



## BVRIT HYDERABAD College of Engineering for Women

(Approved by AICTE | Affiliated to JNTUH | Accredited by NAAC with Grade 'A' & NBA for CSE, ECE, EEE, & IT)  
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Department of CSE(Artificial Intelligence and Machine Learning)

Certified that this is the bonafide record of the work done by  
**Miss Potukuchi Sneha Registration no 23wh5a6603 of Class II Year I,  
Semester in Software Engineering Laboratory.**

Date: **Head of the Dept.** **Staff Incharge**

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Regd no. ....

**Submitted for the University Practical Examination held on**

**Internal Examiner**

**External Examiner**

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# **BOOK BANK SYSTEM**

## **1. Problem statement**

A Book Bank lends books and magazines to members, who are registered in the system. Also It handles the purchase of new titles for the Book Bank. Popular titles are brought into Multiple copies. Old books and magazines are removed when they are out of date or poor in condition.

A member can reserve a book or magazine that is not currently available in the book bank, so When it is returned or purchased by the book bank, that person is notified. The book bank can easily create, replace and delete information about the tiles, members, loans and reservations from the system.

## **2. Software Requirement Specification Document**

### **2.1 Functional Requirements**

If the entire process of & "Issue of Books or Magazines" is done in a manual manner then it would take several months for the books or magazines to reach the applicant. Considering the Fact that the number of students for Book Bank is increasing every year, an Automated System Becomes essential to meet the demand. So this system uses several programming and database techniques to elucidate the work involved in this process. The system has been carefully verified and validated in order to satisfy it. The System provides an online interface to the user where they can fill in their personal details and submit the necessary documents (may be by scanning). The authority concerned With the issue of books can use this system to reduce his workload and process the application in a speedy manner.

### **2.2 Tools and Technology Requirements**

The following are the list of software requirements we are using to implement this Client Side Technologies: HTML, CSS

- Scripting Language: JavaScript
- Business Logic Development Language: JSP
- Database Connectivity: JDBC
- Database: MYSQL
- Operating System: Windows 10
- Documentation: MS-Office

### **Hardware Requirements:**

The following are the hardware requirements with minimum configuration to get better performance of our application.

- Processor : Pentium-IV Systems
- RAM: 512MB or above
- Hard Disk : 20GB or above

- input and Output Devices : Keyboard, Monitor

#### **Deployment Requirements:**

- Front end : Java 1.8
- Technologies : JSP and JDBC
- Database : MYSQL server
- Web Server : Apache Tomcat 8.

### **2.3Non-functional Requirements**

#### **Performance:**

It is the response time, utilization and throughput behavior of the system. Care is taken so as to ensure a system with comparatively high performance.

#### **Maintainability:**

All the modules must be clearly separate to allow different user interfaces to be developed in future. Through thoughtful and effective software engineering, all steps of the product throughout its lifetime. All development will be provided with good documentation.

#### **Reliability:**

The software should have less failure rate.

### **3. Design Documents :**

The purpose of a design is to describe how the enhancements will be incorporated into the existing project. It should contain samples of the finished product. This could include navigational mechanism screenshots, example reports, and UML diagram

#### **3.1 Design Document Description**

##### **i. Use case diagrams:**

A use case diagram is a diagram that shows a set of use cases and actors and their relationships.

**Common Properties:** A use case diagram is just a special kind of diagram and shares the same common properties as do all other diagrams - a name and graphical contents that are a projection into a model. What distinguishes a use case diagram from all other kinds of diagrams is its content.

**Contents:** Use case diagrams commonly contain "Use cases "Actors "Dependency, generalization, and association relationships **Common Uses:** The use case diagrams are used to model the static use case view of a system. This view primarily supports the behavior of a system -the outwardly visible services that the system provides in the context of its environment.

##### **ii. Class Diagrams**

A class diagram is a diagram that shows a set of classes, interfaces, and collaborations and their relationships. Class diagram commonly contain the following things:

- Classes interfaces

- Collaborations
- Dependency, generalization and association relationships

### **Common Uses:**

Class diagrams are used to model the static design view of a system. While modeling the static design view of a system, class diagrams are used in one of the three ways:

- To model the vocabulary of a system
- To model simple collaborations
- To model a logical database schema.

## **ii. Sequence Diagrams**

a sequence diagram emphasizes the time ordering of messages.

Sequence diagram is formed by first placing the objects that participate in the interaction at the top of your diagram, across the X axis.

Typically, you place the object that initiates the interaction at the left, and increasingly more subordinate objects to the right.

Next, you place the messages that these objects send and receive along the Y axis, in order of increasing time from top to bottom.

This gives the reader a clear visual cue to the flow of control over time.

Sequence diagrams have two features that distinguish them from collaboration diagrams.

- "First, there is the object lifeline.

An object lifeline is the vertical dashed line that represents the existence of an object over a period of time.

- "Second, there is the focus of control.

The focus of control is a tall, thin rectangle that shows the period of time during which an object is performing an action, either directly or through a subordinate procedure.

### **Content:**

Sequence diagrams commonly contain

- "Objects
- "Links
- "Messages

### **Common Use:**

Modelling Hows of Control by Time Ordering.

## **IV Collaboration Diagram**

Also known as a communication diagram is an illustration of the relationships and interaction among software objects in the UML.

- objects: These are shown as rectangles with naming labels inside. The naming label follows the convention of
- object name: class.
- Links: These connect objects with actors and are depicted using a solid line between two elements. Message between objects: these are shown as a labeled arrow placed near a link.

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### **v. Activity Diagrams**

An activity diagram shows the flow from activity to activity. An activity is an ongoing non atomic execution within a state machine.

Activities ultimately result in some action, which is made up of executable atomic computations that result in a change in state of the system or the return of a value. Actions encompass calling another operation, sending a signal, creating or destroying an object, or some pure computation, such as evaluating an expression.

Graphically, an activity diagram is a collection of vertices and arcs.

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What distinguishes an interaction diagram from all other kinds of diagrams is its content.

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- "Activity states and action states
- "Transitions
- "Objects Common

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- "To model a workflow
- "To model an operation

### **Vi Statechart**

Statechart diagram describes the flow of control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. The most important purpose of a Statechart diagram is to model the lifetime of an object from creation to termination.

Statechart diagrams are also used for forward and reverse engineering of a system. However, the main purpose is to model the reactive system.

Following are the main purposes of using Statechart diagrams :

- To model the dynamic aspect of a system.
- To model the lifetime of a reactive system.
- To describe different states of an object during its lifetime.
- Define a state machine to model the states of an object.

## v. Component Diagrams

Component diagrams are used to model the physical aspects of a system. Physical aspects are the elements such as executables, libraries, files, documents, etc. which reside in a node. Component diagrams are used to visualize the organization and relationships among components in a system.

Component diagram commonly contain:

- Components
- Interfaces
- Relationships

## 3.2 Testing Document

### i. Overview of Testing

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner.

There are various types of tests.

Each test type addresses a specific testing requirement.

### ii. Stages of Testing:

- **Unit testing:**

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs.

All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .

It is done after the completion of an individual unit before integration. This is a structural testing that relies on knowledge of its construction and is invasive.

Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration.

Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

- **Integration testing:**

Integration tests are designed to test integrated software components to determine if they actually run as one program.

Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfactory, as

shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

### **iii. Types of testing:**

- **White-box testing:**

White-box testing, sometimes called glass-box testing, is a test case design method that uses the control structure of the procedural design to derive test cases. These test cases & Guarantee that all independent paths within a module have been exercised at least once

- Exercise all logical decisions on their true and false sides
- Execute all loops at their boundaries and within their operational bounds Exercise internal data structures to ensure their validity

- **Black box testing:**

Also called behavioral testing, focuses on the functional requirements of the software. It enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.

Black-box testing is not an alternative to white-box techniques, but it is a complementary approach.

Black box testing attempts to find errors in the following categories:

- Incorrect or missing functions
- Interface errors
- Errors in data structures or external database access
- Behavior or performance errors
- Initialization and termination errors.

