SYSTEM ENVIRONMENT

Question 1. ***What do you mean by information system and what is its importance to the organization?***

Answer:

- Information system is a collection of components working together to provide information to people in an organization.
- There are many people working in an organization. Similarly, there are many other people interacting with the organization.
- All such people need information about the system.
- The information provided to such people should be meaningful and should serve the purpose of making the organization work in a way that is beneficial to it.
- The information system provides such information.
- Hence, we can say that information system is important to an organization because it performs the task of providing the required information to the people requiring it.

Question 2. ***How many types of information system are there in an organization?***

Answer:

There can be various kinds of information systems in an organization. Some of them are:

i. Transaction Processing system

- Computer programs that can be used to allow people to access the database, make any necessary changes to it and use them to initiate a further transaction are called Transaction Processing Systems (**TPS**).
- The transaction processing system provides responses to the user as the transaction progresses through the system.
- Any errors and inconsistencies, as well as the result of the final updated database, are reported.
- Responses can be provided in a number of ways, depending upon the transaction system mode. Transactions can be input in on-line or batch mode.

ii. Management Information System

- Management Information System (**MIS**) takes relatively raw data available through a TPS and converts them into a meaningful aggregated form that managers need in order to conduct their responsibilities.
- Developing an MIS requires good understanding of what kind of information managers require and how managers use information in their jobs.
- For this it is important to draw on data from various subject areas and hence developing a comprehensive and accurate model of data is essential in building an MIS.

iii. Decision Support System

Decision support systems assist groups to make complex decisions. Some decisions require an optimization algorithm, while many decision support systems are experimental in nature, where the user tries different inputs to see their effects. A third kind of decision is one of policy nature where one develops alternate positions and then justifies them by

argumentation. Decision support usually assumes asynchronous interaction, although there can be some advantage in synchronous discussion to resolve conflicts.

iv. Expert System

An Expert System (ES) attempts to manipulate knowledge rather than information. Users communicate with an ES through an interactive dialogue. The ES asks questions (that an expert would ask) and the end user supplies the answers. The answers are then used to determine which rules apply and the ES provides a recommendation based on the rules. The focus while developing an ES is on acquiring the knowledge of the expert in the particular problem domain.

v. Office Automation System

Office Automation (OA) Systems support the wide range of business office activities that provide for improved workflow and communication between workers, regardless of whether or not those workers are located in the same office. Office Automation functions include word processing, electronic messages, work group computing, fax processing, etc. OA systems can be designed to support both individuals and work groups.

Question 3. ***What do you know about methods and tools to build an information system?***
Answer:

- Methods and tools are used to build a system effectively.
- System development methodology defines a set of steps followed to build the systems.
- It also provides a variety of supporting methods and tools.
- It includes modeling methods used to produce models that help us to understand the system and its requirements and then to develop system specifications and are primarily used in analysis.
- Productivity tools that help people develop models and convert them to working systems are also available.
- It is always necessary to choose the right methods and tools to build a quality system.

Question 4. ***What are the different approaches based on the methods for developing the system?***
Answer:

The different approaches based on methods for developing the system are:

i. Prototyping

Prototyping is an iterative process of systems development in which requirements are converted to a working system that is continually revised through close work between an analyst and users. In other words, building a scaled down but functional version of a desired system is called prototyping. A prototype can be developed with some fourth-generation languages, with the query and screen and report design tools of a database management system, and with Computer-Aided Software Engineering (CASE) tools. Prototyping is a form of rapid application development (RAD).

ii. Joint Application design

Joint Application Design (JAD) is a structured process in which users, managers and analysts work together for several days in a series of intensive meetings to specify or review system requirements. Because of bringing the people directly affected by the system in one place and time, time and organizational resources are better managed. Also, group members develop a shared understanding of what the system is supposed to do.

iii. Participatory design

Participatory Design (PD), the end users of the system and improvements in their work is given central focus. PD may involve either the entire user community or an elected group of users in the development process. The organization's management and outside consultants provide advice rather than control.

Question 5. ***How is system structure defined with the view of Information System?***

Answer:

- System structure defines the boundary of the system and the environment in which the system works.
- System boundary defines the components that make up a system.
- Anything outside the system boundary is the system environment.
- Within the system boundary there can be a number of subsystems, which carry out parts of the system function.

The system structure of an information system can be viewed as a collection of people, process and data.

- **People**

  The information produced by information systems is used by people in the organization in their everyday activities, such as in making decisions.
- **Process**

  In order to support the user activities and the interaction between the various users, information systems include processes that ensure that the right people receive the right information at the right time. These processes determine what is to be done with data as it enters and passes through the system.
- **Data**

  Data in used in the information systems for generating meaningful information. Data is stored in various equipments such as hard disks. Similarly, data needs to be transferred from one place to another through communication links.

