S. B. JAIN INSTITUTE OF TECHNOLOGY, MANAGEMENT & RESEARCH, NAGPUR.

Practical No. 2

Aim: Modeling the UML use case diagram and capturing use case scenarios.

Name of Student	**Shrutika Pradeep Bagdi**
Roll No	**CS22130**
Semester/Year	**5th/3rd**
Academic Session	**2024-2025**
Date of Performance	
Date of Submission	

Department Sof Computer Science & Engineering , S.B.J.I.T.M.R., Nagpur

AIM: Modeling the UML use case diagram and capturing use case scenarios.

OBJECTIVE/EXPECTED LEARNING OUTCOME:

- To identify different actors and use cases from a given problem statement
- To associate use cases with different types of relationships
- To draw a use-case diagram

HARDWARE AND SOFTWARE REQUIRMENTS:

Hardware Requirement

- Processor : Dual Core
- RAM : 1GB
- Hard Disk Drive : > 80 GB

Software Requirement

- Operating System – Windows

THEORY

Use case diagram is a platform that can provide a common understanding for the end-users, developers and the domain experts. It is used to capture the basic functionality i.e., use cases, and the users of those available functionality, i.e., actors, from a given problem statement. Use case diagrams belong to the category of behavioural diagram of UML diagrams. Use case diagrams aim to present a graphical overview of the functionality provided by the system. It consists of a set of actions (referred to as use cases) that the concerned system can perform, one or more actors, and dependencies among them.

Actor

An actor can be defined as an object or set of objects, external to the system, which interacts with the system to get some meaningful work done. Actors could be human, devices, or even other systems.

For example, consider the case where a customer *withdraws cash* from an ATM. Here, customer is a human actor.

Actors can be classified as below :

- **Primary actor**: They are principal users of the system, who fulfil their goal by availing some service from the system. For example, a customer uses an ATM to withdraw cash when he needs it. A customer is the primary actor here.

- **Supporting actor**: They render some kind of service to the system. "Bank representatives", who replenishes the stock of cash, is such an example. It may be noted that replenishing stock of cash in an ATM is not the prime functionality of an ATM.

In a use case diagram primary actors are usually drawn on the top left side of the diagram.

Use Case

A use case is simply a functionality provided by a system.

Continuing with the example of the ATM, *withdraw cash* is a functionality that the ATM provides. Therefore, this is a use case. Other possible use cases include, *check balance*, *change PIN*, and so on.

Use cases include both successful and unsuccessful scenarios of user interactions with the system. For example, authentication of a customer by the ATM would fail if he enters wrong PIN. In such case, an error message is displayed on the screen of the ATM.

Subject

Subject is simply the system under consideration. Use cases apply to a subject. For example, an ATM is a subject, having multiple use cases, and multiple actors interact with it. However, one should be careful of external systems interacting with the subject as actors.

Graphical Representation

An actor is represented by a stick figure and name of the actor is written below it. A use case is depicted by an ellipse and name of the use case is written inside it. The subject is shown by drawing a rectangle. Label for the system could be put inside it. Use cases are drawn inside the rectangle, and actors are drawn outside the rectangle, as shown in figure:
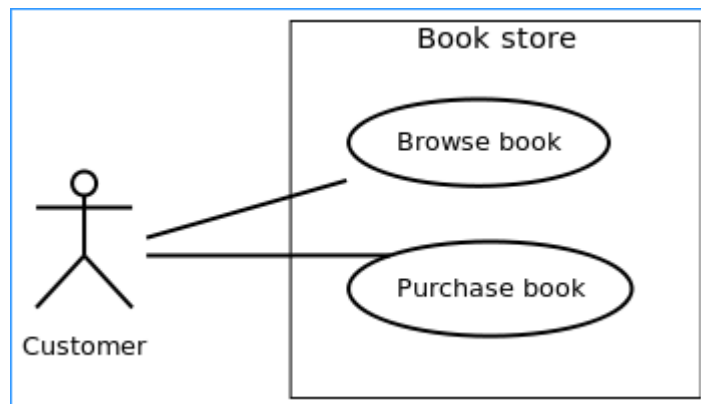
Association between Actors and Use Cases

A use case is triggered by an actor. Actors and use cases are connected through binary associations indicating that the two communicates through message passing.

An actor must be associated with at least one-use case. Similarly, a given use case must be associated with at least one actor. Association among the actors are usually not shown. However, one can depict the class hierarchy among actors.

