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SE Adv Practical-1

Pre-lab:

1.Define Modeling in UML and its advantages?

Ans:
Modeling:
- Model is a simplification of reality.
- Blueprint of the actual system.
- Specify the structural and behavior of the system.
- Templates for designing the system.
- Helps document the system.

Advantages:

- Provides standard for software development.
- Reducing of costs to develop diagrams of UML using supporting tools.
- Development time is reduced.
- The past faced issues by the developers are no longer exists.
- Has large visual elements to construct and easy to follow.

2.What do you understand by intend and extend relationships in use case diagrams?

Ans:

Extend relationship: A uni-directional relationship between two use cases. An extend relationship between use case B and use case A means that the behavior of B can be included in A.
Include relationship: A uni-directional relationship between two use cases. Such a relationship between use cases A and B means, that the behavior of B is always included in A.

3. A. What is the difference between data model and an entity relationship diagram?
   B. Describe the importance of Use Case diagram
   C .Describe the main qualities of good requirement
Ans:

A) Data modeling is a technique to document a software system using diagrams and symbols. It is used to represent communication of data.

The highest level of abstraction for the data model is called the Entity Relationship Diagram (ERD). It is a graphical representation of data requirements for a database.

B) The purpose of the use case diagrams is simply to provide the high level view of the system and convey the requirements in laypeople's terms for the stakeholders.

Additional **diagrams** and documentation can be **used** to provide a complete functional and technical view of the system.

C) Characteristics of a Good Requirement

A requirement needs to meet several criteria to be considered a "good requirement".Good requirements should have the following characteristics:

- Unambiguous
- Testable (verifiable)
- Clear (concise, terse, simple, precise)
- Correct
- Understandable
- Feasible (realistic, possible)
- Independent
- Atomic
- Necessary
- Implementation-free (abstract)

## 4.What is the difference between functional and non-functional requirements?

Ans

FUNCTIONAL REQUIREMENTS	NON FUNCTIONAL REQUIREMENTS
1.A functional requirement defines a system or its component.	1.A non-functional requirement defines the quality attribute of a software system.
2.It specifies "What should the software system do?"	2.It places constraints on "How should the software system fulfill the functional requirements?"
Functional requirement is specified by User.	3.Non-functional requirement is specified by technical peoples e.g. Architect, Technical leaders and software developers.

In-lab:

1.You have to register for your courses in your online based Semester. Based on the procedures and technicalities involved, draw a UML Use case diagram for the same.(Use appropriate primary and secondary actors along with required use cases).
**Ans:**