Question 6. ***Describe Centralized system.***

Answer:

- In a centralized system, users are connected to a computer system through terminals or workstations.
- The computer system supports a number of databases.
- The computer system contains the program that allows the users to access the database.
- Many centralized systems support structured processes made up of a predefined sequence of steps.
- An example of centralized systems is data warehousing and data mining.
- ***Data warehousing*** refers to maintaining a central repository of records.
- Access to historical information that helps analysts to study patterns in past activities is called ***data mining*****.**

Question 7. ***Describe distributed system.***
Answer:

- In distributed systems, more than one computer systems are connected together to form a computer network.
- A significant amount of computation can be carried out on the workstation itself.
- An example of distributed systems is the client-server systems, where the workstation is known as the client and the computer system is known as the server.
- The server stores the data commonly used by its connected clients as well as common programs for the users.
- The computation on the data can either be carried out on the server and the result returned to the client or it can be carried out on the workstation by using the data and program sent by the server on request.

Question 8. ***Why is system analysis necessary?***
Answer:

- System analysis refers to analyzing how the system works and what its needs are.
- It takes place when new systems are being built or existing ones are changed.
- System analysis is necessary because it identifies what is possible and how the new system will work.
- This includes gathering the necessary data and developing models for the new system.
- Its crucial role is in defining user requirements, which is a statement of what the users of the system need from the system.

Question 9. ***What qualities should a system analyst have? How would you acquire these qualities?***
Answer:

- System analysts are people who analyze the way the existing system works and find out what its problems are.
- In order to perform the task of system analysis effectively, system analysts should possess a number of qualities. Such qualities are:

i. <u>Analytical skills</u>

Analysts should be able to analyze the system properly. For this

- Analysts should be able to develop a proper system thinking
- They should have adequate organizational knowledge
- They should be able to identify problems in the existing system
- They should be able to analyze the problems and propose ways for solving them

ii. <u>Technical skills</u>

In order to develop computer-based information systems, analysts should have the technical knowledge about computers, data networks, database management systems, operating systems, etc.

iii. <u>Management skills</u>

System analysts are almost always members of project teams and are frequently asked to lead teams. So, they need to have management skills to lead teams properly. For this they should be able to perform the following management tasks effectively:

- Resource management

- Project management
- Risk management
- Change management

iv. Interpersonal skills

System analysts need to work with all types of people during analysis. They must interact with users of the system too find out what they need in the new system. Similarly, they need to interact the management of the organization. For proper interaction with the various kinds of people, system analysts should have the following interpersonal skills:

- Communication skills
- Skill to work alone or with a team
- Skill to facilitate groups
- Skill to manage expectations

Some of the ways to acquire these qualities are:

- Reading trade publications
- Joining professional societies
- Attending classes
- Attending professional conferences
- Participating in electronic bulletin boards, news groups, etc.
- Taking every opportunity to practicing speaking for developing communicational kills, this involves activities such as speaking to civic organizations.
- Taking classes on business and technical writing from colleges and professional organizations.

Question 10. ***What are the characteristics of personal system?***

Answer:

Personal systems are simple computer-based systems that support one person only to keep track of his records. The characteristics of a personal system are:

i. **Components:** It has components, or subsystems, made up of people, process and data. A personal system has only one computer where all the data and programs are stored, and only one person is supported.

ii. **Inter-related components:** The various components are inter-related, that is, the function of one subsystem is somehow related the functions of the others.

iii. **A purpose:** The system, like all other information systems, has a goal or purpose that defines exactly what the system is supposed to do.

iv. **A boundary:** It has system boundary, which defines the set of components that can be changed during system design.

v. **An environment:** It has a system environment, which defines anything outside the system boundary.

vi. **Interfaces:** It has interfaces for allowing the users interact with the system.

vii. **Input:** it tales certain inputs for carrying out the necessary computations and data manipulations.

viii. **Output:** it gives certain outputs depending upon the input provided and data-manipulations carried out.

ix. **Constraints:** it has certain constraints within which it has to work..

x. **Feedback:** Feedback is used to monitor the current system and compare it to the system goal, to see if any variations exist. If yes, the variations are used to ensure that the system meets its goals.

The various processes involved in building information systems

There are mainly three processes involved in the development of information systems. They are:

i. Development process

- Development process is a set of steps used to build a system.
- During development, first a concept is built about what is to be developed.
- Then a detailed requirements specification is prepared and the system is developed so that it meets the requirements specified in the requirements specification.
- There are various methods and tools used in the development process.

ii. Management process

- It includes the tasks required to manage a development process.
- It is mainly concerned with organizing the work, ensuring that adequate resources are made available and monitoring the process of the work.
- Organizing people involves selecting proper analysts, programmer and computer operators.
- Monitoring the development work involves testing the new system against the users' needs.

iii. Supporting process

It is a process to provide facilities needed by development teams. It includes

- Ensuring that the equipments necessary for developing the system is provided
- Facilitating teamwork and communication to ensure that all team members are aware of each other's activity so as to avoid overlap and unnecessary delays and to ensure that everyone is working towards the same goal.
- Keeping track of design documents, so that the team members always have the latest documents.