## **3.3 Software Configuration Management**

Software Configuration Management is defined as a process to systematically manage, organize, and control the changes in the documents, codes, and other entities during the Software Development Life Cycle. It is abbreviated as the SCM process in software engineering. The primary goal is to increase productivity with minimal mistakes.

The primary reasons for Implementing Software Configuration Management System are:

- There are multiple people working on software which is continually updating
- It may be a case where multiple version, branches, authors are involved in a software project, and the team is geographically distributed and works concurrently
- Changes in user requirement, policy, budget, schedule need to be accommodated.
- Software should able to run on various machines and Operating Systems
- Helps to develop coordination among stakeholders
- SCM process is also beneficial to control the costs involved in making changes to a system

## **3.4 Risk Management**

Risk management assists a project team in identifying risks, assessing their impact and Probability and tracking risks throughout a software project.

Categories of risks:

- Project risks
- Technical risks
- Business risks
- Risk Components:
- Performance risk
- Cost risk
- Support risk
- Schedule risk
- Risk Drivers:
- Negligible
- Marginal
- Critical
- Catastrophic

**Risk Table:**

Risk	Category	Probability(%)	Impact	
Size estimation may be significantly low	PS	<b>60</b>	<b>2</b>	
Delivery deadline will be tightened	BU	<b>50</b>	<b>2</b>	
Customer will the requirements	PS	<b>80</b>	<b>2</b>	
Technology will not meet expectations	TE	<b>30</b>	<b>1</b>	
Lack of tracking on tools	DE	<b>80</b>	<b>3</b>	
Inexperienced staff	ST	<b>30</b>	<b>2</b>	

ST-staff size and experience risk

BU-business risk

TE-technology risk

PS-project size risk

1-catastrophobia

2-critical

3-marginal

4-negligible

# RISK MANAGEMENT PLAN

RISK	TRIGGER	OWNER	RESPONSE	RESOURCE REQUIRED
<b>RISKS WITH RESPECT TO THE PROJECT TEAM</b>				
- Illness or sudden absence of the project team	- Illness / other emergencies/ resign	-Project Manager	-Project manager take responsibilities	-Backup resources - proper schedule plan
<b>RISKS WITH RESPECT TO THE CUSTOMER / USER</b>				
- The customer changes initial requirements  - The customer is not available when needed	- User change request  - Incomplete description during requirement phase  - Target user unable to attend testing / assessments	- Senior Technician  - Senior Manager  - Senior Manager	- Quality Assurance / Control  - Change Request Form  - Scheduling and customer "booking"	- Quality control checklist  - Change Request Form  - User Requirement Doc  - Project Schedule  - Letter of acknowledgement to Customer

## 4.Design phase tools

### STAR UML:

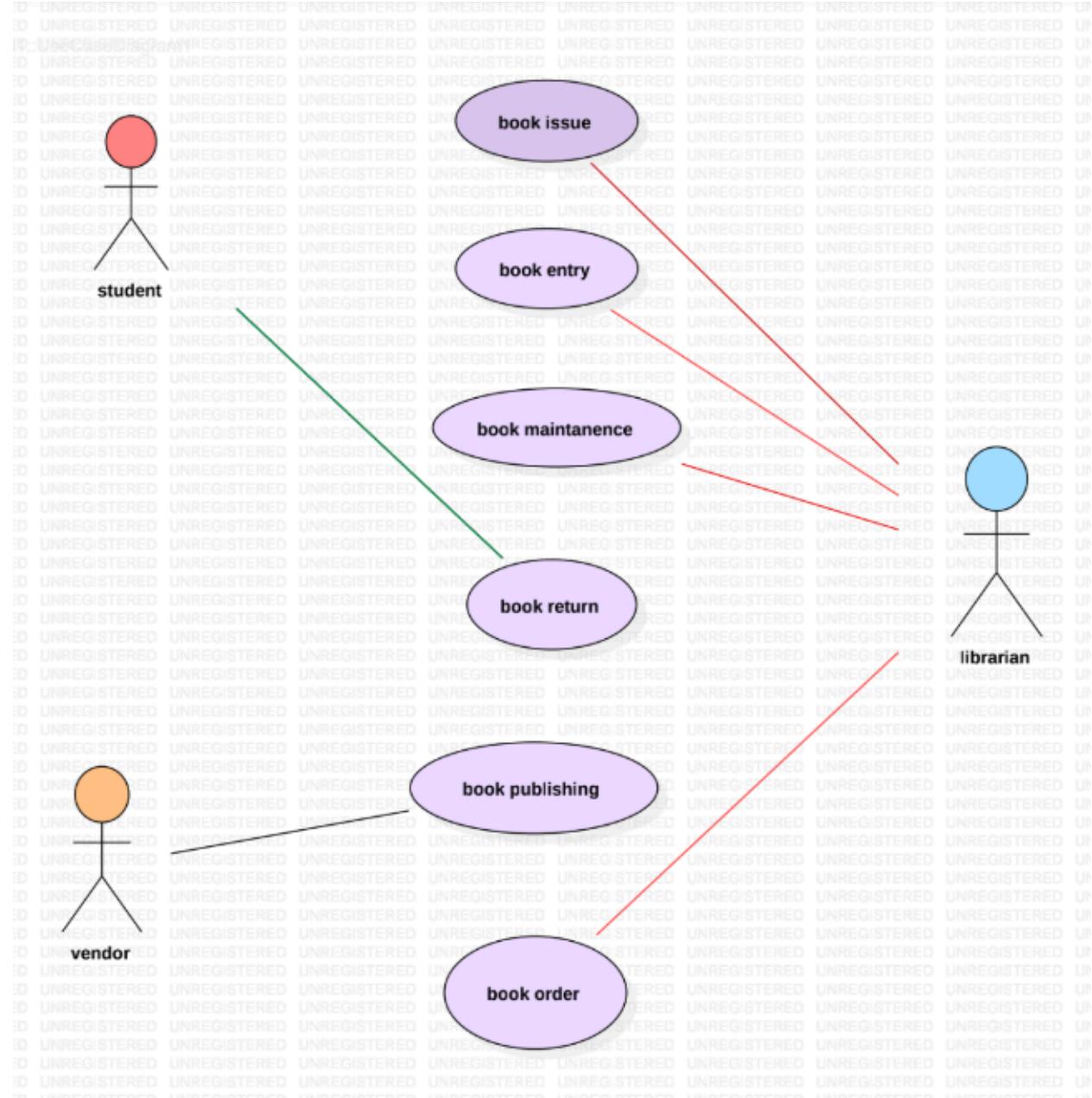
Star uml is open source software modeling tool that supports the uml (unified modeling language)Framework for a system and software modeling .It is based on the uml version 1.4,provides different types of diagrams and it accepts UML 2.0 notation.I actively supports MDA(Model Driven Architecture)Approach by supporting UML profile concepts and allowing to generate code for multiple languages.

UML supports the following diagrams:

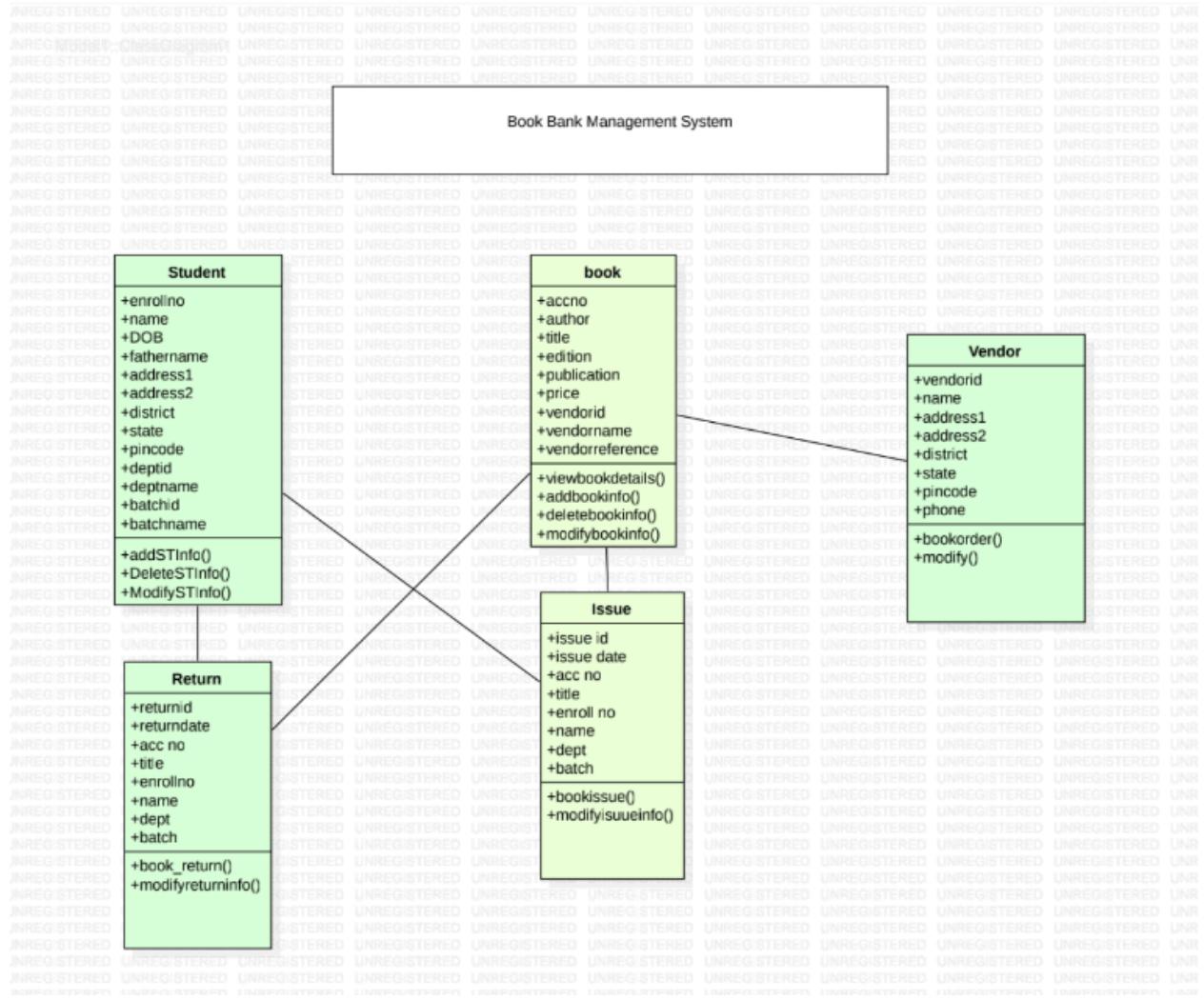
- 1.USE CASE diagrams
- 2.CLASS diagrams
- 3.SEQUENCE diagram
- 4.COLLABORATION diagram
- 5.STATE CHART diagram
- 6.ACTIVITY diagram
- 7.COMPONENT diagram
- 8.DEPLOYMENT diagram
- 9.COMPOSITE STRUCTURE diagram

## 5.DESIGN

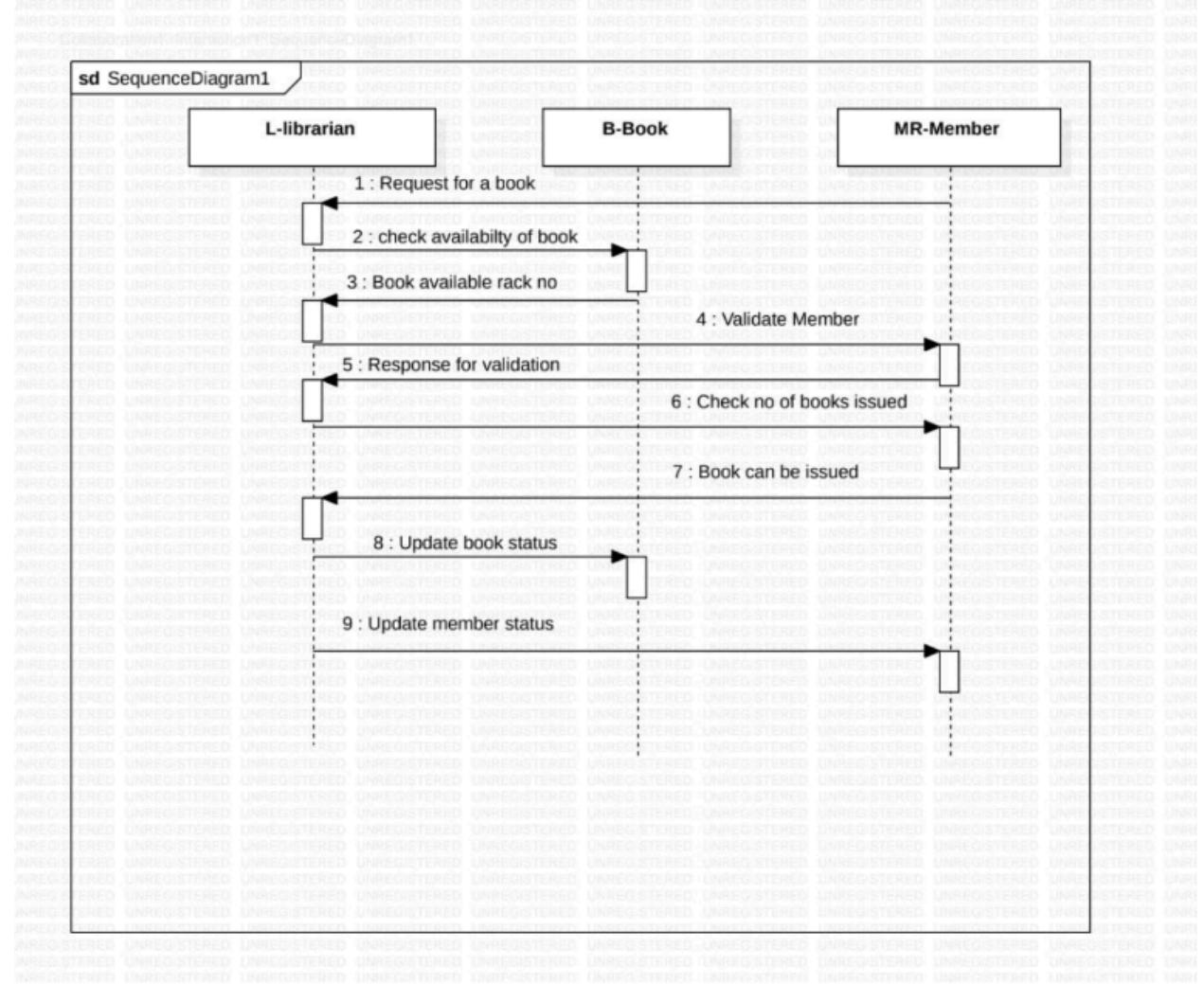
### Use case diagram for Book Bank System