Use Case Relationships

Three types of relationships exist among use cases:

- Include relationship
- Extend relationship
- Use case generalization

3

OBSERVATION (Students should attach screenshot of assigned problem statement):

Department of Computer Science & Engineering , S.B.J.I.T.M.R., Nagpur
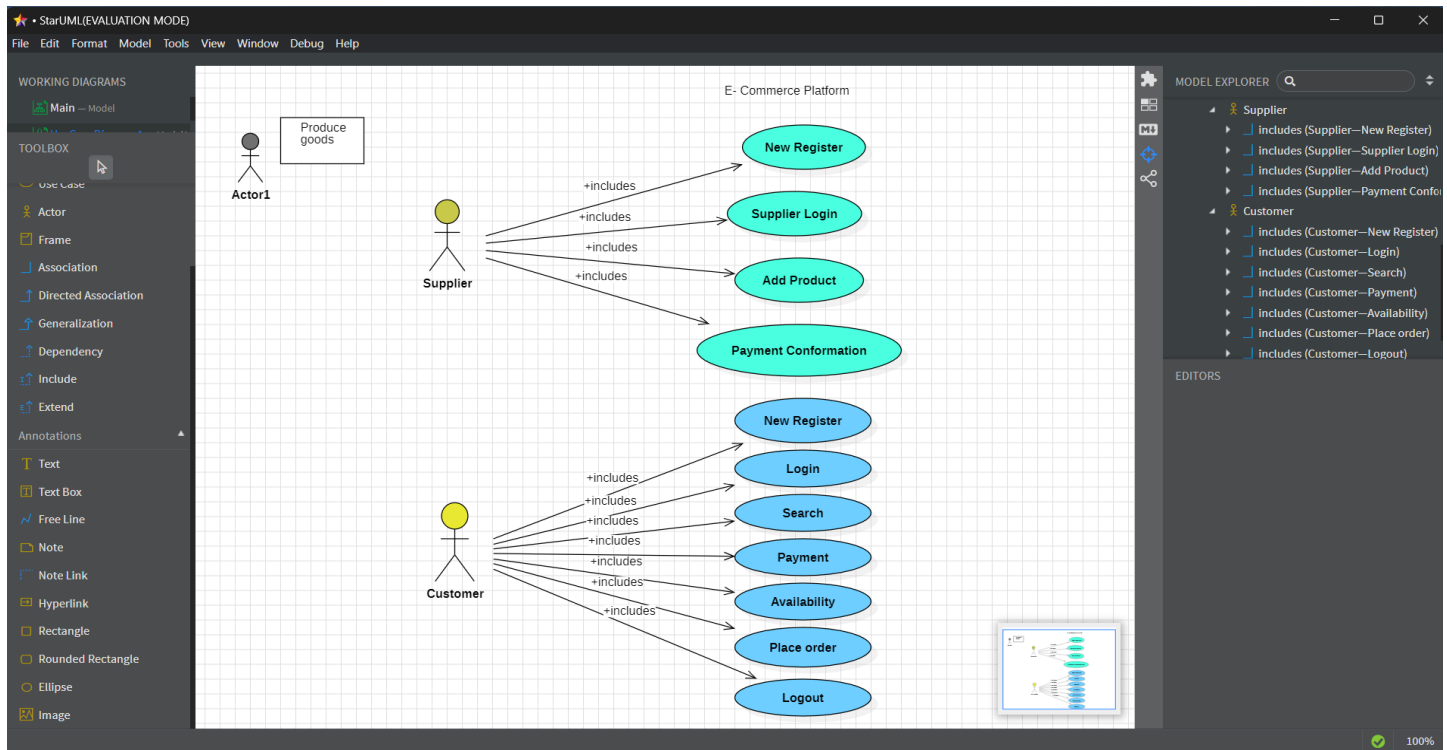
DISCUSSION QUESTIONS?

1) What are the main components of Use case Diagram?

_____
_____
_____
_____
_____
_____
_____

2) What are requirements?

_____
_____
_____
_____
_____
_____
_____

3) What is use case?

_____
_____
_____
_____
_____
_____
_____

Department Sof Computer Science & Engineering , S.B.J.I.T.M.R., Nagpur

4) What is the difference between use case diagram and use case?

_____

_____

_____

_____

_____

_____

_____

_____

_____

5) What is actor in use case diagrams?

_____

_____

_____

_____

_____

REFERENCES:
- http://vlabs.iitkgp.ernet.in/se/1/
- https://sites.google.com/view/ait-se/Home/practicals
- https://www.javatpoint.com/software-requirement-specifications

Department Sof Computer Science & Engineering , S.B.J.I.T.M.R., Nagpur