We Make You Shine
St. JOSEPH'S INSTITUTE OF TECHNOLOGY
(An Autonomous Institution)
St. JOSEPH'S GROUP OF INSTITUTIONS
OMR, CHENNAI - 119

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR (2024-2025) ODD SEMESTER

INNOVATIVE TEACHING METHODS

Name of Pedagogy Used:	**SOFTWARE ENGINEERING VIRTUAL LAB**
Branch/Year/Sem/Sec:	**CSE/III/V/B&C**
Subject Code/Subject Name:	**CS4508/SOFTWARE ENGINEERING & DESIGN LAB**
Topic:	**TECHNIQUES AND METHODOLOGIES IN SOFTWARE ENGINEERING LAB**
Date/Period/Timing	**20.09.2024/7/1.00 PM TO 1.40 PM**
Link for Virtual Lab	**HTTP://VLABS.IITKGP.ERNET.IN/SE/**
Description	The Software Engineering Virtual Lab has been developed by keeping in mind the following objectives: • To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner through the Web • Present case studies to demonstrate the practical applications of different concepts • Provide a scope to the students where they can solve small, real life problems

Students Feedback	**312422104174 :**We have learned the importance of various associations in UML diagrams. **312422104179:** We have realized the importance of UML diagrams in the Analysis and design phase in Software Engineering.
Total No. of Students	22
No. of Students Present	21
No: of Students Absent	01
Action Plán for Absentees	• Planned to conduct another virtual lab session for the absentees.

DOCUMENT PROOF

A REPORT ON INNOVATIVE TEACHING MODEL

SOFTWARE ENGINEERING VIRTUAL LAB

1. MODELING UML USE CASE DIAGRAMS AND CAPTURING USE CASE SCENARIOS

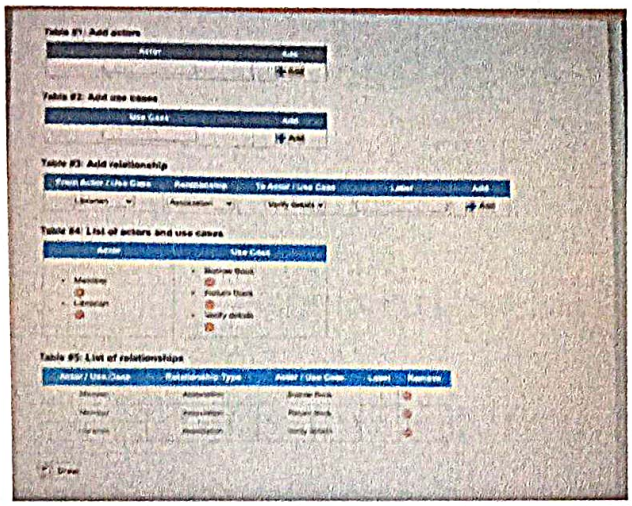
Draw a use case diagram for the following problem

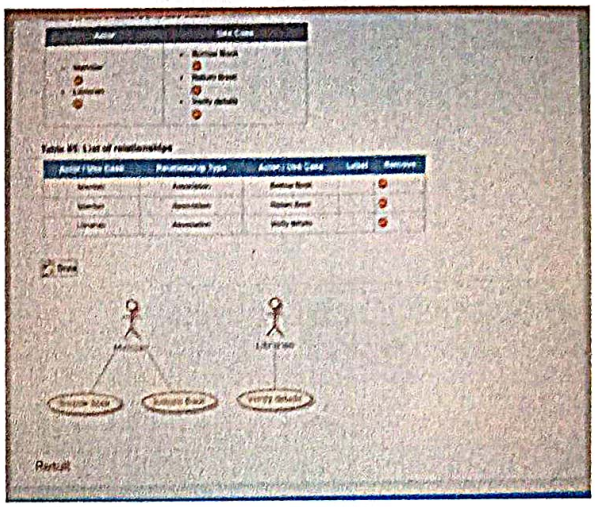
Consider a library, where a member can perform two operations: issue book and return it. A book is issued to a member only after verifying his credentials. Draw a use case diagram for the problem.