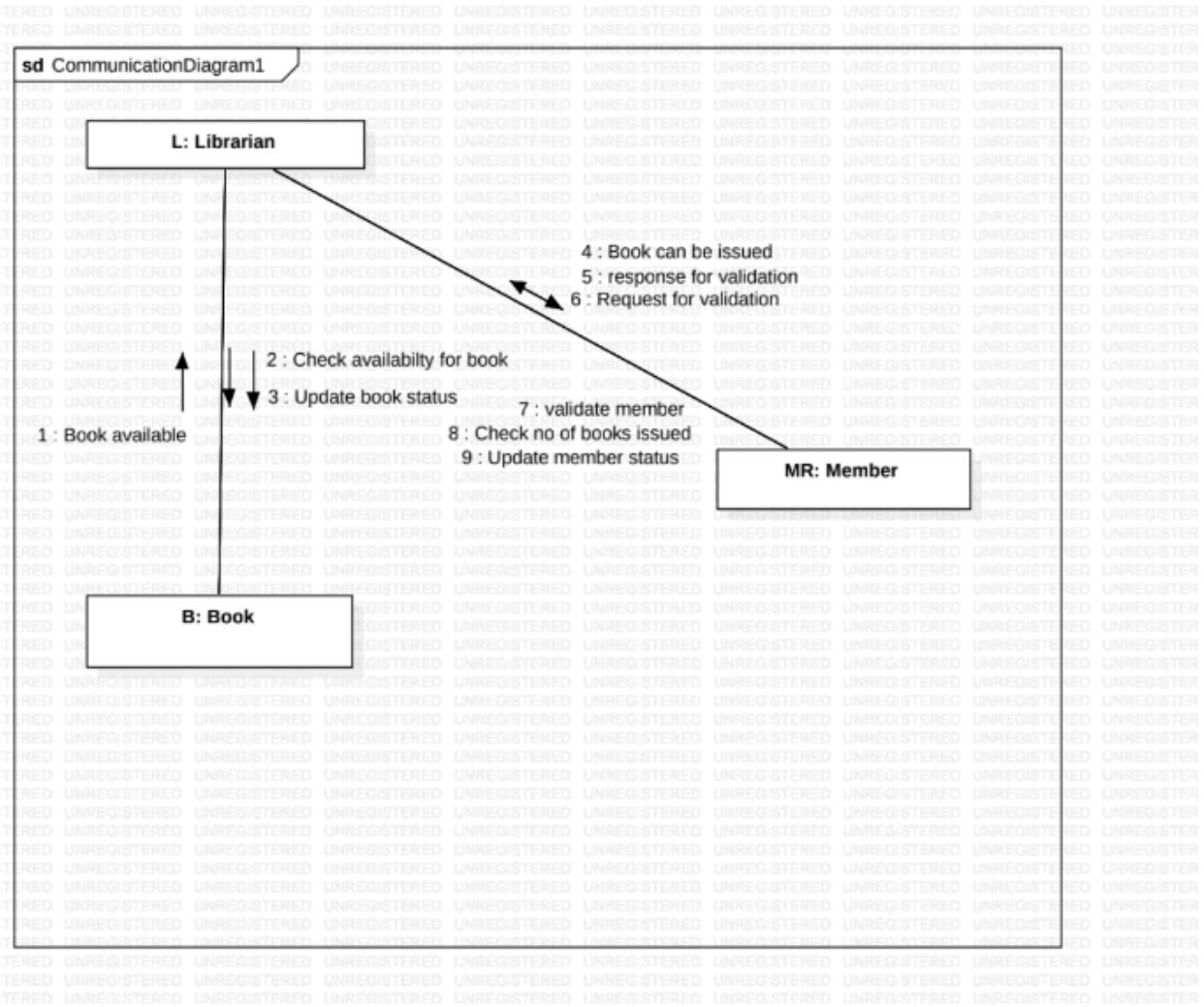
# Class diagram for Book Bank System



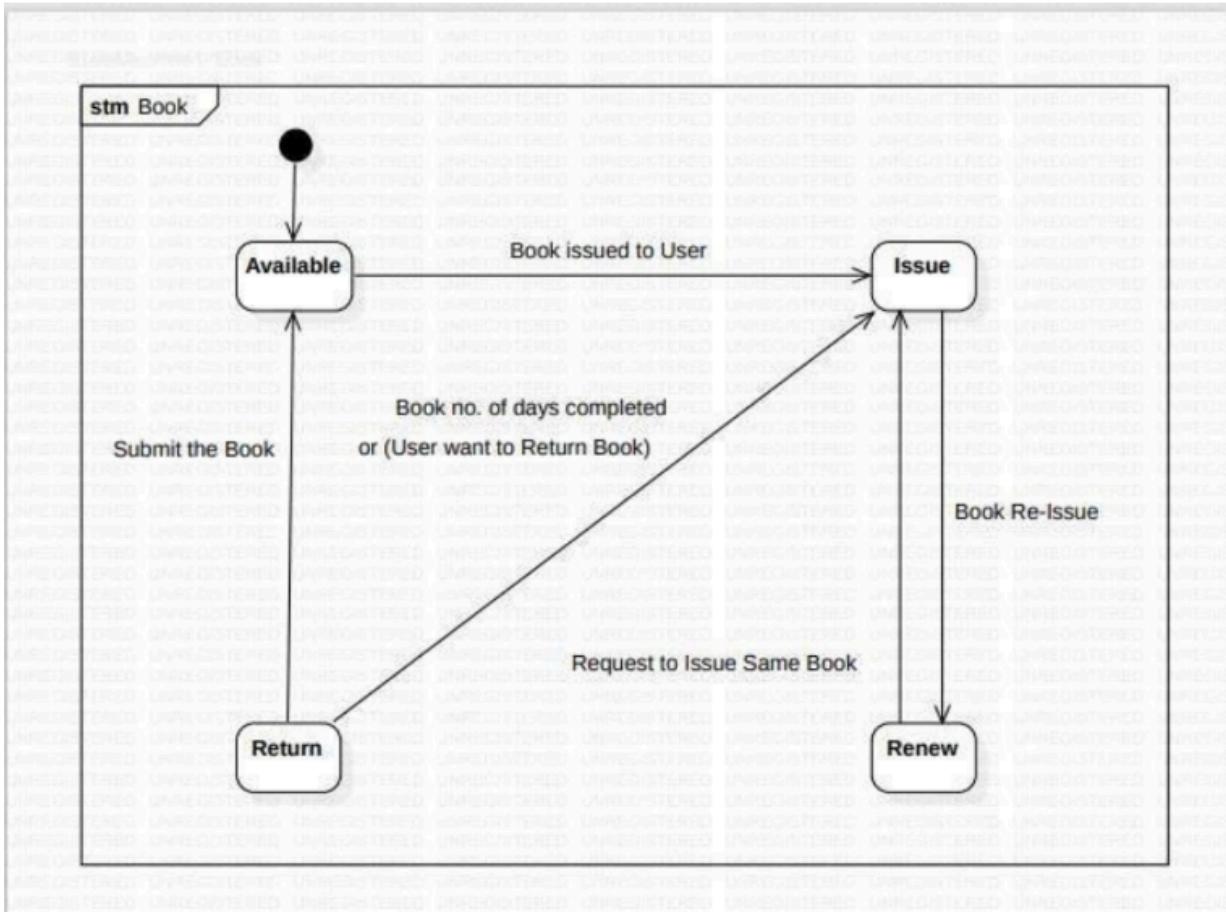
## Sequence diagram for Book Bank System



