Introduction to System Analysis and Design

System analysis and design is a crucial process that involves understanding the needs of a system and creating a blueprint for its development. It helps ensure that a new or improved system is effective, efficient, and meets the requirements of its users.

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System Development Life Cycle (SDLC)

1 Planning

1 Planning

The planning phase defines the scope, goals, and requirements of the project.

2 Analysis

The analysis phase involves gathering and analyzing requirements to understand the current system and identify areas for improvement.

3 Design

The design phase outlines the system's architecture, functionalities, and user interface.

4 Implementation

The implementation phase involves building the system based on the design specifications.

5 Testing

The testing phase ensures the system meets its requirements and functions as intended.

6 Deployment

The deployment phase involves releasing the system to users and making it operational.

7 Maintenance

The maintenance phase involves ongoing support, updates, and enhancements to the system.

Requirement Gathering and Analysis

Requirement Gathering

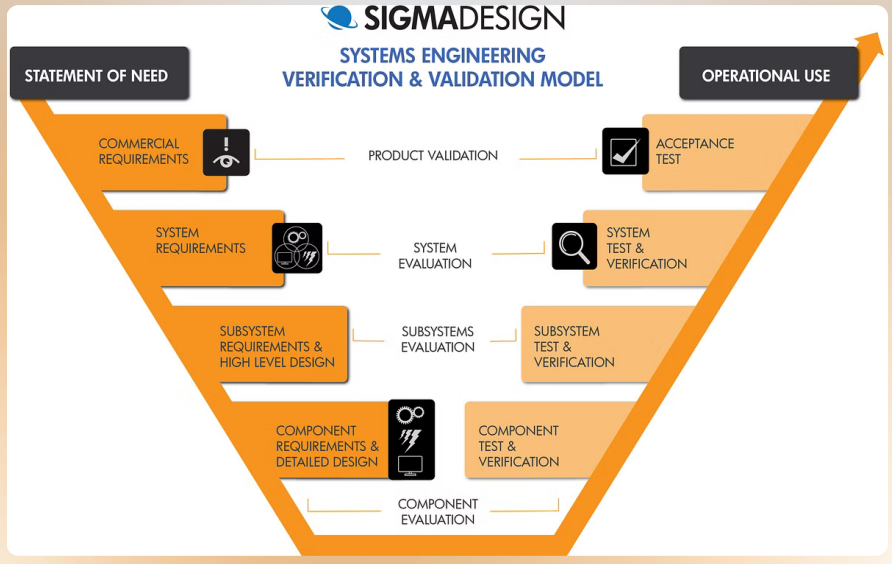
Requirement gathering involves understanding the user's needs and the business goals that the system should fulfill. This is often done through interviews, surveys, and observation.

Requirement Analysis

Requirement analysis involves documenting and validating the gathered requirements to ensure they are clear, consistent, and feasible.

Requirement Validation

Requirement validation ensures that the gathered and analyzed requirements



System Design and Modeling

Logical Design

The logical design defines the system's functionalities, data relationships, and user interactions.

Physical Design

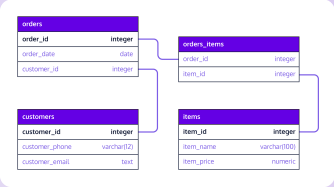
The physical design specifies the hardware, software, and network infrastructure required to implement the system.

Modeling

Modeling involves creating diagrams and representations of the system to visualize its architecture, data flow, and user interactions.

Prototyping

Prototyping creates a working version of the system to test its functionalities and gather user feedback.



Database Design

1

Data Modeling

Data modeling involves defining the data entities, attributes, and relationships in the database.

2

Schema Design

Schema design specifies the structure of the database, including tables, columns, and data types.

