Ex: No: 1 Identify the software system that needs to be developed

Aim

To identify a suitable software system for a given real life problem using Object Oriented Software Engineering concepts.

Introduction about CASE Tools

CASE tools mean Computer Aided Software Engineering tools.
They support software development activities.
They help in analysis design coding and testing.
They improve productivity and quality.
They reduce manual errors.
They store models and documents in one place.

Example
Using a tool to draw UML diagrams instead of paper.

Introduction about UML

UML means Unified Modeling Language.
It is a standard visual modeling language.
It is used in object oriented software development.
It shows system structure and behavior.
It improves communication among team members.

Example
Use case diagram for an ATM system.

Description of Nine Graphical Diagrams of UML

1. Use Case Diagram
   Shows system functions and users.
   Example
   Student registers for a course.

2. Class Diagram
   Shows classes attributes and methods.

Example
Student class with name and roll number.

3. Object Diagram
   Shows objects at a specific time.
   Example
   One student object created from Student class.
4. Sequence Diagram
   Shows message flow between objects.
   Example
   Login request sent to server.
5. Collaboration Diagram
   Shows object interaction with links.
   Example
   User interacts with payment module.
6. Activity Diagram
   Shows flow of activities.
   Example
   Steps in online order processing.
7. State Chart Diagram
   Shows states of an object.
   Example
   Order states like placed shipped delivered.
8. Component Diagram
   Shows software components.
   Example
   UI database and server components.
9. Deployment Diagram
   Shows hardware and software mapping.
   Example
   Application deployed on server and client system.

Conceptual Model of UML

The UML conceptual model has three parts.

- Building blocks
  Things relationships and diagrams.

- Rules
  Rules define how elements are connected.
- Common mechanisms
  Specifications and notations are included.

Example
Association between Student and Course classes.

Problem Statement

A college wants to automate its activities.
It needs student admission details.
Attendance and marks must be stored.
Reports should be generated.

Task

1. **Read the problem carefully.**
2. **Identify the software system to be developed.**
3. **Write one reason for your choice.**
4. **List two users of the system.**

Expected Output

- **Identified system name.**
  College Management System.
- **Reason**
  Manages academic and administrative data.
- **Users**
  Student and staff.

Result

The software system was identified successfully.
The problem was related to a real life scenario.
OOSE concepts were applied.

Conclusion

This lab exercise helps students understand system identification.
It links real life problems with object oriented approach.
It introduces CASE tools and UML basics.
It prepares students for further design activities.

Viva Voce Questions

1. **What is the role of CASE tools**
2. **Why is UML used**
3. **Name any two UML diagrams**