Use Case Diagram:
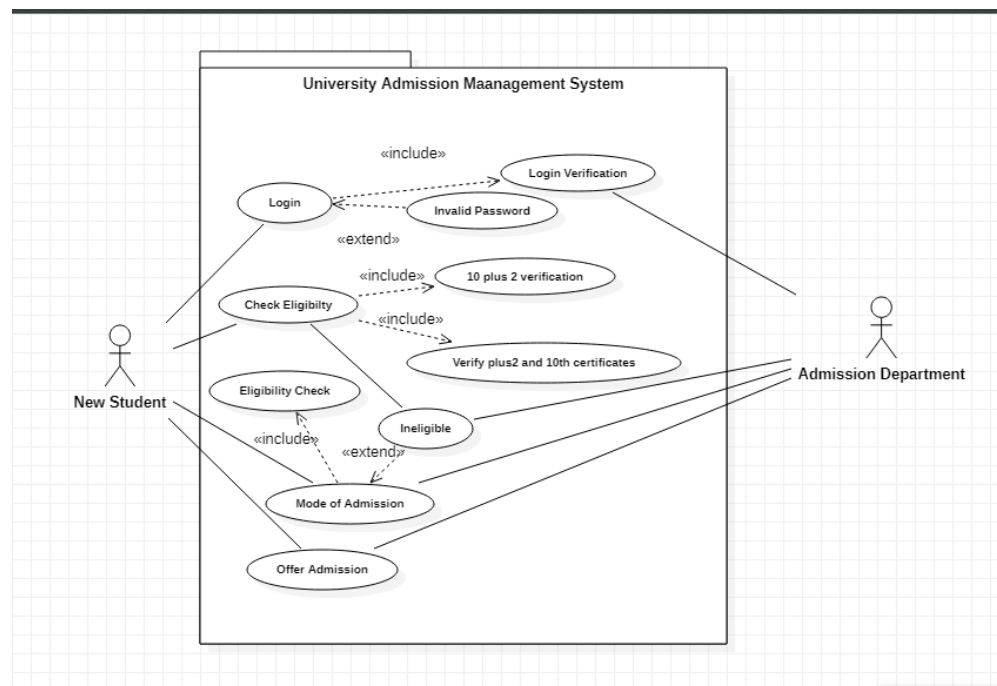
2) The software to be designed, will control a simulated automated teller machine(ATM) having a magnetic stripe reader for reading an ATM card, a customer console (keyboard and display) for interaction with the customer, a slot Forde positing envelopes, a dispenser for cash, a printer for printing customer receipts, and