Learning Objectives:

- Identify the actors and use cases
- Associate the use cases with the actors by drawing a simple use case diagram

Limitations: While extending a use case, extension points could not be defined through this interface.





2. IDENTIFYING DOMAIN CLASSES FROM THE PROBLEM STATEMENTS

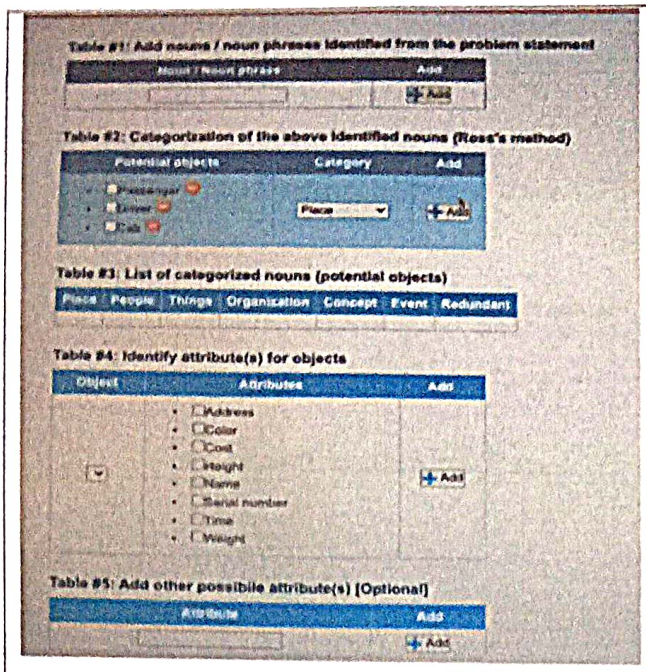
Identify the domain classes from the following problem statement

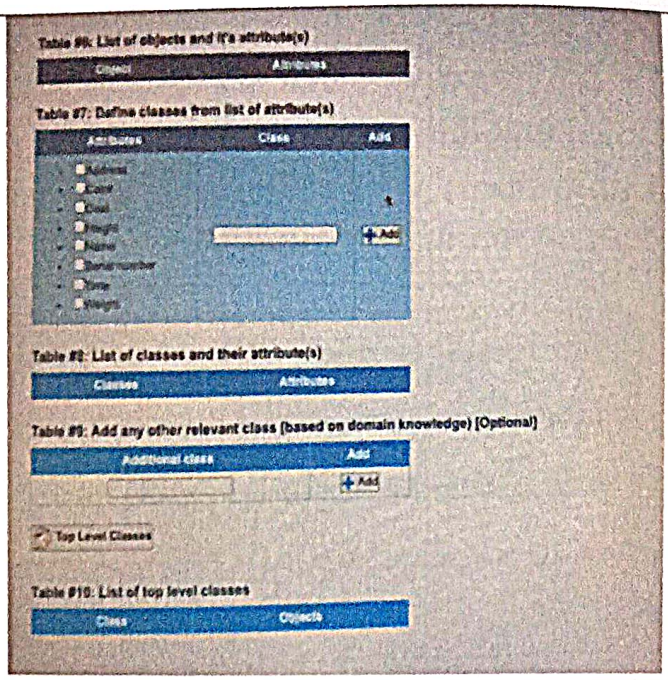
The latest cab services agency in the city has approached you to develop a Cab Management System for them. Following is the information they have given to implement the system.

Learning Objectives:

1. Identifying potential classes (and their attributes) from a given problem statement
2. Use expert knowledge on the subject matter to identify other relevant classes

Limitations: The workspace provided is constrained to solve the current problem only. This is not a general user interface to solve *any* problem.





