

## ***Design Thinking and Requirements Modelling: A User-Centric Approach***

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### ***A. Design Thinking***

Design thinking is an iterative, non-linear process used to solve complex problems and create user-friendly products and services. The process is divided into several stages: empathize, define, ideate, prototype, and test. This approach begins with understanding the user's problem and needs, rather than focusing on a specific solution.

### ***B. Requirements and Modeling***

- Requirement is a description of a system's services and constraints.
- Requirements engineering is the process of discovering, analyzing, validating, and managing these requirements.
- System modelling is the process of creating abstract representations of a system. Models help in understanding the system, communicating with stakeholders, and managing complexity.

### ***C. Types of Models***

- Personas: A persona is a detailed profile of a typical or archetypal user, representing a user group's goals, motivations, and pain points. Creating a persona helps designers and developers understand who they are building the system for.
- User Stories: A user story is a simple, informal description of a feature from the perspective of an end-user. The standard format for a user story is: "As a [user type], I want to [perform some task], so that I can [achieve some goal]". This format focuses on the value and motivation behind a feature.
- Use Cases: A use case describes a system's functional requirements by detailing a sequence of actions that produce a result of value to an actor. The components of a use case include actors, preconditions, a trigger, and a main success scenario. Use cases often include alternative flows to cover potential issues.

- Entity-Relationship Diagrams (ERDs): An ERD is a graphical representation of the logical structure of a database. It shows the entities (or objects), their attributes, and the relationships between them. ERDs are a way to model the data that will be used by the system. The key components of an ERD are:

- Entity: A type of object that is important to the system.
- Attribute: A property or characteristic of an entity.
- Relationship: An association between two entities.