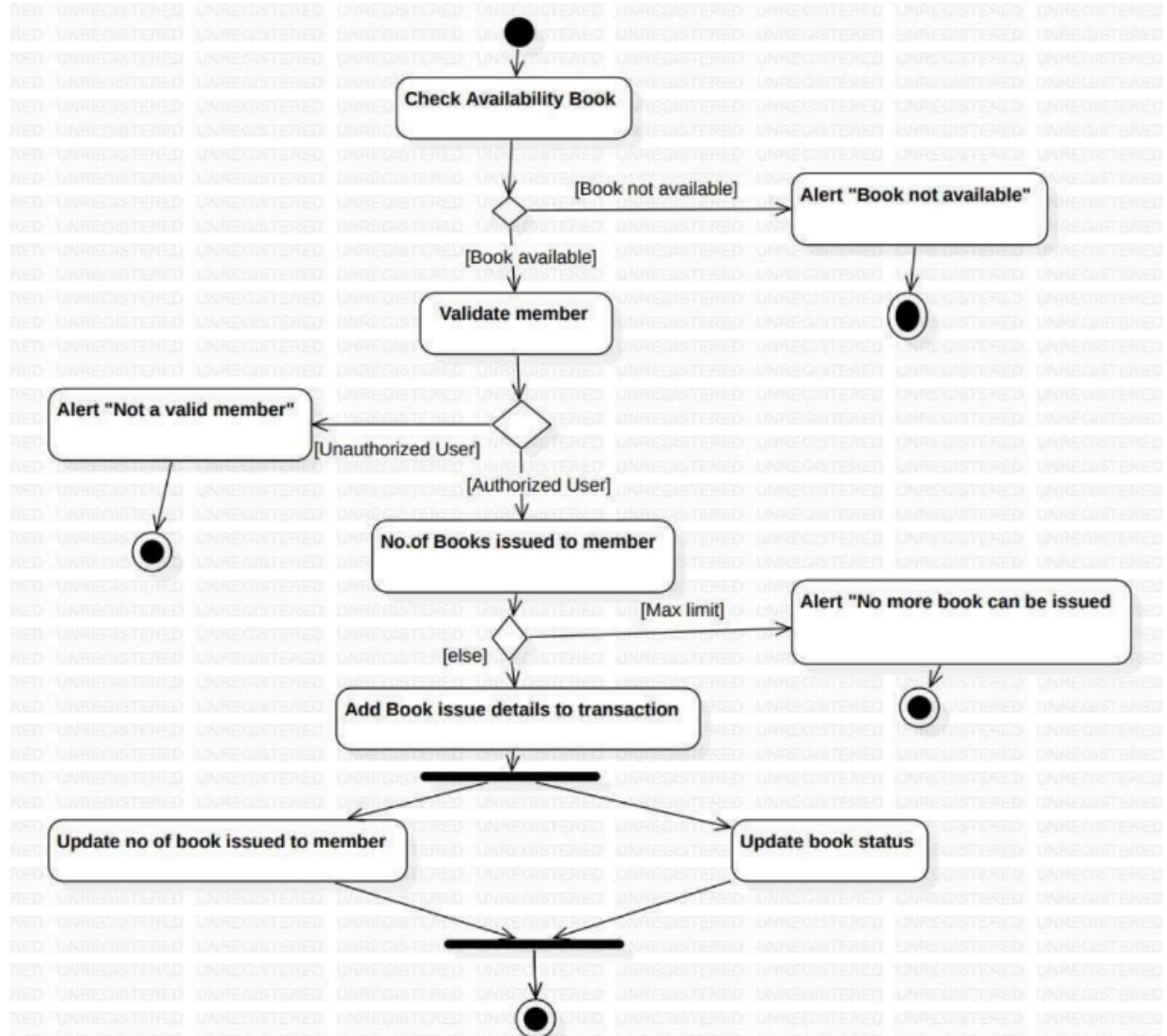
## Collaboration Diagram for Book Bank System



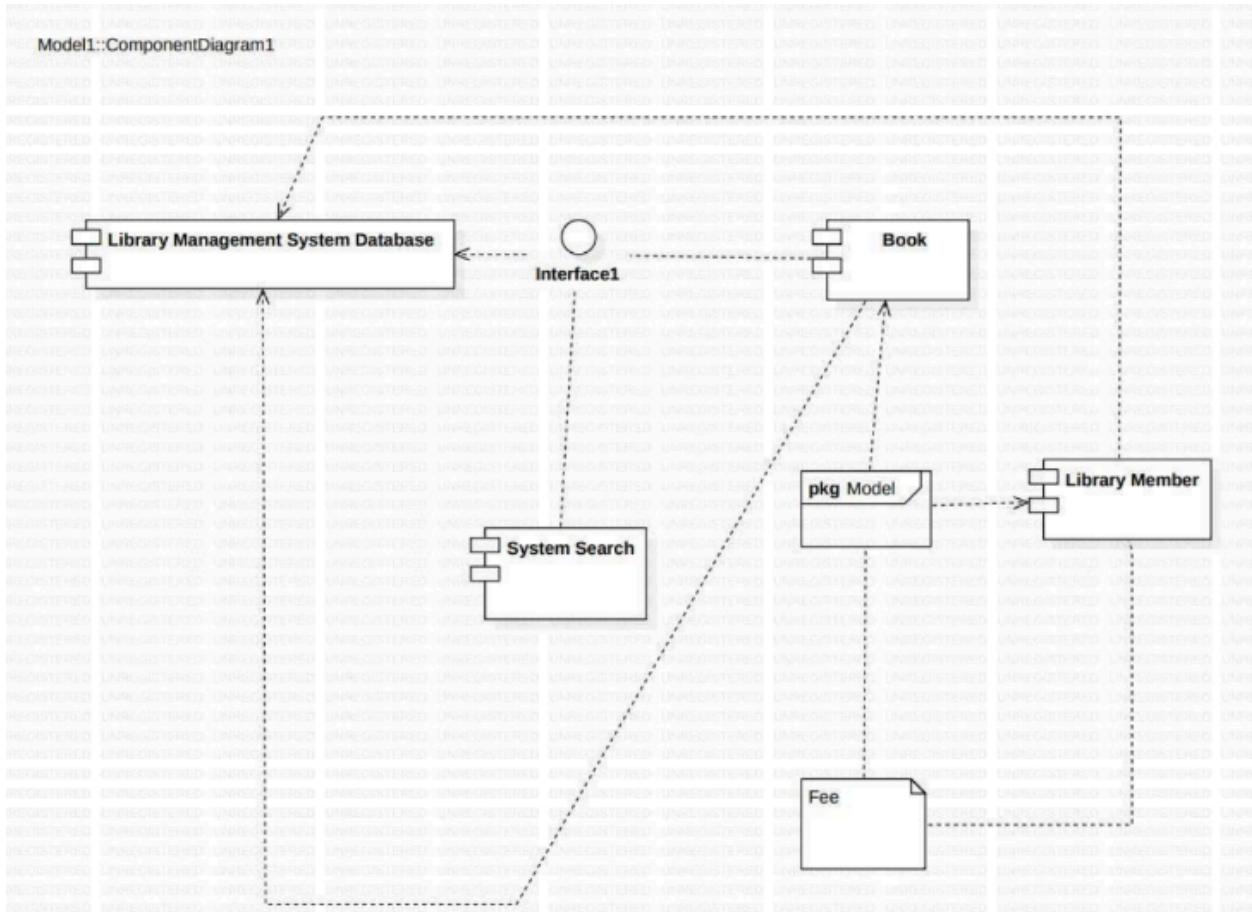
## State chart diagram for Book bank System



## Activity diagram for Book Bank System



## Component diagram for Book Bank System



## 6. Test Case

Test cases	Input	Expected output	Actual output
Valid login	Username, password.	Successful	Successful Next page
Invalid login	Username, password.	Failed	Enter valid details, Try again

# **Recruitment system**

## **1. Problem statement**

The recruitment system allows the job seekers to enroll their names through the process of registration. The employee also can get the list of available candidates and shortlist for their company recruitment once the applicant enrolls he receives an id, which helps him in further correspondence a fee amount is received from the job seekers for enrolment. This systemizes the task of the job seeker easier rather than waiting in queue for enrolment this also reduces the time consumption for both for the job seeker and employee.

## **2. Software Requirement Specification Document**

### **2.1 Functional Requirements**

Consolidating vital candidate information and documents like contact details, resumes and CVs in one place is typically the heart of recruiting software capabilities. Going through each and every data is a tiring process, so using one platform for assessing potential employees throughout the application process, from job posting to selection. The system provides a jobs catalog and information to members and helps them decide on the jobs to apply for. The admin can keep the jobs catalog updated all the time so that the members (Job seekers and the agencies) get the updated information all the time. The main users are users: Admin, Members who are the Job seekers, and the agencies.

### **2.2 Tools and Technology Requirements**

The following are the list of software requirements we are using to implement:

Application:

- Client Side Technologies: HTML, CSS
- Scripting Language: JavaScript
- Business Logic Development Language: JSP
- Database Connectivity: JDBC
- Database: MYSQL
- Operating System: Windows 10
- Documentation: MS-Office

### **Hardware Requirements:**

The following are the hardware requirements with minimum configuration to get better performance of our application.

