in GUI (Graphical User Interface). Main functions include:

- Mouse is a small handy device.
- There are two buttons and a wheel at its bottom.
- A mechanical mouse has rubber or metal ball on its underside. Rolling of the ball in certain direction causes the pointer on the screen to move in the same direction mechanical mouse is usually used on a rectangular rubber mouse pad.
- An optical mouse does not contain a ball on its underside. Instead, its uses devices that emit and sense light to detect the movement of the mouse. It does not need the mouse pad.

- *Trackball*

A trackball is a computer cursor control device used in many notebook and laptop computers. The trackball is usually located in front of the keyboard toward the user. Alternative to a mouse is called trackball. It is a variation of mouse. It has buttons same like those on mouse. It has a wheel or rotating ball on the top to mouse. The body of track ball is not moved or rolled. The ball is scrolled or more with fingers. The position of the cursor on computer screen is controlled by rotating the ball. An advantage of the trackballs that it consumes less space to move than mouse. It is less tiring because less motion is needed. Trackball is often included in notebook computer it can also be used as separate input device with standard desktop computers.

- *Touch Pad*

A touch pad is a device for pointing (controlling input positioning) on a computer display screen. A small, plan surface over which the user moves his finger is known as touchpad. The movement of the cursor on the screen is controlled by the movement of the finger. It is also called as track pad. A touch pad also has one or more buttons close to it. This button work just like mouse buttons. Touch pads are usually used with note book computer like Lab. Top computer etc. Main concepts:

- It is a small surface over which we slide our finger to move the cursor on the screen.
- It is commonly find on the portable computer.

- *Joystick*

A joystick normally used in games which contains a base and a stick. The stick can be moved in any direction to move or point to any object across the computer screen. A joystick is an input device that allows the user to control character or machine in a computer program, such as plane in flight simulator. They look similar to the control device you would find on an arcade game, but nearly always include extra buttons for additional functionality. A joystick works same function like mouse or trackball. But it is often considered less efficient, comfortable and useful if used as mouse.

- Cursor motion is controlled by vertical stick or arrow buttons.
- A joystick gives a more natural feeling.
- It is use to move objects on the screen in games.

Question # 4: What are source data entry devices, Explain any four source data entry devices in detail?

Direct data entry to the computer system is called source data entry devices. These devices work more quickly and efficient to input data. The source data entry devices provide methods for entering data in a very quick way and efficiently with signals. The commonly used source data entry devices are as follows:

- Barcode Reader (vertical lines)

  Barcode reader utilizes a laser beam to read vertical line bar codes. Barcode is the vertical zebra-striped marks. A bar code (often seen as a single word, barcode) is the small images of lines and spaces that is affixed to retail store items, identification cards, and postal mail to identify a particular product number, person or location. Barcode reader is identification. It sis mostly found on different manufactured products in the market.

- Mark and character Recognition Devices
  - Magnetic-Ink Character Recognition Reader (MICR)

    Magnetic-Ink Character Recognition, MICR is a font capable of recognition using magnetically charged ink. Computers equipped with the right hardware and software can print or read the character printed in such ink. MICR font is commonly used to print checks, deposit slips, mortgage coupons, etc. MICR stands for Magnetic-Ink Character Recognition Reader. It contains magnetically encoded information. It is used to read data or text mentioned with magnetized ink. It is normally used in banks for check processing for cash. MICR characters are placed at lower-left edge of each check. These MICR characters represent check number, bank number and account number and branch code information.

  - Optical Mark Recognition (OMR)

    Optical Mark Reading or Optical Mark Recognition, OMR is the process of gathering information from human beings by recognizing marks on a document. OMR is accomplished by using a hardware device (scanner) that detects a reflection or limited light transmittance on or through piece of paper. OMR allows for the processing of hundreds or thousands of physical documents per hour. For example, students may recall taking tests or surveys where they filled in bubbles on paper with pencil.

  - Optical Character Recognition (OCR)

    Optical Character Recognition Optical Character Reader, OCR is the process of taking am image of letters or typed text and converting it into data the computer understands. A good example is companies and libraries taking physical copies of books, magazines, or other old printed material and using OCR to put them onto computers. While far from perfect, OCR is currently the best method of digitizing typed pages of text.

