CS 331 (Software Engineering Lab)
Assignment 2 (Total Marks = 20)

Covering The Behavioral Aspects of the Software:

Use Case Diagrams:

Draw UML use case diagrams for the different use cases. Follow the following steps while drawing use case diagrams for each important use case.

Step 1: Identify the use cases that need to be represented. (Examples of use cases could be user login, giving music recommendations in music playing software, etc).

[Marks = 10]

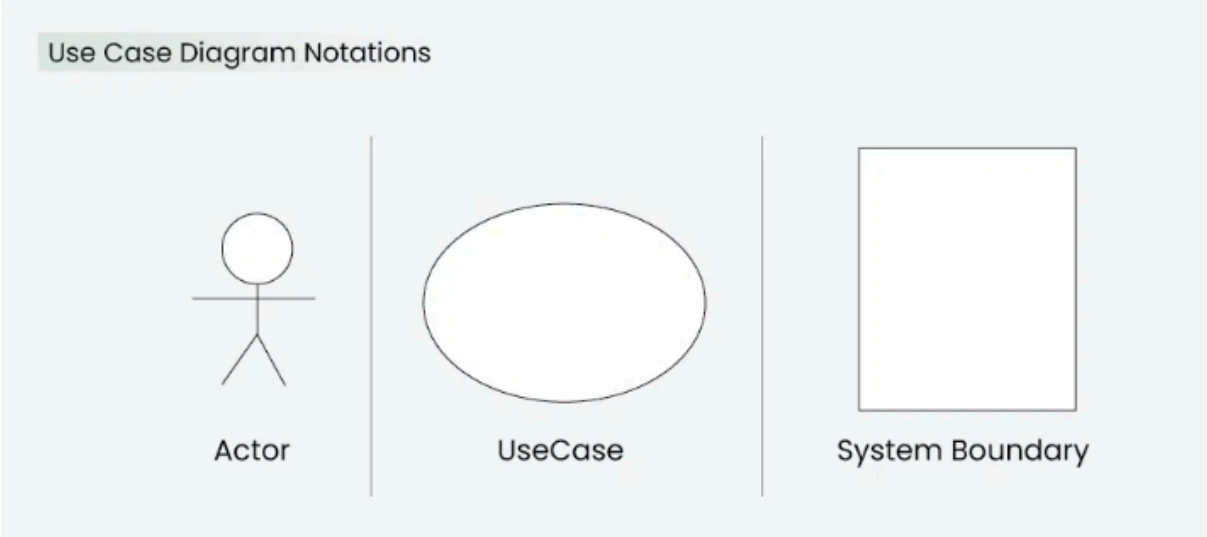
Step 2: List the actors (external users) that interact with the system.

[Marks = 10]

Theory on Use Case Diagrams:

Use Case Diagram

A Use Case Diagram is a visual representation that illustrates the interactions between users (actors) and a system. It captures the functional requirements of a system, showing how different users engage with various use cases or specific functionalities within the system. Use case diagrams provide a high-level overview of a system's behavior, making them useful for stakeholders, developers, and analysts to understand how a system is intended to operate from the user's perspective, and how different processes relate to one another. They are crucial for defining system scope and requirements.



Use Case Diagram Notations

1. Actors

Actors are external entities that interact with the system. These can include users, other systems, or hardware devices.

2. Use Cases

Use cases are like scenes in the play. They represent specific things your system can do. In the online shopping system, examples of use cases could be "Place Order," "Track Delivery," or "Update Product Information". Ovals represent use cases.

3. System Boundary

The system boundary is a visual representation of the scope or limits of the system you are modeling. It defines what is inside the system and what is outside. The boundary helps to establish a clear distinction between the elements that are part of the system and those that are external to it.

Use Case Diagram Relationships

1. Association Relationship

The Association Relationship represents a communication or interaction between an actor and a use case. It is depicted by a line connecting the actor to the use case.

2. Include Relationship

The Include Relationship indicates that a use case includes the functionality of another use case. It is denoted by a dashed arrow pointing from the including use case to the included use case.

3. Extend Relationship

The Extend Relationship illustrates that a use case can be extended by another use case under specific conditions. It is represented by a dashed arrow with the keyword "extend."

Use Case Diagram example (Online Shopping System)

Let's understand how to draw a Use Case diagram with the help of an Online Shopping System:

- **Actors:** Customer, Admin
- **Use Cases:** Browse Products, Add to Cart, Checkout, Manage Inventory (Admin)
- **Relations:** The Customer can browse products, add to the cart, and complete the checkout. The Admin can manage the inventory.

<u>Below is the Use Case Diagram of an Online Shopping System:</u>