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Ans to the ques No-1

system design is the process of defining the architecture, Components, modules, interface, and data for a system to satisfy specified requirements. It involves transforming user requirments into an architecture and design that can be implemented to fulfill those requirments. In other words - its about planing the structure of a system to accomplish specific goals.

Differences between system analysis and system design Absolutely, let's dive into the distinctions between system analysis and system design.

1. Focus: * System Analysis: primarily concentrates on understanding the requirements and constraints of the system.
* System Design: shifts the focus towards devising a solution the meets the requirements gathered during the analysis phase.

2. Activities: * System Analysis: Involves activities such as requirements gathering, stakeholder, interviews, feasibility studies, and creating requirement specifications.

* System Analysis : Design: Involves activities such like architectual design, Component specification, interface design, and data modeling.

3. Timeframe:

* System Analysis: Typically occurs early in the project lifecycle, laying the foundation for Subsequent design, and data modeling and development phases.

* System Design: Follows system analysis and proceeds system implementation. It involves translating requirements in to a structured plan for implementation.

4. Purpose:

* System Analysis: Aims to define the problem and scope, ensuring that the proposed system will address the identified needs and deliver value to Stakeholders.

* System Design: Aims to provide a detailed Solution to the identified needs and deliver problem, ensuring that the system is well-structured, scalable and meets performance requirements.

Ans to the ques No:- 2

A "System" typically refers to a set of Connected part or elements the work together to achieve a particular goal or function.

Types of Systems

Systems can be classified in various ways based on their characteristics, function, or properties, Here are Some common types of systems.

1. Physical Systems: These are Systems that exist in the physical world and can be touched or sensed. Example include mechanical systems (e.g. a car engine), biological systems (e.g, the human body).

2. Abstract Systems: These systems are Conceptual and my not have a physical presence. Examples include mathematical Systems (e.g, number systems), information systems (e.g, databases).

3. Open systems: open systems exchange both energy and matter with their their environment. They are influenced by and in turn influence their surroundings. Living organisms are classic example of open systems.

4. Closed Systems: closed systems do not exchange matter with their environment, but they may exchange energy. An example is a sealed terrarium where only energy (such as sunlight) enters and exits.

Define System models: System models are representation of systems, wherethere they are physical, conceptual, or abstract. These models are designed to aid in understandin, analyzing, predicting, or controlling the behavior of the system under consideration.

key characteristics of system models include.

1. Components: Identifying the elements or parts or part that make up the system. These components can be entities, Processes, variables, or othe relevant factors.
2. Relationship: Describing the interactions and dependencies between the components within the system. This includes understanding how changes in one part of the system can affect other parts.
3. Representation: Using various tools and techniques to represent the system in a structured manner. This can includes understanding how changes in one part diagrams, simulations, or conceptual frameworks.

Ans to the ques No- 3

A Data flow Diagram (DFD) is a graphical outside representation of the flow of data within a system, illustrating how data moves between processes data stores, and external entities.

Here's a breakdown of the key elements and types of DFDs:

Elements of a DFD:

1. External Entities: These are entities outside the system being modeled that interact with the system by providing inputs or receiving outputs. External entities are represented by rectangles in a DFD.

2. Processes. Processes represent the transformation or manipulation of data within the system. They are depicted by circles or ovals in a DFD.

3. Data Flows: Data flows represent the movement of Data between external entities, Processes, and data stores. They are depicted by arrows in a DFD.

4. Data Stores: Data stores represent repositories of data within the system. Data stores are typically represented by rectangles with two parallel lines at the sides in a DFD.

Types of DFDs:

1. Context Diagram (Level 0 DFD): This is the highest-level view of the system, showing the interactions between the system and external entities. It provides an overview of the system without delving into its internal processes.

2. Level 1 DFD: Level 1 DFDs expand upon the processes shown in the context diagram, breaking them down into more detailed subprocesses. Level 1 DFDs provide a more detailed view of the system's internal workings.

3. Lower-level DFDs: If further detail is needed, lower-level DFDs can be created for each process in the level 1 DFD. These lower-level DFDs provide increasingly detailed views of specific subprocesses within the system.

Ans to the ques No-4

Bottom-up strategy advantages and Disadvantage:

Sure, here are the advantages and disadvantages of the bottom-up strategy:

Advantages:

1. Detailed understanding: Bottom-up-strategies allow for a detailed understanding of the system or problem at hand. By starting from specific elements and gradually building up, analysts gain insights in to the intricacies of the system.

2. Incremental Development: Bottom-up approaches enable incremental develoment, where smaller components or moduls are developed and tested independenty before being integrated into the larger system.

3. Flexibility: Bottom-up-strategies are flexible and adaptable. They allow for changes to be made at lower levels without necessarily impacting higher-level components, providing agility in responding to evolving requirements or unexpected challenges.

4. Difficulty in managing complexity: As the system grows in complexity, managing the interactions and dependencies becomes more challenging. This can lead to increased complexity and potential maintenance issues.

Objectives of using structural flowcharts.

Structural flowcharts, also know as hierarchy charts or top-down charts, are graphical representation of a system's structure of organization. The objectives of using structual flowcharts include.

1. Visualization of system structure: Structural flowcharts provide a visual representation of the hierarchical structure of a system. The visualization helps stakeholders understand the overall architecture of the system.

2. Identification of components:

By breaking down the system into smaller components or modules, structural flowcharts help identify the identify the individual parts that make up the system. Each component is represented as a separate entity in the flowchart, making it easier to analyze and manage.

3. Clarification of Relationships:

Structural flowcharts depict the relationships between different components or modules within the system. Clear visualization of these relationships helps stakeholders understand the flow of information or control within the system.

4. Hierarchy Reppesentation:

Structural flowcharts use hierarchical structures to represent the organization of the system. This hierarchy helps stakeholders understand the relative importance and dependency of different components within the system. Components higher in the hierarchy typically ~~had~~ have broader scope and greater control over lower-level components.