  - Magnetic Strip (magnetically encoded data)

    Magnetically encoded data on back side of card is called Magnetic strip card. The magnetic strips are available in many plastic cards. The magnetic strips are available in many plastic cards such as personal identity strips are available in many plastic cards such as personal identity cards. The magnetic strip can contain or store the personal details cards. The magnetic strip can contain or store the personal details of the card holder. It can be used to retrieve secure information such as (debit card etc.)

Question # 5: Explain features and types of display screen in detail?

Display Screen:

As the name suggest a screen which shows some display is known as a display screen, it is also known as CRT, monitor or simply screen, it is also known as CRT, monitor or simply screen. It is used to show soft copy output. There are different types of display screens, these are distinguished on the basis of the following features:

Size:

Monitors are exits in market of different sizes. The standard monitor for personal computers is 14 to 19 inches and size of the monitors and size of the monitor is measured diagonally.

Color:

Many display screens display output in multiple colors. The RGB display can create 256 colours and thousands of variations of these colors. RGB stands for Red, Green and Blue. Some display output in single color. Single color display screen is called monochrome. Monochrome display screens show images in a single color usually white, green, blue and red or ember. However, monochrome monitor can display different shades of one color.

Resolution:

Almost all characters and images like pictures are shown on the screen are made of pixels or dots. Resolution means sharpness of a monitor is the number of pixels on the screen. It is the image sharpness of a display screen. Maximum number of pixels means sharper image.

Dot Per Inch:

The distance between one pixel on the screen and its next nearest pixel is known as dot pitch. The smaller gap between the pixels, the sharper the displayed image will be. To minimize eye fatigue, a monitor with a dot pitch of 2.28 mm or minimum should be used.

Refresh Rate:

The images are drawn on the screen and as an electron bean moves back and forth the back of the screen and causes pixels on the screen to glow. These pixels, however, glow for a fraction of a second before beginning to fade. The monitor thus redraws the picture many times per second so the images does not face. This is called refreshing. The speed with which monitor redraws images on the screen is called refresh rate. A high-quality monitor should provide a refresh of at least 75 hertz.

Question # 6: Explain various types of impact and non-impact printers used today in the market?

Impact printers:

Impact printer has same working mechanism as of a typewriter. It prints characters, pictures, images by striking a print hammer or wheel against an inked ribbon.

Types of Impact Printer:

- Dot Matrix Printer

  Dot matrix printing or impact matric printing is a type of computer printing which use a print head that moves back-and-forth, or in an up-and-down motion, on the page and prints by impact, striking an ink-soaked cloth ribbon against the paper, much like the print mechanism on a typewriter. However, unlike a type writer or daisy wheel printer, letter is drawn out of a dot matrix, and thus, varied fonts and arbitrary graphics can be produced.

- Daisy Wheel Printer

A type of printer that produces letter-quality type. A daisy-wheel printer works on the same principle as a ball-head typewriter. The daisy wheel is a disk made of plastic or metal on which characters stand out in relief along the outer edge. To print a character, the printer rotates the disk until the desired letter is facing the paper. Then a hammer strikes the disk, forcing the character to hit an ink ribbon, leaving an impression of the character on the paper. You can change the daisy wheel to print different fonts.

- Line Printer

  A line printer is an impact printer which makes use of a continuous feed of paper and prints one line of text at a time. Although they have been replaced in most instances by high-speed laser printers, they are still used in some business as they are low cost and have the ability to print on multipart forms. Line printer is a speedy impact printer due to its printing entire line at a time than other impact printers. Its speed is measured in lines per minute.

Non-Impact Printers:

A non-impact printer used some technology to prints characters and graphics and graphics on a piece of paper without striking the paper. Spray ink, heat and pressure are different methods used to create images. These printers are faster than impact printer.

Types of Non-Impact Printers:

- Laser Printer

  Laser printers are non-impact printers. It works same as a photocopying machine. The laser printer creates image on the paper by laser beam. LASER stands for Light Amplification by Stimulated Emission of Radiation. Laser throws magnetic material powder on paper in the form of microscopic dots. The density of these dots ranges from 300 to 2000 Dots Per inch (DPI). When printing a document, laser printers process and store the entire page before when they actually print it. To store a page before printing, a certain amount of memory is provided in the laser printers.