3. STATECHART AND ACTIVITY MODELING

- Capturing the dynamic view of a system is very important for a developer to develop the logic for a system. State chart diagrams and activity diagrams are two popular UML diagram to visualize the dynamic behaviour of an information system.
- In this experiment, we will learn about the different components of activity diagram and state chart diagram and how these can be used to represent the dynamic nature of an information system.

Draw a State chart diagram to graphically represent the following system

Consider a bulb with a push down switch. The bulb initially remains off. When the switch is pushed down, the bulb is on. Again when the switch is pushed up, the bulb turns off. The lifecycle of the bulb continues in this way until it gets damaged.

Think about these points:

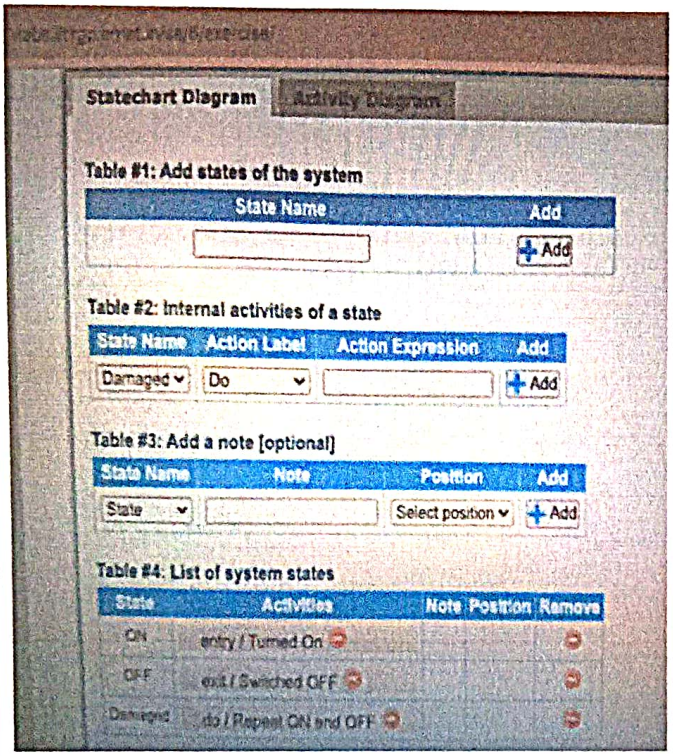
- What are the different states of the bulb?
- What activities are performed in each state?
- What action does make the bulb move from one state to another?

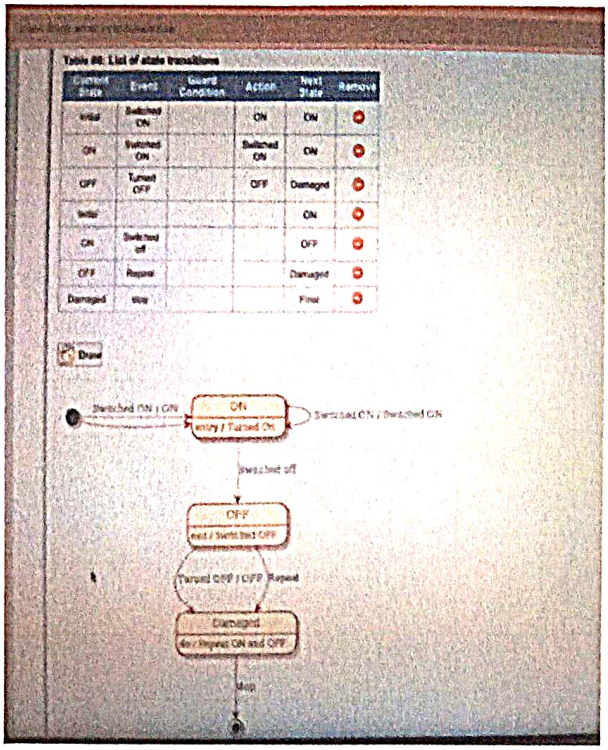
Learning Objectives:

1. Identifying different states of a system

2. Identifying activities performed in each state

Limitations: A complex system often has sub-states, which is not covered as a part of this lab. The following interface only let you represent simple states. Please check out the references section to know more about them.