a key-operated switch to allow an operator to start or stop the machine. The ATM will communicate with the bank's computer over an appropriate communication link.
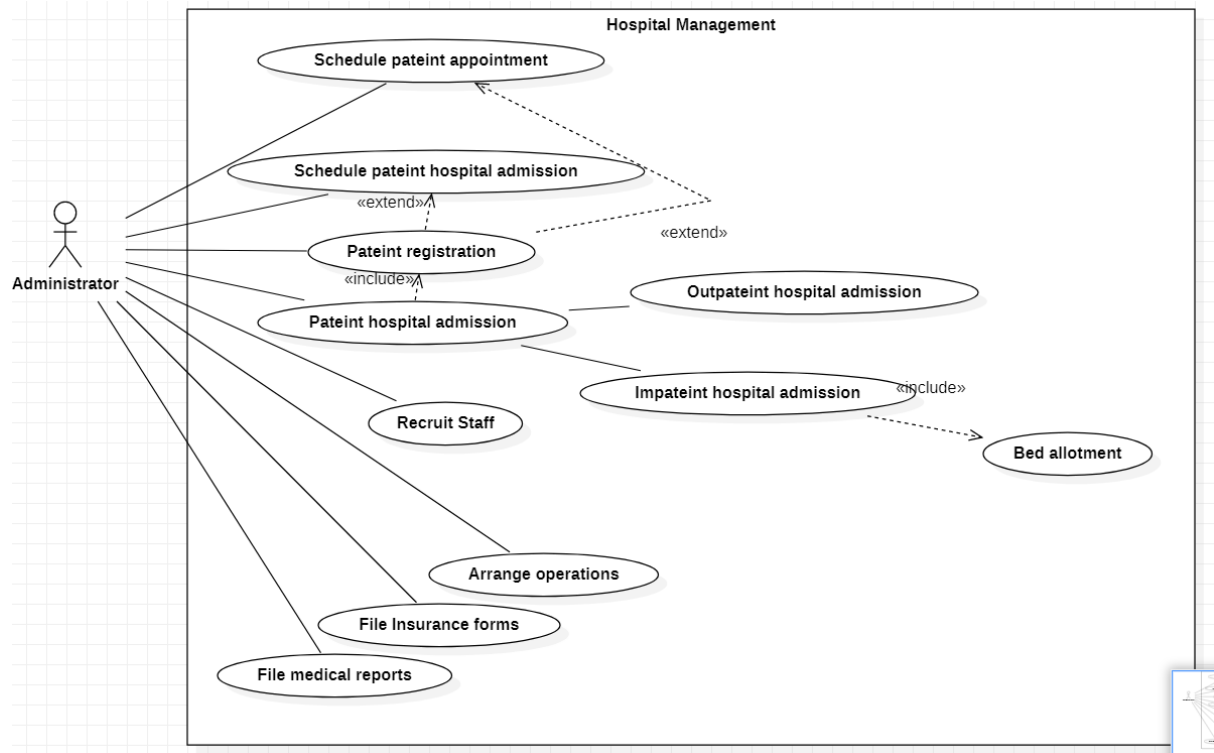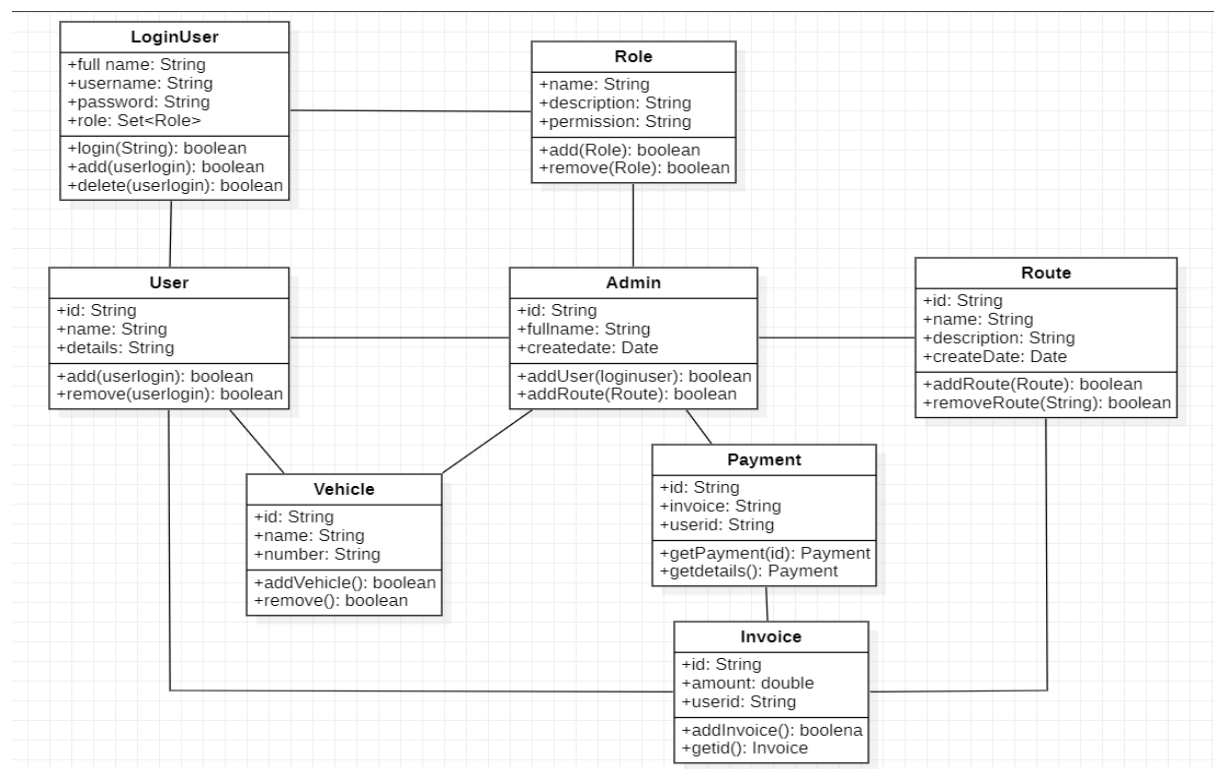
Use Case Diagram:
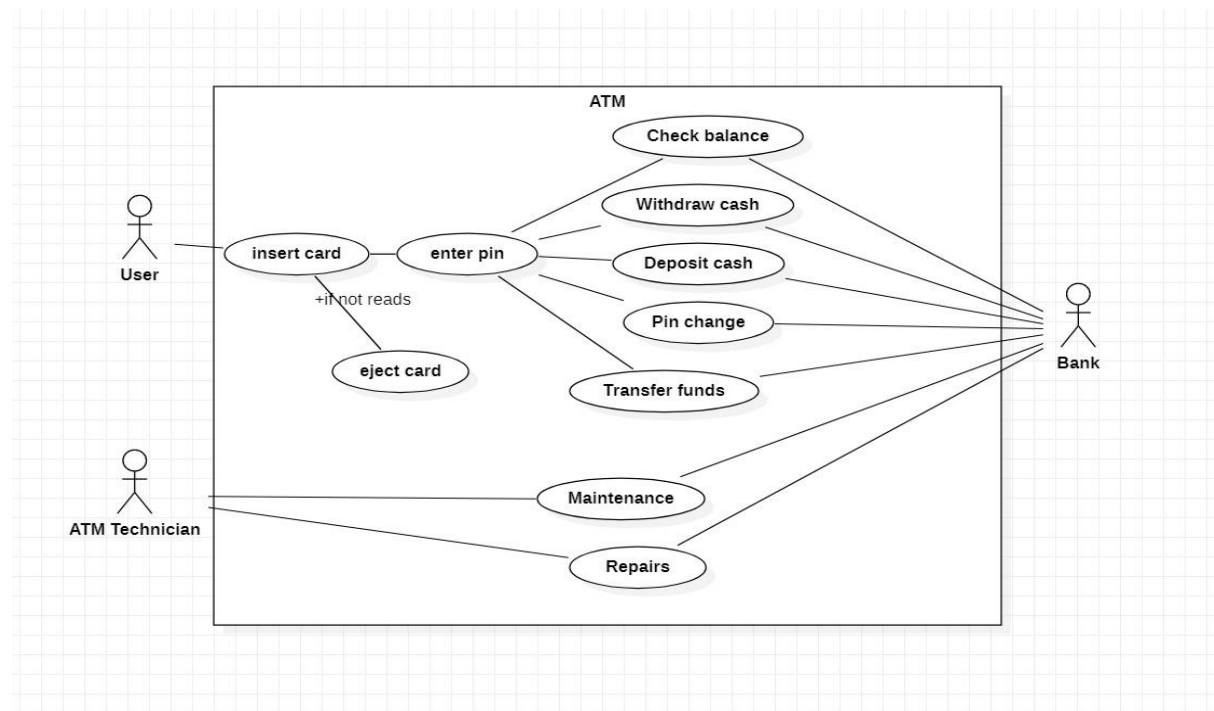
Class Diagram:
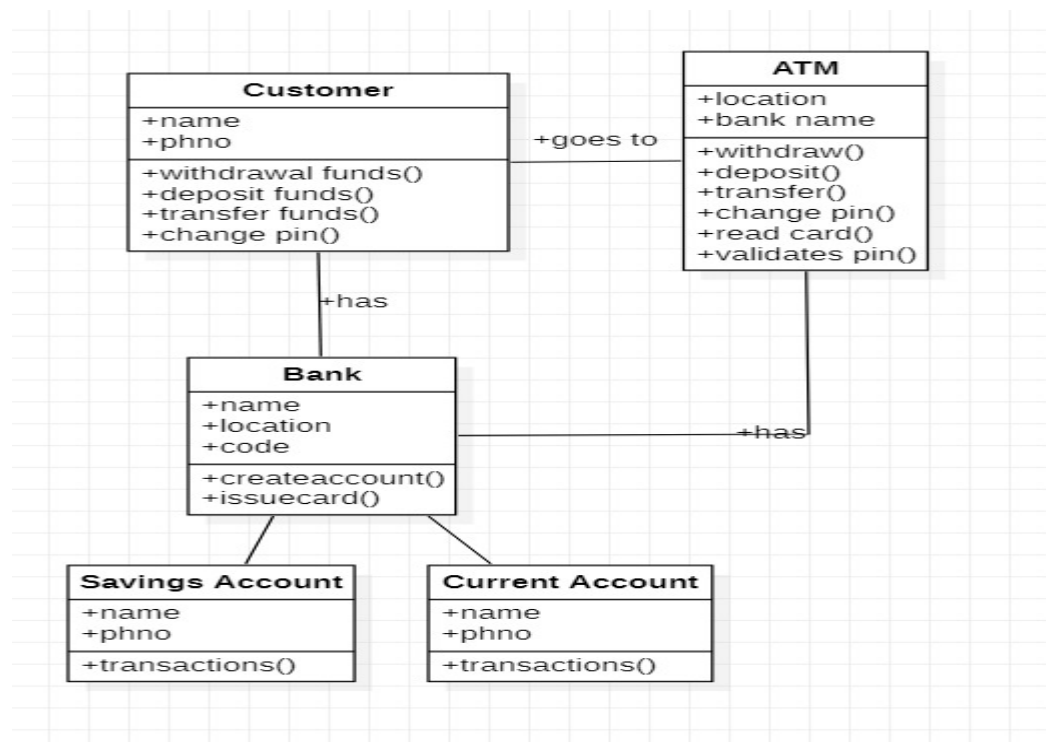
Post-lab:

1.Draw a UML use case diagram for Hospital management system

Ans:

2.Draw a UML Class diagram for transport Business Model.

Ans:

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SE Adv Practical-2

Pre-Lab:

1) **What problems are solved through business analysis?**

Ans:

Requirements Clarity - A good Business Analysis solves the problem of having to deal with vague requirements before or during the development phase. It is the BA's responsibility to make sure all the requirements elicited from the client are crystal clear.
Documentation – Business Analysis should make sure the requirements are documented in a proper, easy to read/easy to access format
User Stories – Business Analysis leads to drawing best user stories for the software or for the project

2) **What is an actor in a use case?**
Ans:-
An Actor in the Unified Modeling Language (UML) specifies a role played by a user or any other system that interacts with the subject.An Actor models a type of role played by an entity that interacts with the subject

3) **What analysis and modeling techniques do you use to translate business objectives into system requirements?**

Ans:-
- Use case with diagrams and simple English
- Feasibility study involving technology team
- Capturing & clarifying non-functional requirement along with technology team involvement
- Creating CAR (control-action-response) document and getting reviewed from user and technology team

4) **What can a Business Analyst do differently than project or program manager (Design Architect) with respect to successfully getting the project implementation done?**

Ans:-

A project/program manager is mostly concerned with the progress of the entire project and taking care of the project members. This includes cost management (invoicing, billing), time management (scheduling), risk management (project closure) and similar things.