- Inkjet Printer

  In the inkjet printing mechanism, the print head has several tiny nozzles, also called jets. As the paper moves past the print head, the nozzles spray ink onto it, forming the characters and images. An ink-jet printer is a type of non-impact printer which use spray jet. These types of printers can print characters and graphics by spraying tiny drops of liquid ink on paper and printers generate quality text and graphics in both black-and-white and colour image. The print mechanism of inkjet printers consists of a print head that spray very fine drops of ink. Each drop prints a dot on the paper. These dots are extremely small. The dots are positioned very precisely. A combination of these dots is creating a character of an image.

- Thermal Printer

  A thermal printer, thermal transfer printer, or thermal wax-transfer printer is a printer invented by Jack Kilby that uses thermal wax ribbon to melt coloured wax on paper for a photo print. Thermal printer is a type of non-impact printer in which fine heated pins form characters on heat-sensitive paper. They use colour waxes and heat to produce images by burning dots on special paper. The colour wax sheets are not required for black- and-white output, it uses as colour printing.

Question # 7: What are plotters, describe different types of plotter in detail?

The plotter is a computer printer for printing vector graphics. It is used to produce image-quality graphics in a various colour. A plotter produces a special hard copy output devices used to produce plotters high-quality graphics in many colours. And these are used to create graphics, maps, architectural drawings and charts.

Flatbed Plotter:

A flatbed plotter is a computerized plotter that works by using an arm that move under the arm as with a drum plotter. Flatbed plotter is used to draw or create images by placing paper on table. It consists of various colour pens for drawing images. The paper is placed on straight table-like surface. Software instructs the pens to move down on the paper. The pen closes to moves on the paper for creating or drawing images. Many flatbed plotters have one or more pens of various colours and widths.

Drum Plotter:

A drum plotter is a type of printer typically used to produce graphics such as architectural blueprints created with CAD applications. The drum plotter uses a drum to move the paper left and right while one or more pens draw up and down. Drum plotter contains a rotating drum or cylinder to draws lengthy drawing with more speed. The drawing pens are placed on the drum. The pens move towards left and right as the drum rotates. This movement creates the required text, shapes or images. The benefits of drum plotter are that the size of the plot is not limited. Lengthy roll paper can be used to draw very lengthy images. The width of text material or graphics depends on the width of the drum for drawing images.

Question # 8: What is SDLC? Describe its different phases in detail?

SDLC can be elaborated as System Development Life Cycle. It is well defined set of ways for developing successful systems. It improves the quality of a system. SDLC consists of different phases. These phases are as follows:

- Preliminary Investigation

  The first phase of SDLC is preliminary investigation. It is a phase in which system is investigated to solve initial problems. This phase is used to conduct a starting analysis and findings of the system as follows:

  - System Identification (area of problem)

    This phase is used to extract the need for a new system need by the organization. The system problem is identified at that stage. It is very important factor or step because everything happened in future depends on this definition and identification of system problem.

  - System Scope (to solve up to which extend)

    The scope of the system is also explained at this stage. A system can be reduced in its scope by facing financial, political or time factor problems.

  - Alternative Solutions

    In this phase, analyst is used to find out alternate solutions for developing the system and providing system solution. There may be solution only best available solutions must be used. The better way to get information by taking interview the concerned people in the organization.

  - Feasibility Study (measure every cost factor)

A feasibility study is use to find out whether the proposed system is possible correct, affordable and acceptable for the organization whether organization accepts or reject. The financial, political, social and time consuming constraints must be considered during this study.

- Preliminary Plan (starting plan)

  The final step of first phase is to submit all finding in written form for approval. It is also known as feasibility report. It is normally submitted to the top managers of organization. They take decision about the system by studying this report. They may accept the report, suggest modifying it or may completely reject it.

- System Analysis

  This is the phase is which working or current business system is studied in detail to find out how the system is working and how to improve it. The analyst conducts the following activities:

  - Need Analysis

    In this phase, analyst used to requirements analysis for developing new system. The analyst used different techniques to get all requirements of the development of new system from users, managers and directors. The developed phase should satisfy all requirement.