4. DESIGNING TEST SUITES

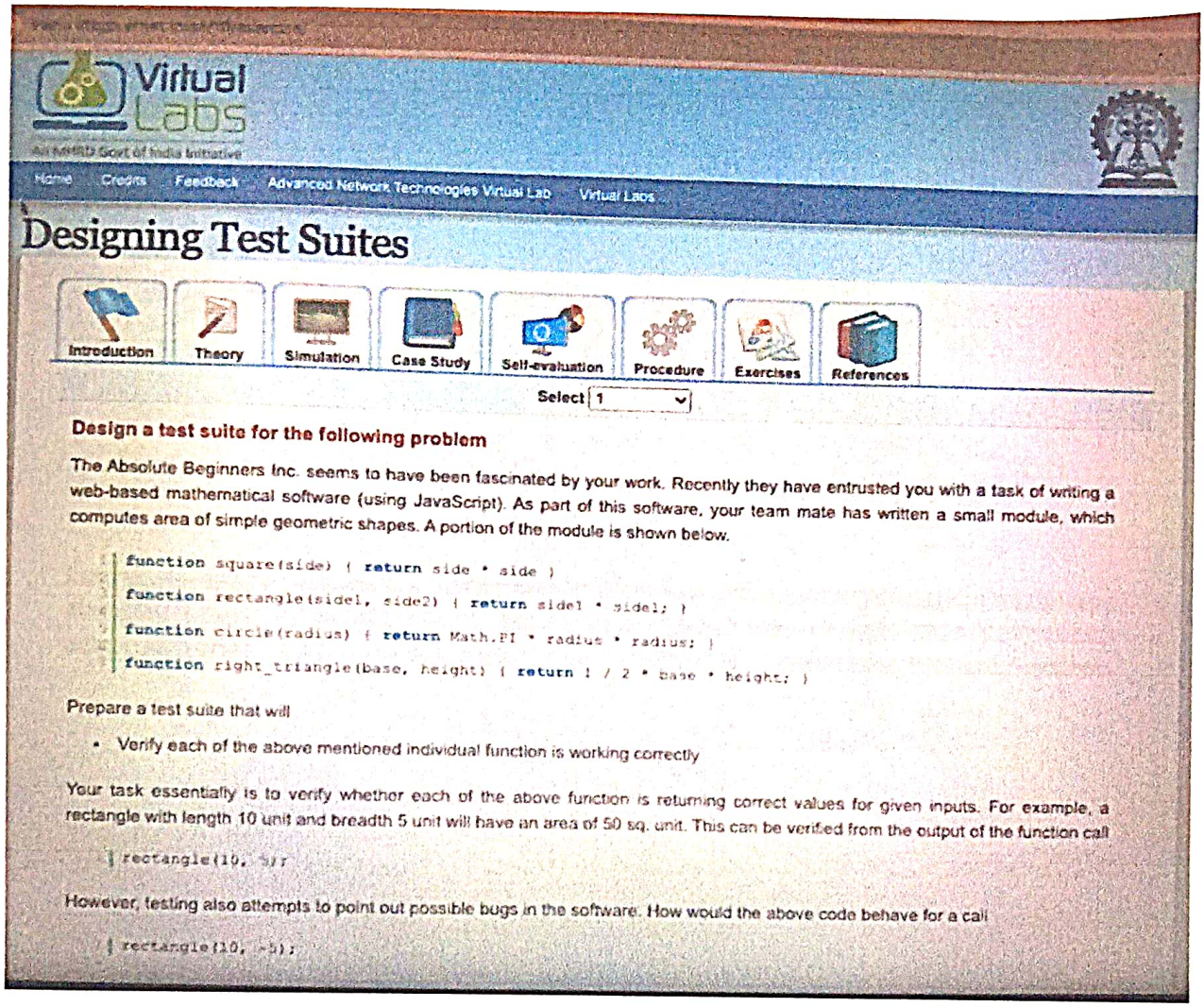
Learning Objectives:

1. Get familiarized with unit testing
2. Verify implementation of functional requirements by writing test cases
3. Analyze results of testing to ascertain the current state of a project

Limitations: This workspace attempts to provide a very simple version of a testing framework. Real life testing frameworks are much more extensive and provide a lot of options like creating test cases from user requirements, automatic reporting of bug when a test case fails, and so on. Nevertheless, this workspace is expected to make a student familiar to testing and some of it's templates and reports.

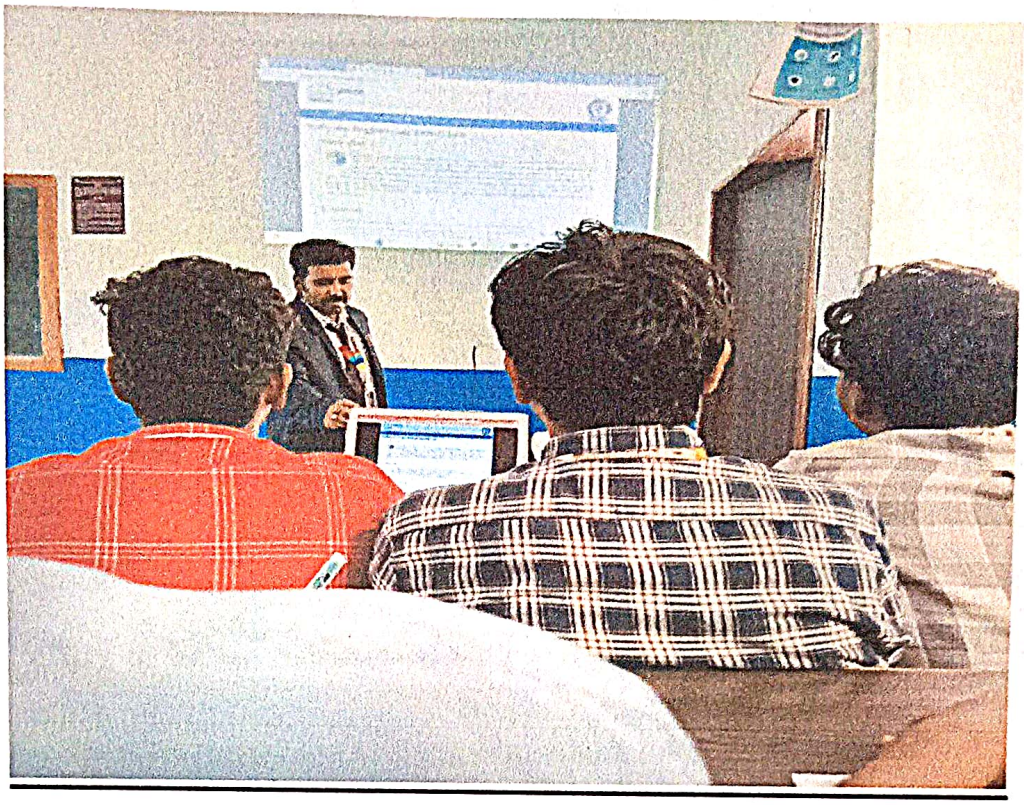
Design a test suite for the following problem

The Absolute Beginners Inc. seems to have been fascinated by your work. Recently they have entrusted you with a task of writing a web-based mathematical software (using JavaScript). As part of this software, your team mate has written a small module, which computes area of simple geometric shapes. A portion of the module is shown below.



(i) Session on Discussing various Problem Statements

(ii)Session on Various Associations in UML Class Diagrams



FACULTY INCHARGE

HOD

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