A business analyst is mostly concerned with gathering and documenting business requirements (application requirements) and communicating them to the development and test teams.

5) **What is the relationship between use case and actors in use case diagram?**
Ans:-

The use case model contains actors that represent the future users of the system and use cases that represent what the users can do with the system. An actor represents a coherent set of roles that users of use cases play when interacting with these use cases

In-lab:

The library management system project is related to the storage of information regarding the library. Library is the place with the huge collection of books. It is place from where the students and the faculties issue the books for their reference purposes. But the maintenance of keeping the records of issuing and borrowing is difficult if you use a normal book as a registry. To make this task easier, the library management system will be very useful. It helps in maintaining the information regarding the issuing and borrowing of books by the students and the faculties. The library management system case study gives the case study of the library management system.

The students and the faculty will be able to issue the books from the library. There will be different limitations on the number of days that the books can be renewed for. If the library management system is implemented it will help the librarians in simplifying the work.

 In the case of libraries with huge collection of books it will be difficult in locating the position of the book. Through this project, the people will be able to locate the exact location of the book that is the row and the column in which the book is present. It will be helpful in simplifying the work at the library. The project can have the following features:

Book id: This is a unique id through which the book can be tracked.
Borrower: It is the person who will borrow the book from the library.
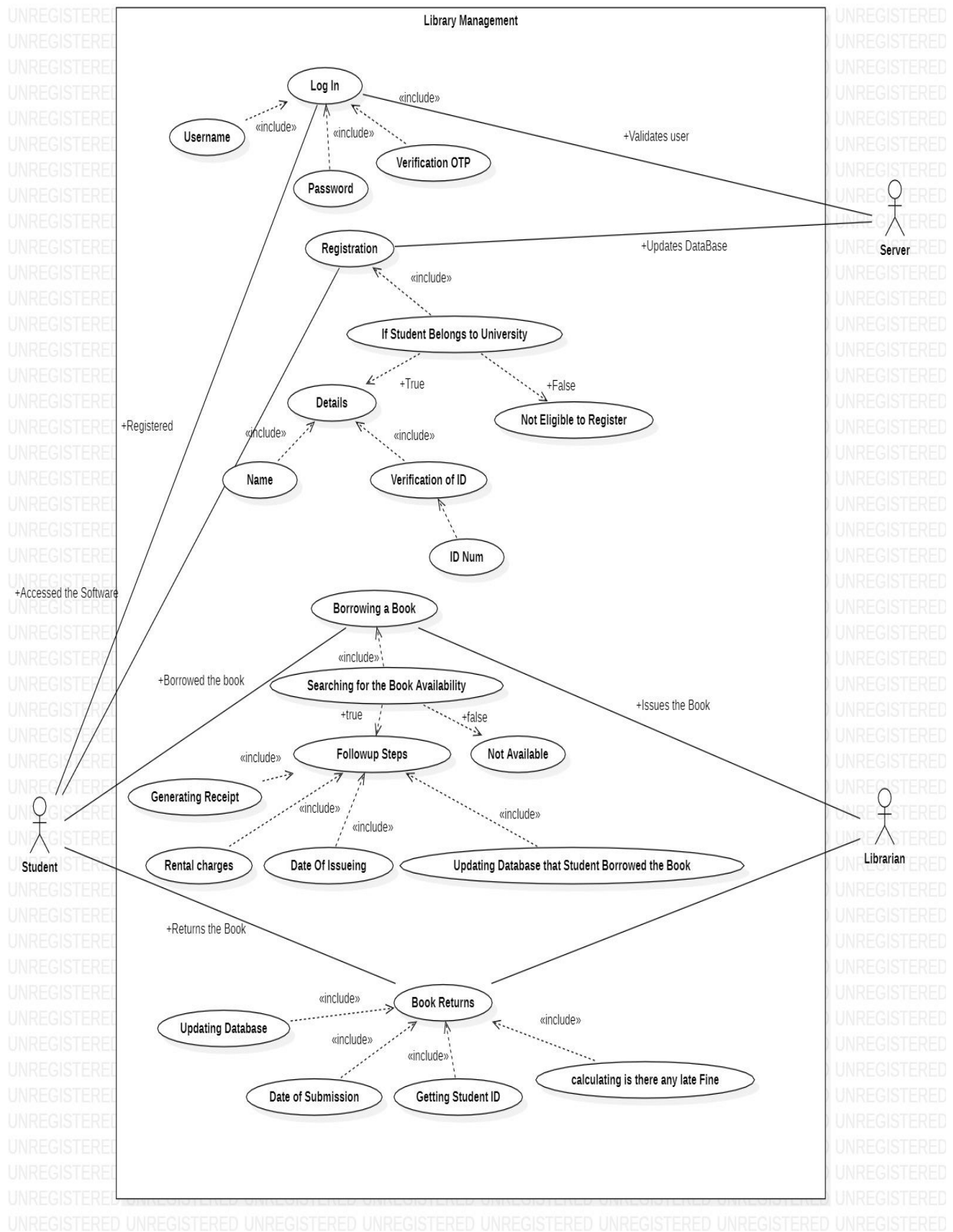**Issuer**: The person who issues the book like the librarian.
Date of issuing: It is the date that will be recorded on which the book will be issued.
Date of return: It is the date on which the particular book will be returned.
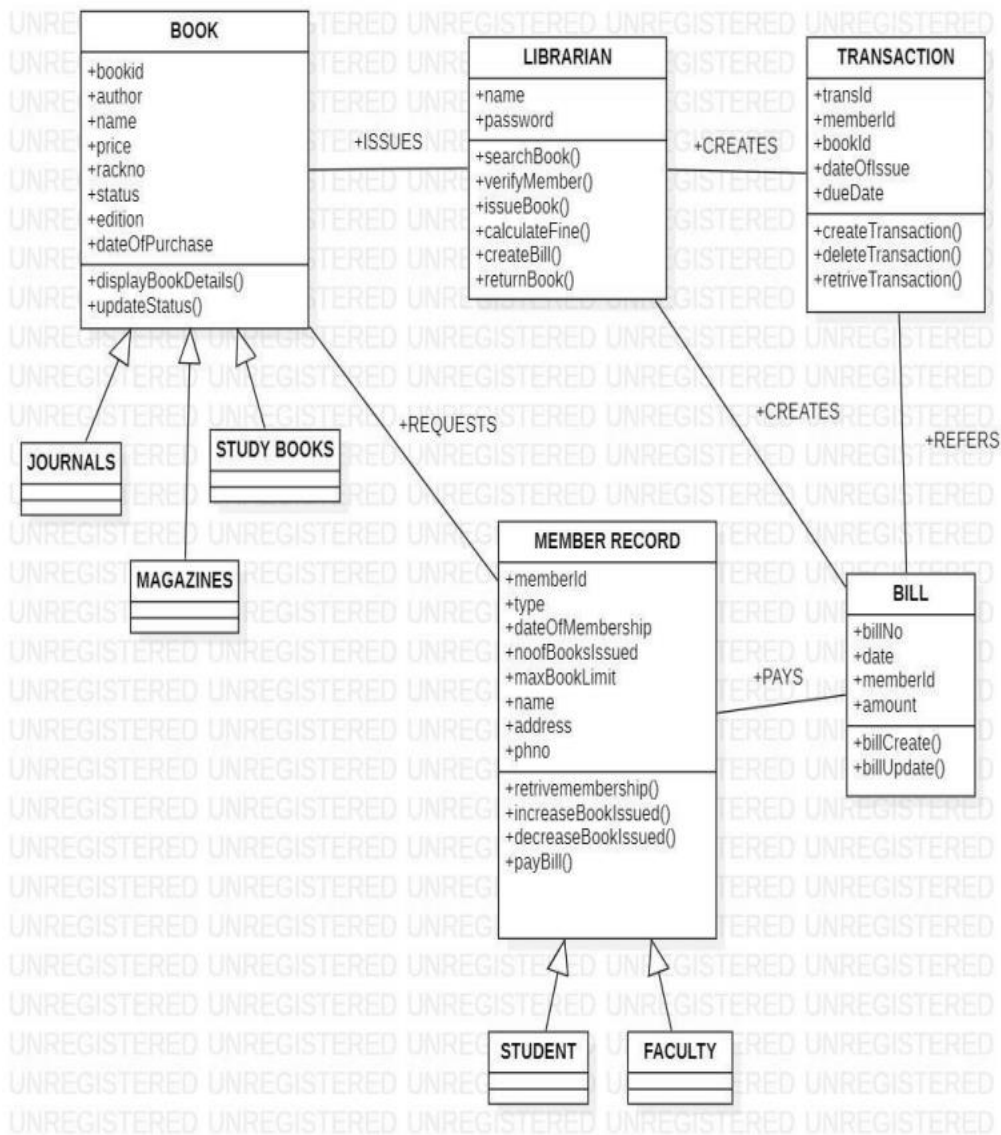**Fine**: Extra amount received for the late return of the book.