3

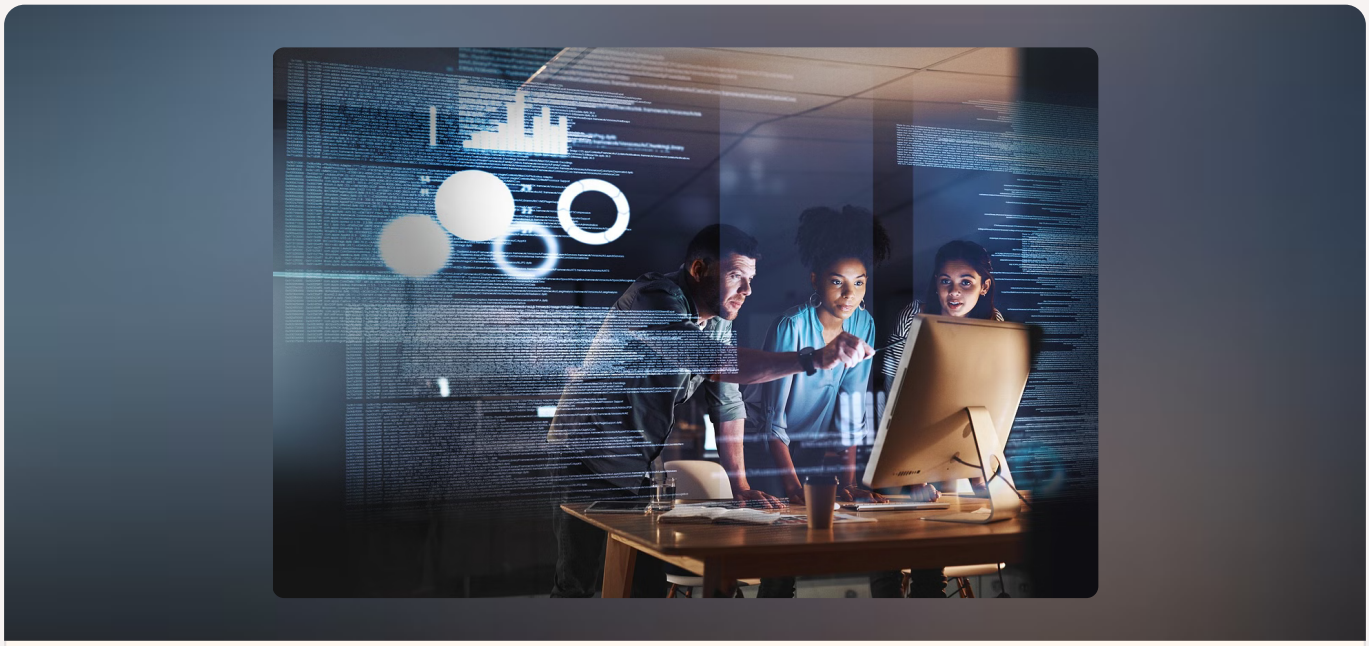
Normalization

Normalization ensures that the database is structured efficiently and avoids data redundancy.

4

Security

Database security measures protect the data from unauthorized access and ensure its integrity.



Implementation and Testing

1. ## Coding

   Coding involves translating the design specifications into code using programming languages.

2. ## Unit Testing

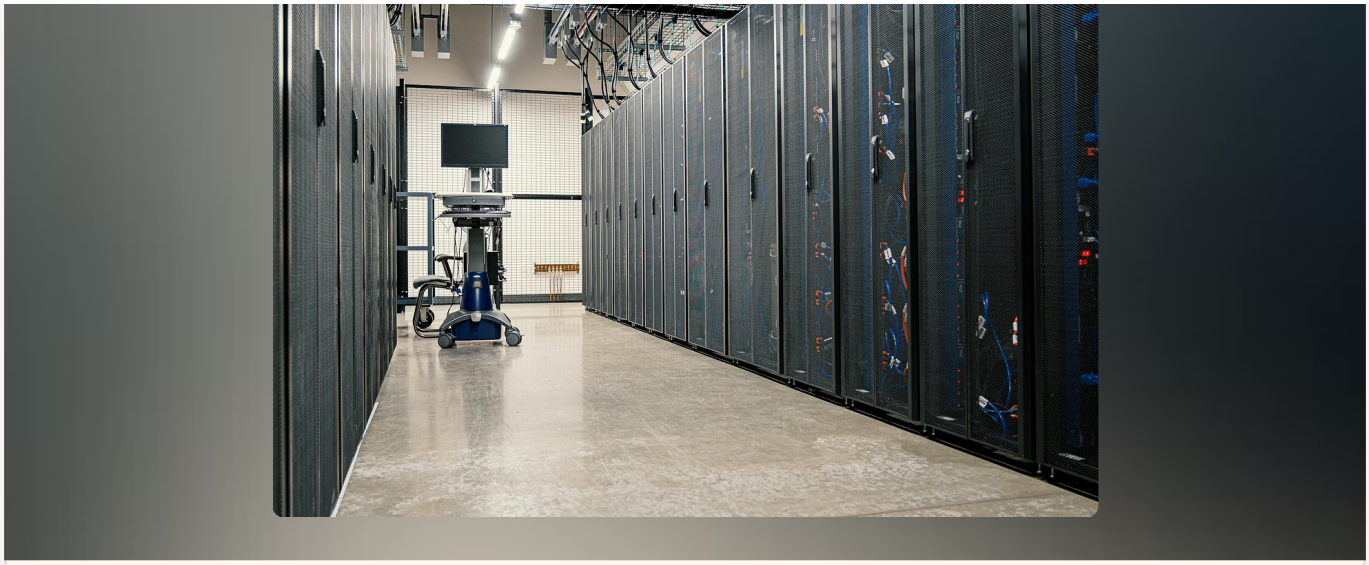
   Unit testing involves testing individual components of the system to ensure they function correctly.

3. ## Integration Testing

   Integration testing involves testing the interaction between different components of the system.

4. ## System Testing

   System testing involves testing the complete system to ensure it meets the overall requirements.



Deployment and Maintenance

Cloud Deployment

Cloud deployment involves hosting the system on a cloud platform, providing scalability and flexibility.

On-Premise Deployment

On-premise deployment involves installing the system on the organization's own servers.

Bug Fixes

Bug fixes involve resolving issues and defects identified during testing or after deployment.

Upgrades and Enhancements

Upgrades and enhancements involve adding new features or improving existing functionalities.

Conclusion and Key Takeaways

System analysis and design is an essential process for developing effective and efficient systems. It involves understanding user needs, designing a system architecture, implementing the system, and ensuring its ongoing maintenance. Key takeaways include the importance of thorough requirements gathering, careful design, and rigorous testing to ensure system success.