

Victoria University of Bangladesh
Dept. of Computer Science & Engineering
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Course title: - System Analysis and Design
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Ans to the Q no - ②

System design: - System design refers to the process of creating a detailed plan or blueprint for the architecture, components, and functionality of a software or hardware system. It involves making decisions about how different parts of the system will interact and work together to achieve the desired goals.

Inputs to system design: -

Requirements: Detailed specifications and functionalities that the system must fulfill.

Constraints: - Limitations or restrictions on the system's design, such as hardware limitations, budget, time, etc.

User feedback: - Input from potential users or stakeholders regarding their needs and expectations.

Outputs from system design: -

System architecture: - High-level structure of the system, including components, modules, and their interaction.

Detailed design: - Specific design decisions for each

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Component, including data structures, algorithms and interfaces.

Data Flow Diagrams:- Visual representations of how data moves through the system.

Ans to the Q no - (2)

Structured analysis and structured design:- (SA/SD)

is a diagrammatic notation that is designed to help people understand the system. The basic goal of SA/SD is to improve quality and reduce the risk of system failure.

Advantages of SA/SD:-

- ① Clarity and Simplicity:- The SA/SD method emphasizes breaking down complex systems into smaller, more manageable components, which makes the system easier to understand and manage.
- ② Better communication:- The SA/SD method provides a common language and framework for communicating

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the design of a system, which can improve communication between stakeholders and help ensure that the system meets their needs and expectations.

② Improved maintainability:- The SA/SD method provides a clear, organized structure for a system, which can make it easier to maintain and update the system over time.

④ Better testability:- The SA/SD method provides a clear definition of the inputs and outputs of a system, which makes it easier to test the system and ensure that it meets its requirements.

Ans to the Q no-③

Analysis ~~principle~~ model:- Analysis model is a technical representation of the system. It acts as a link between system description and design model.

Objectives of analysis modeling:-

④ It must establish a way of creating software design.

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- ④ It must describe the requirements of the customer.
- ⑤ It must define a set of requirements that can be validated, once the software is built.

Elements of Analysis modeling:-

Data dictionary:- A data dictionary is a centralized repository for software data objects, crucial for analysis models and modeling defined during software requirements.

Entity Relationship Diagram:- ERD is a tool used for data modeling, illustrating the relationship between data objects and their attributes, providing a foundation for data design activities.

Data flow diagram:- DFD illustrates data transformation functions, providing additional information for information domain analysis and function modeling. It enables engineers to develop functional and information domain models simultaneously.

State transition Diagram: - The state transition diagram illustrates a system's behaviors, transitions, and consequences of external events, presenting states and events that cause changes and describing actions taken due to specific events.

Process specification: - The process specification includes a data flow diagram describing each function's input, algorithm, output, performance characteristics, and layout constraints, along with regulations, barriers, and layout constraints affecting implementation.

Control specification: - Control specification stores software control aspects, indicating behavior, invoked processes, and detail of event management processes.

Data object description: - The data object description stores and provides comprehensive information about a data object used in a software system, including its attributes and details in the Entity Relationship Diagram.

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Ans to the Q. no-4

Advantage of Bottom-up strategy:-

- ① It allows for the development of specific solutions to specific problems, rather than relying on pre-conceived or abstract ideas. This can lead to more practical and effective solutions.
- ② It is a more incremental and incremental approach, which can make it easier to implement and test changes.
- ③ It can be more flexible and adaptable, as it allows for the incorporation of new information and the modification of solutions as needed.
- ④ It is ~~more~~ often more efficient, as it focuses on the most fundamental and necessary components first, rather than trying to build a complete system all at once.

Disadvantage of Bottom-up Strategy:-

There are a few disadvantage of bottom-up strategy:-

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- ④ It can be more time consuming
- ④ It can be inflexible.
- ④ It may not always be the most efficient method.
- ④ It can be difficult to co-ordinate.

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