Draw the use case , class and sequence diagrams

USE CASE DIAGRAM:
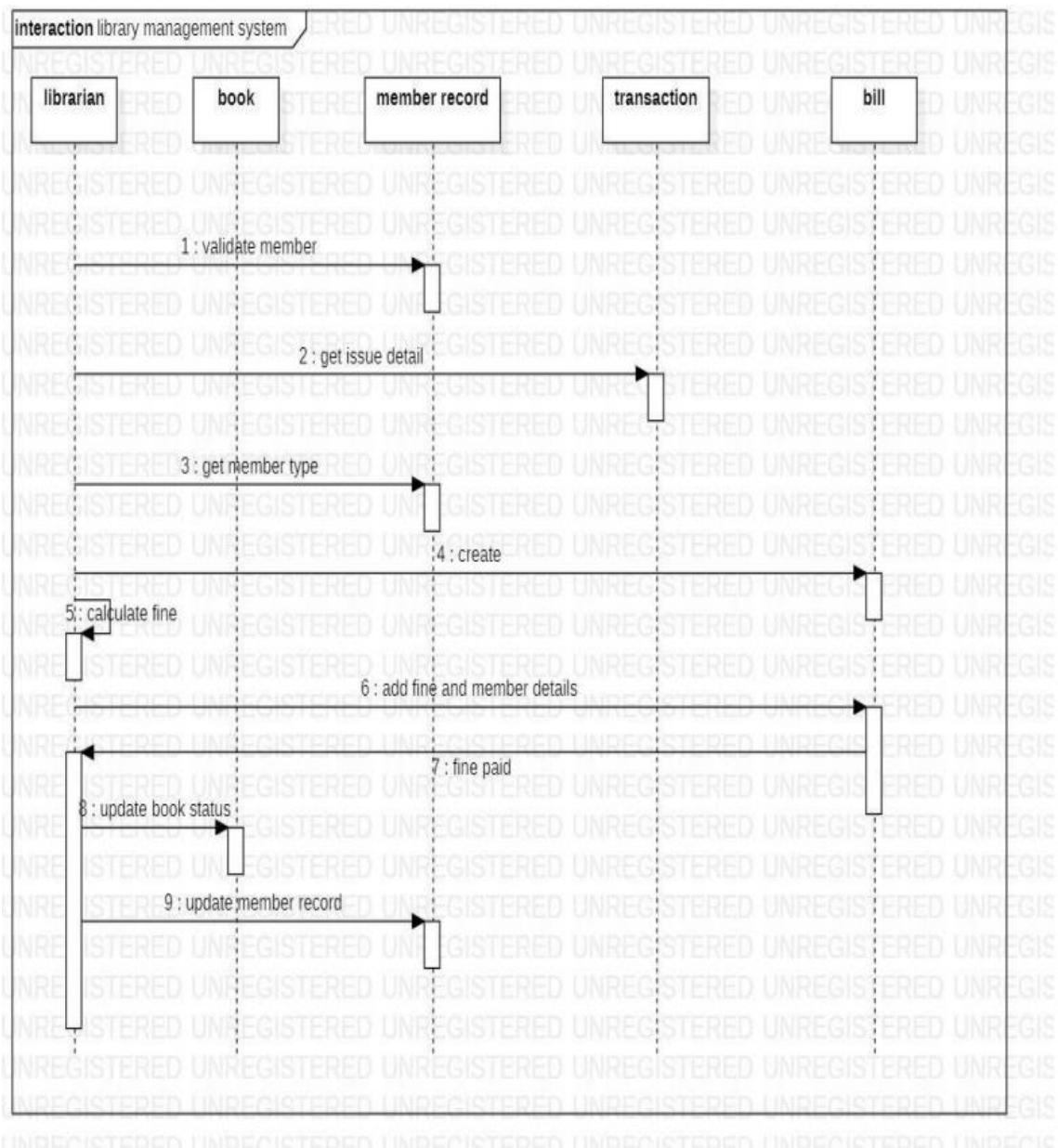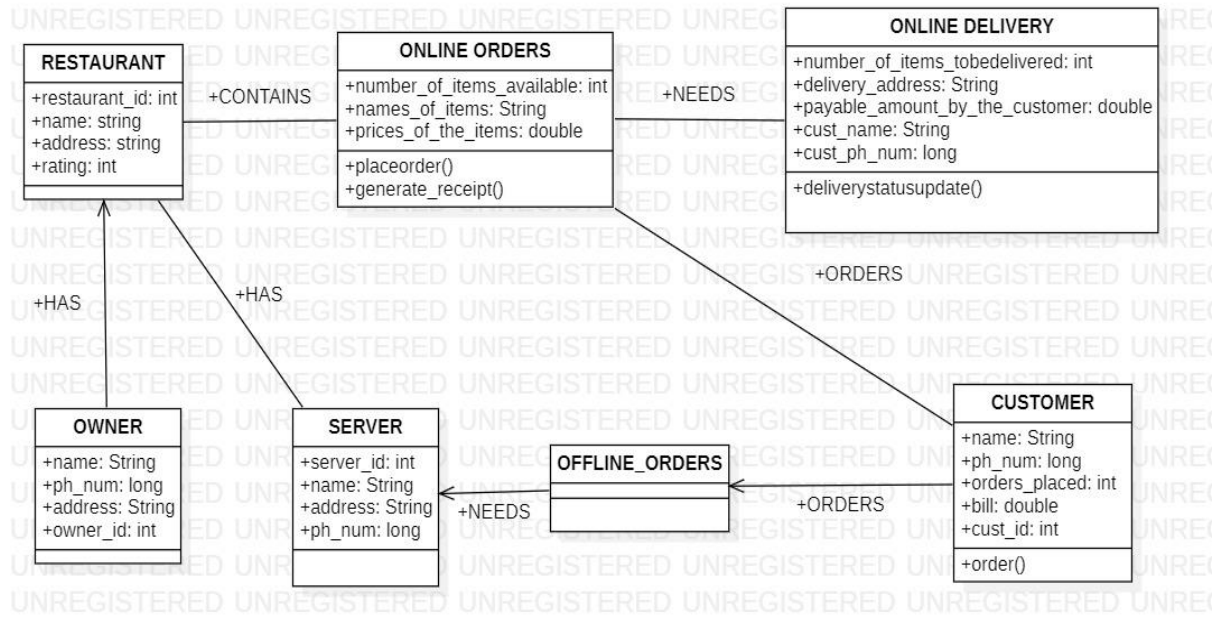
CLASS DIAGRAM:

SEQUENCE DIAGRAM:

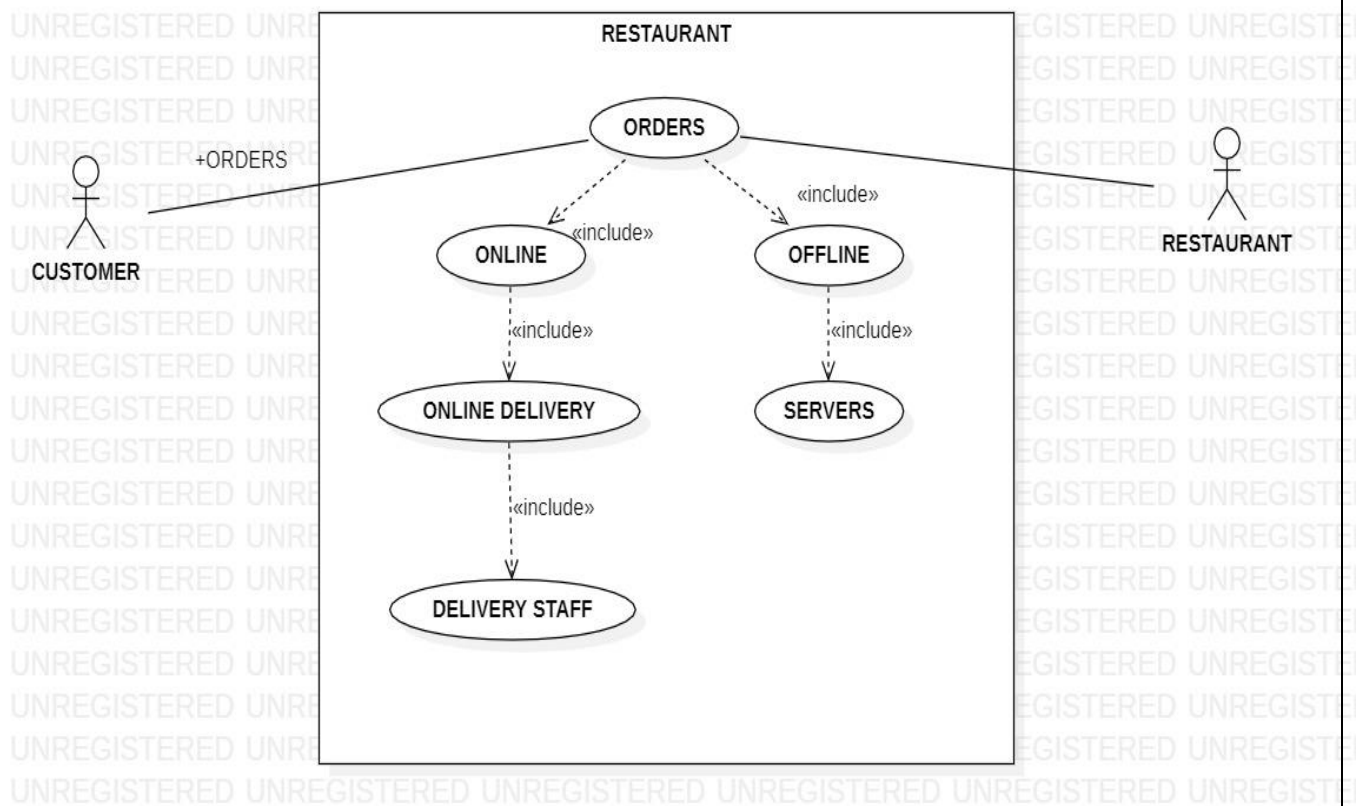**Post Lab :**

1) Analyze and identify the requirements for Restaurant business model and generate Class diagram.

   ANS:

2) Design a use case diagram for Restaurant business model.

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SE Adv Practical-3

Pre-Lab:

1) Use case descriptions consist of which type of interaction?

a)Product
b)Usecase
c)Actor
d)Product&Actor

Ans: Optiond
Explanation: Use case description is the interaction among product and actors in a use case.

2) Which of the following UML diagrams has a static view?
    A) Collaboration
    B) Use case
    C) State chart
    D) Activity

Ans: Option b
Explanation: A use case diagrams captures only the functionality of the system whereas a dynamic model/view captures the functions as well as the action.

3) What does SDLC stand for ?
Ans:SDLC means for Software Development Life Cycle

4) What are the methods in which use case descriptions can be written?
A) Actors in a use case are almost always stakeholders
B) Preconditions must be true before statement begins
C) Need list should be reviewed when writing each use case
D) All of the mentioned

Ans: Option **d**
Explanation: All the statement depicts the method in which use case description can be written.
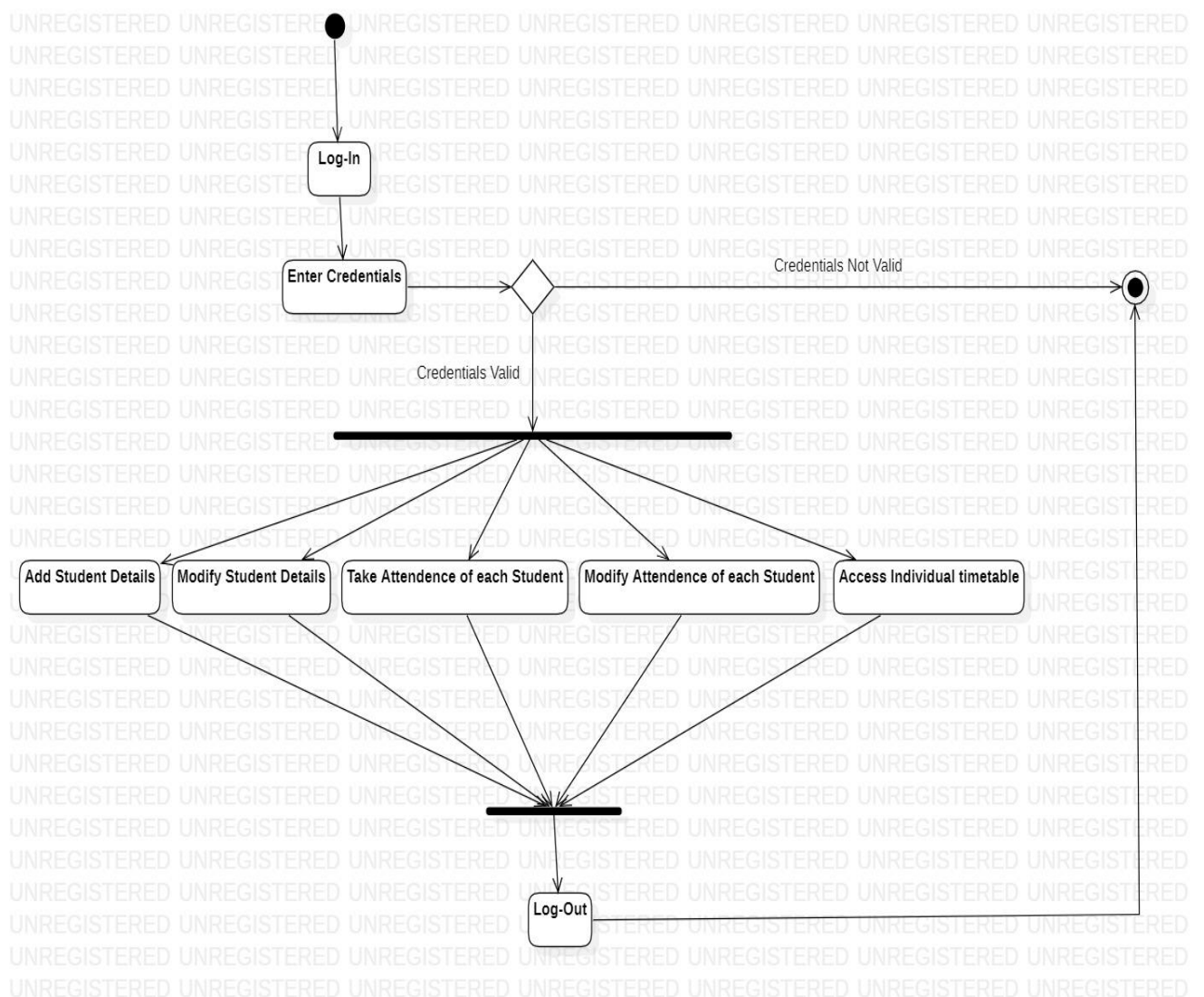
In-lab:

1) Kevin is a Software Engineering student. One day, he got very interested in the staff activity. So, he went to his professor and asked him about everything that they work on the ERP system. The professor said he will explain everything, only if Kevin would draw the activity and sequence diagrams of the ERP system, by the end of the day, so that he could gain some knowledge in this. Kevin agreed to this, but he got confused, while drawing the total diagram. As you are good in this topic, help Kevin to complete his diagram in time.
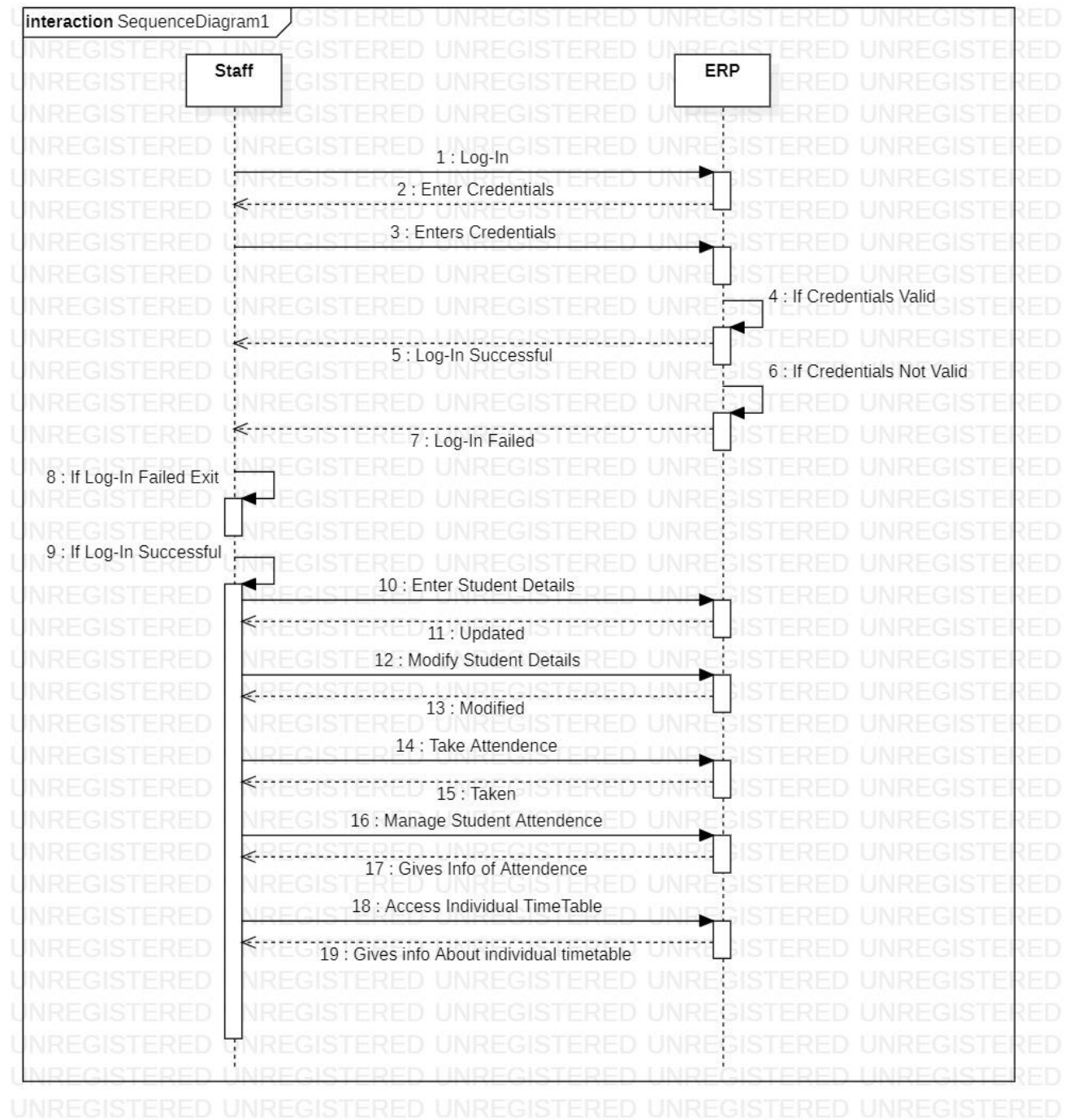
The Professor said the following: -

   a.   First, we have to login with the respective credentials.
   b.   We can add student details and modify it.
   c.   We can take attendance of each student.
   d.   We should be able to manage the attendance of each student.
   e.   We can access the individual timetable.

ACTIVITY DIAGRAM:

SEQUENCE DIAGRAM:

The sequence diagram titled "interaction SequenceDiagram1" shows the following interactions between Staff and ERP:

1. Log-In (Staff → ERP)
2. Enter Credentials (ERP → Staff)
3. Enters Credentials (Staff → ERP)
4. If Credentials Valid (ERP self)
5. Log-In Successful (ERP → Staff)
6. If Credentials Not Valid (ERP self)
7. Log-In Failed (ERP → Staff)
8. If Log-In Failed Exit (Staff self)
9. If Log-In Successful (Staff self)
10. Enter Student Details (Staff → ERP)
11. Updated (ERP → Staff)
12. Modify Student Details (Staff → ERP)
13. Modified (ERP → Staff)
14. Take Attendence (Staff → ERP)
15. Taken (ERP → Staff)
16. Manage Student Attendence (Staff → ERP)
17. Gives Info of Attendence (ERP → Staff)
18. Access Individual TimeTable (Staff → ERP)
19. Gives info About individual timetable (ERP → Staff)

Post Lab :

1) What is the difference between use case diagram and use case?
Ans:
Use case diagram shows business or system, its external users, and use cases applicable to the system. Use case represents one specific goal or need of the user from the system.

2) What is actor in use case diagrams?
Ans:
An actor is a person, organization, or external system that plays a role in one or more interactions with your system.

3) **What are functional requirements?**
Ans:
Functional requirements define the basic system behaviour. Essentially, they are what the system does or must not do, and can be thought of in terms of how the system responds to inputs. Functional requirements usually define if/then behaviours and include calculations, data input, and business processes.