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4-negligible

# RISK MANAGEMENT PLAN

RISK	TRIGGER	OWNER	RESPONSE	RESOURCE REQUIRED
<b>RISKS WITH RESPECT TO THE PROJECT TEAM</b>				
- Illness or sudden absence of the project team	- Illness / other emergencies/ resign	-Project Manager	-Project manager take responsibilities	-Backup resources - proper schedule plan
<b>RISKS WITH RESPECT TO THE CUSTOMER / USER</b>				
- The customer changes initial requirements  - The customer is not available when needed	- User change request  - Incomplete description during requirement phase  - Target user unable to attend testing / assessments	- Senior Technician  - Senior Manager  - Senior Manager	- Quality Assurance / Control  - Change Request Form  - Scheduling and customer "booking"	- Quality control checklist  - Change Request Form  - User Requirement Doc  - Project Schedule  - Letter of acknowledgement to Customer

## 4.Design phase tools

### STAR UML:

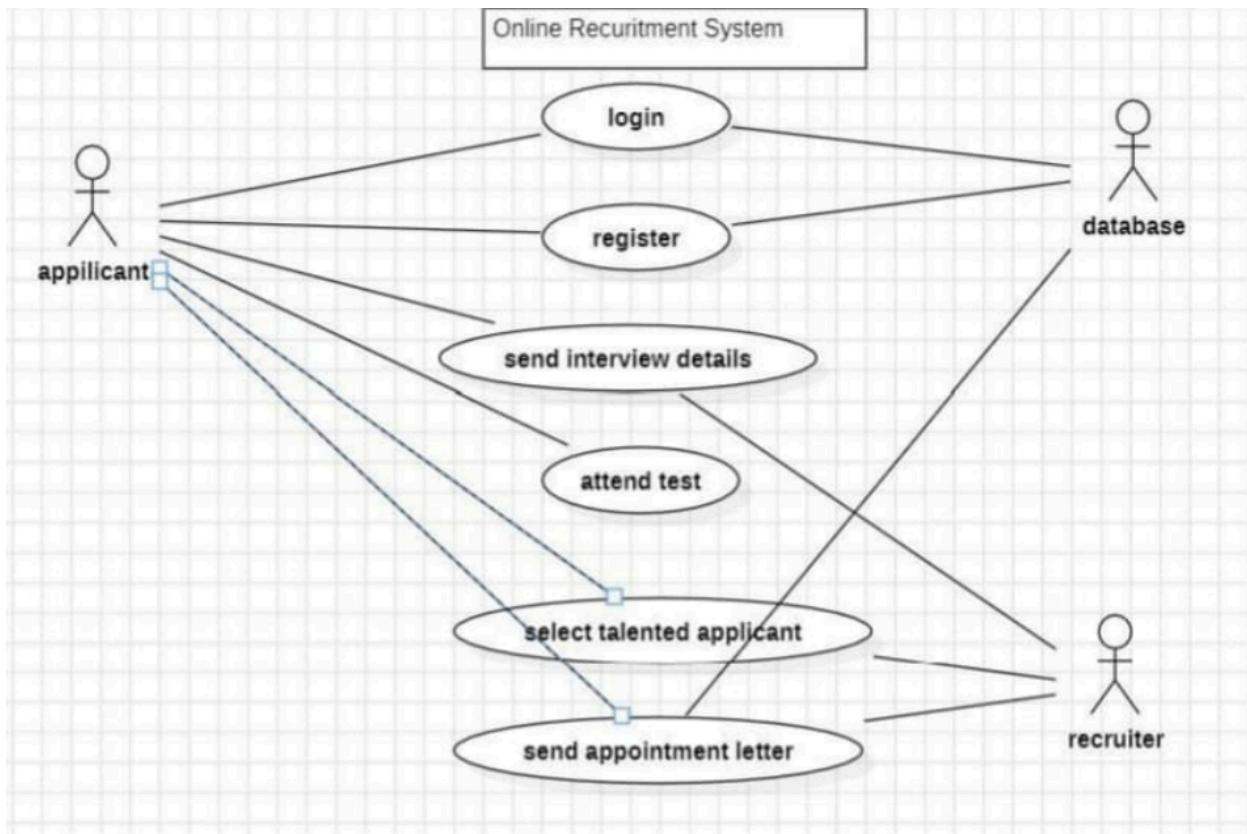
Star uml is open source software modeling tool that supports the uml (unified modeling language)Framework for a system and software modeling .It is based on the uml version 1.4,provides different types of diagrams and it accepts UML 2.0 notation.I actively supports MDA(Model Driven Architecture)Approach by supporting UML profile concepts and allowing to generate code for multiple languages.

UML supports the following diagrams:

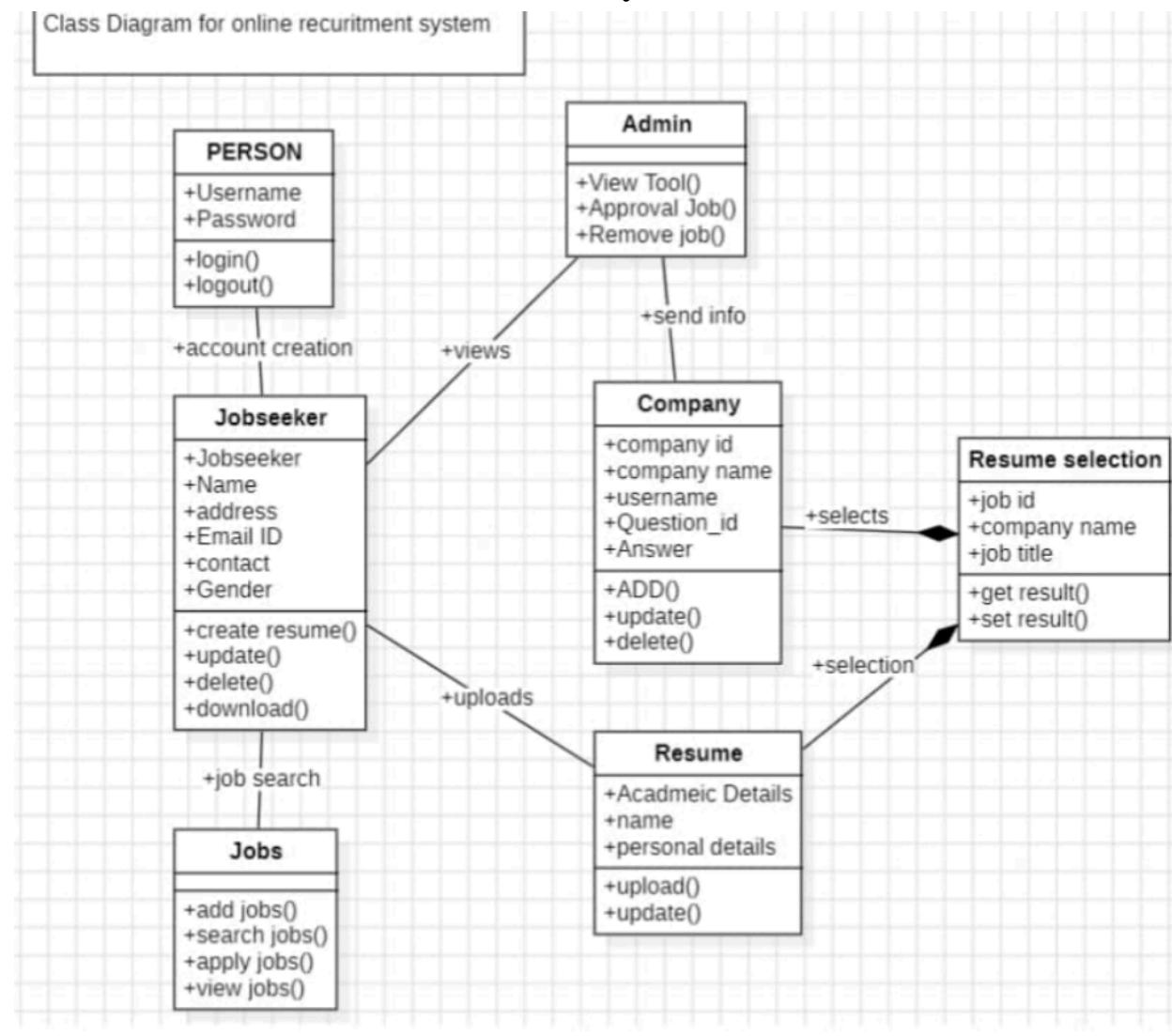
- 1.USE CASE diagrams
- 2.CLASS diagrams
- 3.SEQUENCE diagram
- 4.COLLABORATION diagram
- 5.STATE CHART diagram
- 6.ACTIVITY diagram
- 7.COMPONENT diagram
- 8.DEPLOYMENT diagram
- 9.COMPOSITE STRUCTURE diagram