  - Data Gathering techniques

    The technique to capture the data is known as Data Gathering Technique. These are used to get detailed information about the system.

    - ✓ Written Documents

      Written documents of the company are important source of requirements information for the analyst to develop a new system. The analyst studies these documents, in detail to find out limitations of the system. The reports, forms, memos, business plans, policy statements and organization charts are important means of source documents for getting information for new system.

    - ✓ Interviewing

      Interviewing is a technique used by an analyst to get information from manager department heads and function heads like directors. The analyst asks question to understand the problem and nature of the desired solution of the new system. The questions help to find the overall objectives of the system to get better understanding of the system.

    - ✓ Questionnaires

      A questionnaire is a research method consisting of a series of questions and other prompts or quick technique for the purpose of gathering information. Questionnaires are used to collect information from a large number of people.

    - ✓ Observation

      Observation is a process of seeing or observing the people while they do work. Observations used to help the analyst in finding problems that exist in the current system.

- ✓ Sampling

  When is system is to be develop for a large organization then information about selected users and organisational units collected. Selection of the users and units from where data is to be collected is called sampling. Give samples to person for getting system requirements.

- Data Analysis

  Data analysis is a process of ensuring the accuracy, integrity and availability of data in the system. Many tools are used to keep data in proper shape. Some tools are data flow diagram, flowcharts, connectivity diagram, grid charts and decision tables.

- Analysis Report

  At the end, analysis report is generated for the system analysis phase. This report is posted to the top management for review. It can have following things:

  - ❖ It must explain the current or working system.
  - ❖ It should explain the requirements and recommendations for new system.

- System Design

System design phase is used to represent logical design (structure) and physical model (equipment) of new system. The system design states how new system will meet the requirement identified in analysis phase.

- Logical Design

  Logical design describes how to build structure capabilities of the new system. It checks system requirements and suggestions for the major system components. MS Project Gantt chart and PERT chart some commonly used tools for preparing logical design. CASE tools and project management software is used in the phase.

- Physical Design

  Physical design explains how the planned or proposed system will offer the capabilities specified in the logical design. It specifies the following:

  - ❖ Output Requirements
  - ❖ Input Requirements
  - ❖ Storage Requirements
  - ❖ Processing Requirements
  - ❖ System Control
  - ❖ Backup and Recovery Procedures

- Report

  At the end of this design phase a detailed report is generated. It is submitted to the higher or top management (like directors) for approval.

- System Coding

In this phase, actual purposed system is developed. It consists of writing areas, segments and programs. These segments are combined together at a later stage. This phase requires a lot of time, effort and budget to develop the complete system. Single programmer or a team of Programmers or software house use to develops the system using different tools.

- System Testing

  Complete testing of the system is very important. It is essential to detect errors or problems before using the system. A system can be tested in two stages:

  - Unit Testing (one module testing)

    Unit testing described as single module testing. In this stage, one unit/module of the system are tested by using sample data of organization.

  - System Testing (all modules testing)

    System testing described all modules are combined to make system are complete tested at a time.

- System Implementation

  In this phase, entire system can be copied or implemented after it has been tested. It is also known as system implementation or conversion. It can be performed in any of the following ways:

  - Parallel Conversion or Implementation

    In this implementation both new and old system work at a time for specified period of time. It is called parallel conversion.

  - Pilot Conversion or Implementation

    In this type of implementation one part/department of the organization uses the new system and the remaining part/departments of the organization runs the old system, when, the one department is satisfied with the new system the rest of the parts of organization can use it.

  - Phased Conversion or Implementation

    Types of conversion in which one by one conversion is done on individual part or components of the new system are called conversion.

  - Direct Conversion or Implementations

    Old system is directly replaced by the new system in this type of implementation. A direct conversion is risky but might be necessary in some situations like time is shortage of time. It is known as crash conversion.

- System Maintenance

  Once the system is in place, its functioning is monitored and corrective measures are taken to ensure that it fulfils its objectives. This is known as system maintenance. It is an ongoing process and it includes:

  - ✓ Providing support to users
  - ✓ Correction of errors

- Updating of system over time.