## 5.DESIGN

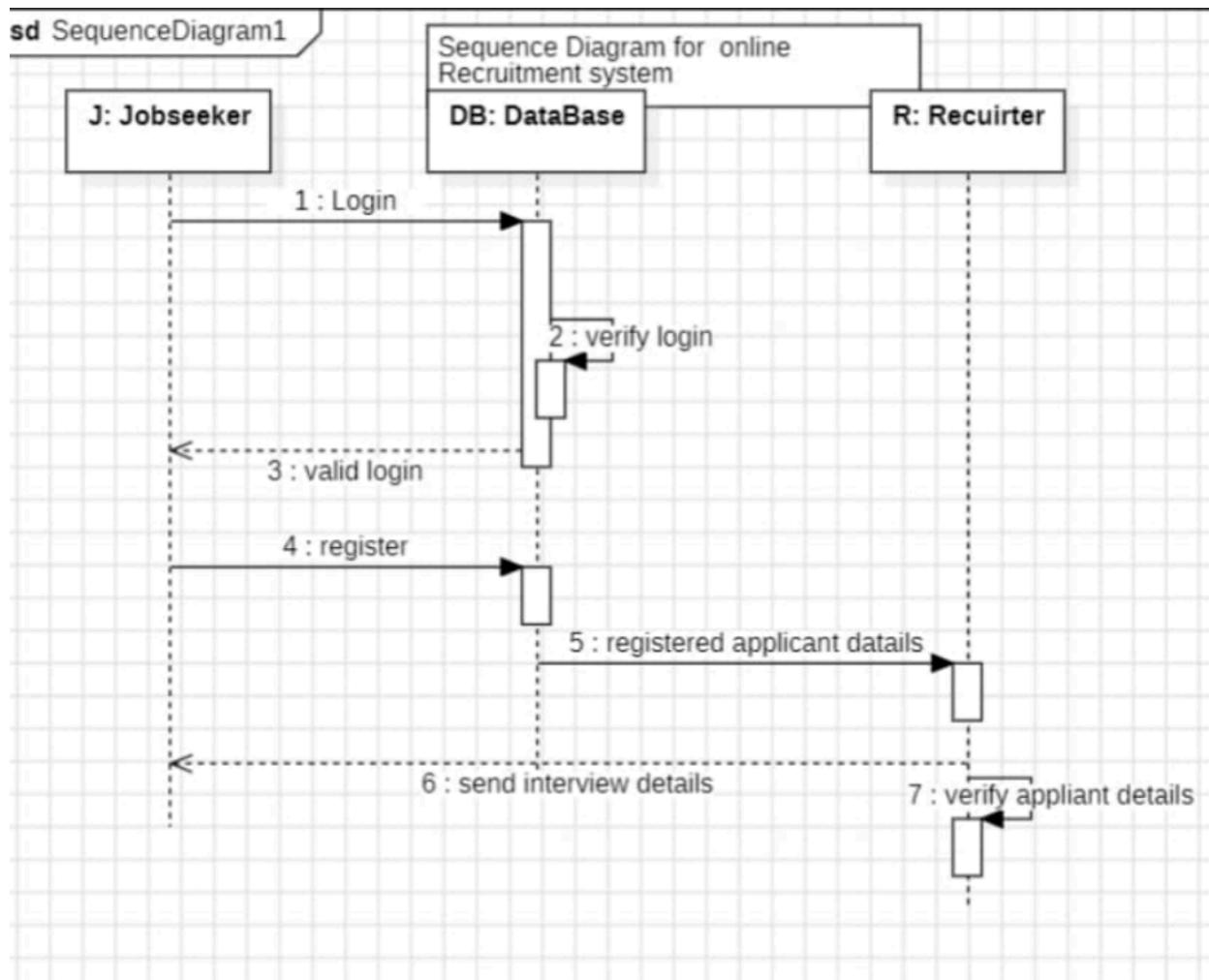
### USE CASE DIAGRAM for Recruitment system



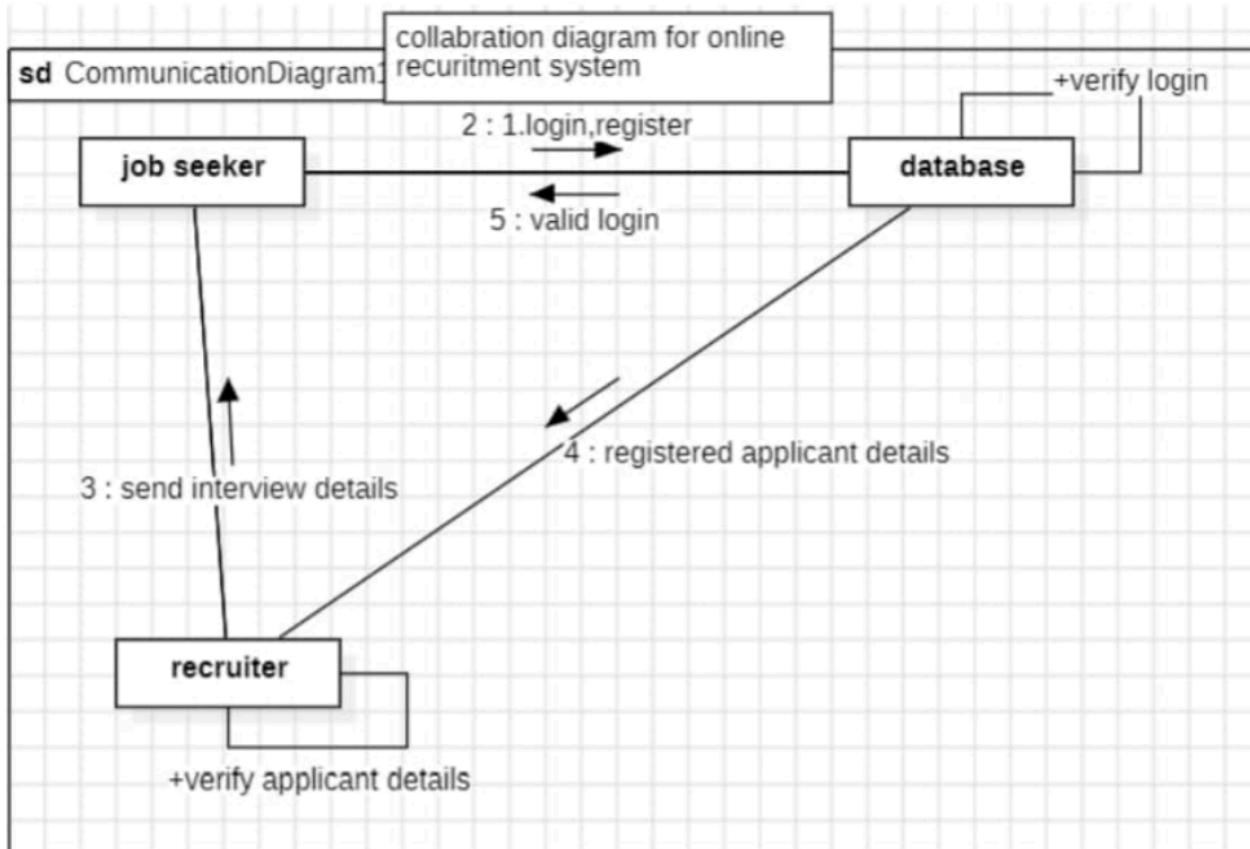
## CLASS DIAGRAM for Recruitment system



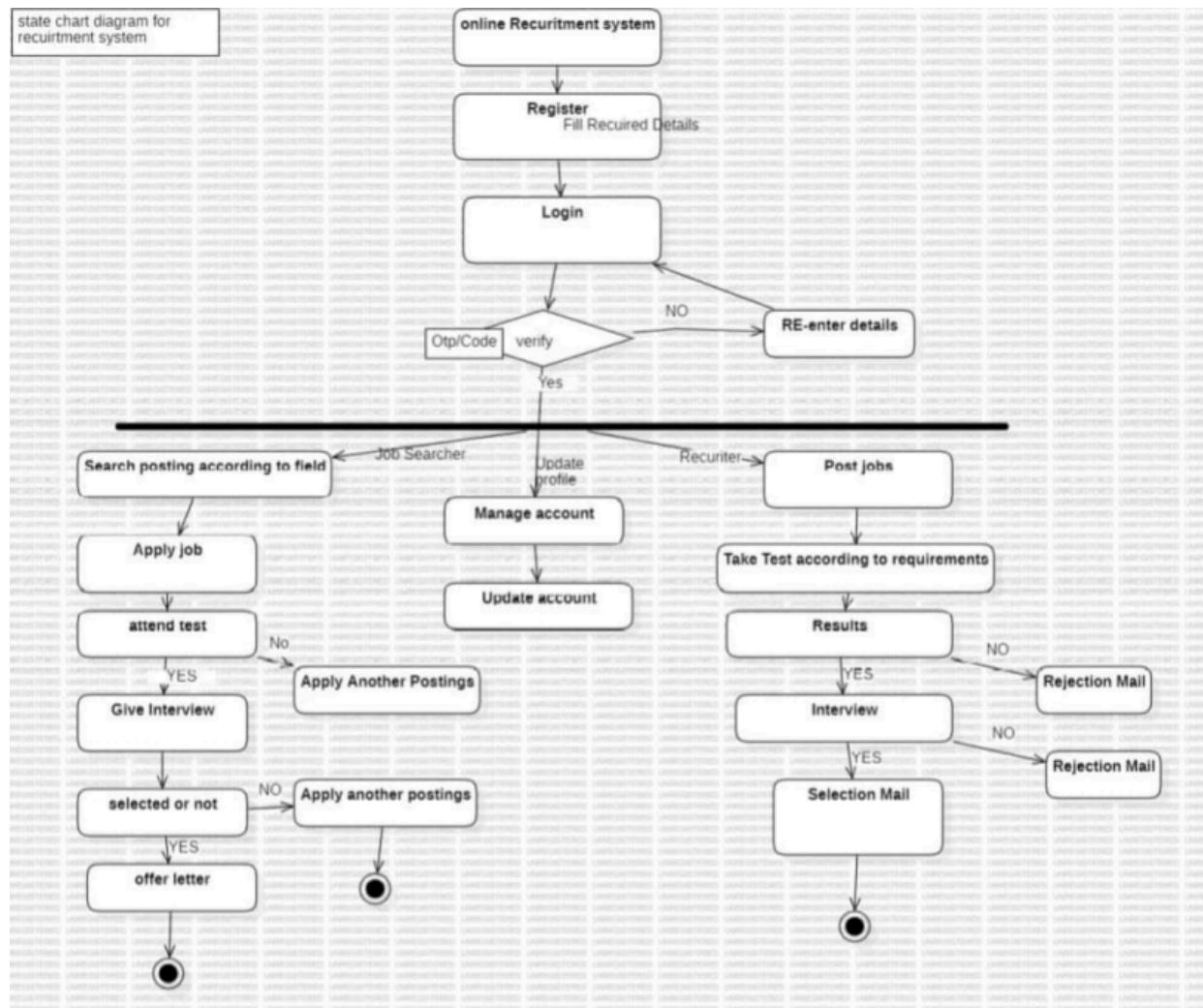
## SEQUENCE DIAGRAM for Recruitment system



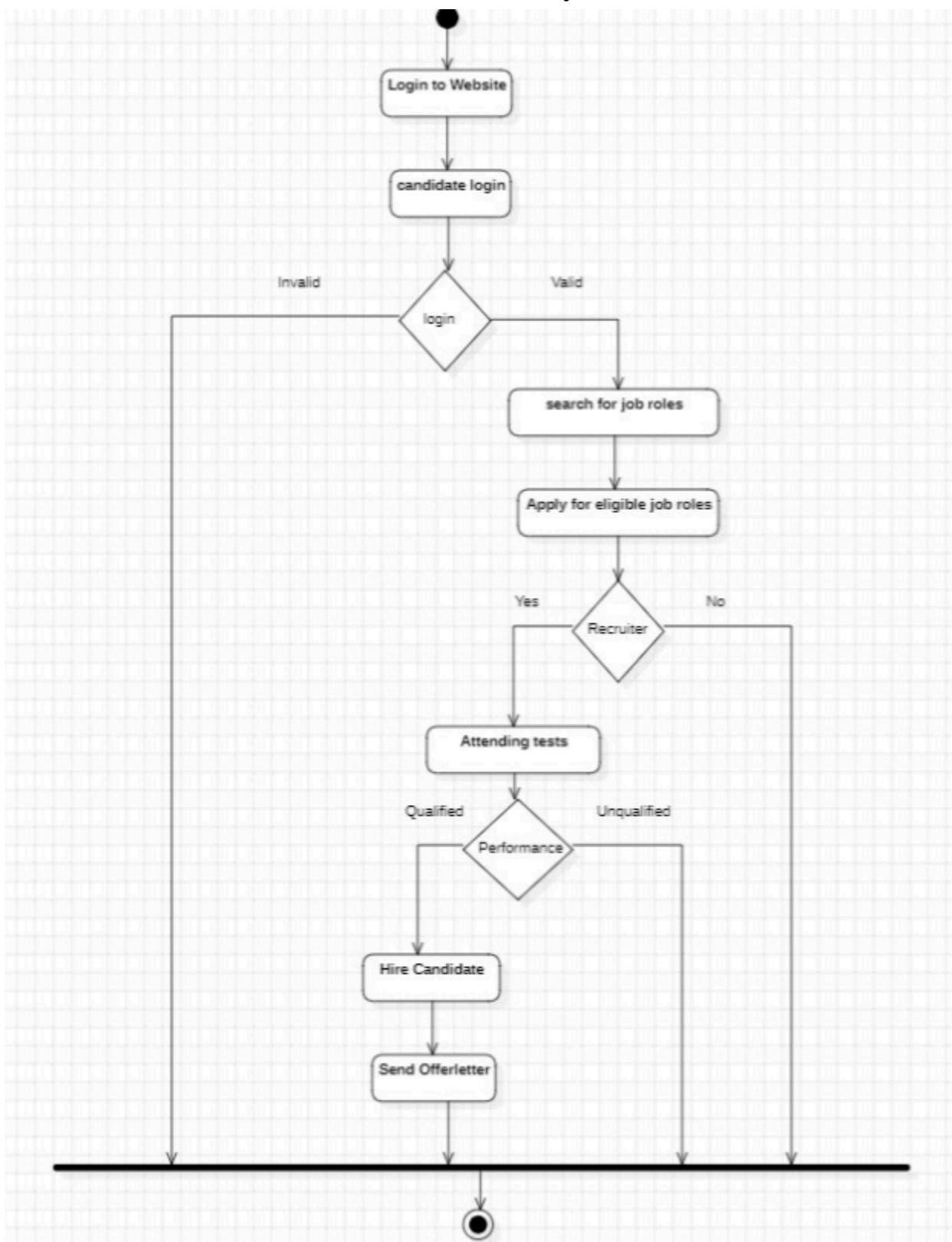
## COLLABORATION DIAGRAM for Recruitment system



## STATE CHART DIAGRAM for Recruitment system



## ACTIVITY DIAGRAM for Recruitment system



## 6. Test Case

Test cases	Input	Expected output	Actual output
Valid login	Username, password.	Successful	Successful Next page
Invalid login	Username, password.	Failed	Enter valid details, Try again
Job Application successful	Upload resume, Upload details	Successful	Application posted successfully
Job application not Successful	Upload resume, Upload details	not successful Try again	Try again

---END---