

CASE TOOLS LABORATORY

LAB MANUAL

Academic Year : 2019 - 2020
Course Code : AIT103
Regulations : IARE - R16
Semester : V
Branch : IT

Prepared by

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IARE

Institute of Aeronautical Engineering

An Autonomous Institute
NAAC Accreditation with 'A' Grade
Accredited by NBA
Permanent Affiliation Status from JNTUH

1. PROGRAM OUTCOMES:

B.TECH - PROGRAM OUTCOMES (POs)	
PO-1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO-2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO-3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO-4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO-5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO-6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO-7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO-8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO-9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO-10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO-11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO-12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

2. PROGRAM SPECIFIC OUTCOMES

PROGRAM SPECIFIC OUTCOMES (PSO's)	
PSO-1	Professional Skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.
PSO-2	Software Engineering Practices: The ability to apply standard practices and strategies in software service management using open-ended programming environments with agility to deliver a quality product for business success.
PSO-3	Successful Career and Entrepreneurship: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

3. ATTAINMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

S No	Experiment	Program Outcomes Attained	Program Specific Outcomes Attained
WEEK-1	INTRODUCTION TO UML	PO2, PO3	PSO-1
	Study of UML		
WEEK-2	ONLINE PURCHASE SYSTEM		
	Create a UML model for Online Purchase System		
WEEK-3	LIBRARY MANAGEMENT SYSTEM	PO-2	
	Create a UML model for Library Management System		
WEEK-4	E-TICKETING	PO-3	PSO-1
	Create a UML model for E-Ticketing		
WEEK-5	QUIZ SYSTEM	PO-3	PSO-1
	Create a UML model for Quiz System		
WEEK-6	STUDENT MARK ANALYZING SYSTEM		
	Create a UML model for Student Mark Analyzing System		
WEEK-7	E- MAIL CLIENT SYSTEM	PO-2,PO-3	
	Create a UML model for E-Mail Client System		
WEEK-8	TELEPHONE PHONE DIALING	PO-2,PO-3	
	Create a UML model for Telephone Phone Dialing		
WEEK-9	POINT OF SALE	PO-3	
	Create a UML model for Point of Sale		
WEEK-10	WORKING COMPANY	PO-11	
	Create a UML model for a Working Company		
WEEK-11	ATM TRANSACTIONS	PO-11	PSO-3
	Create a System to design Bank ATM Transactions and generate code by using MS-Access as back end and VB as the front end		
WEEK-12	STUDENT MARK ANALYSIS		
	Create a System to design Student Mark Analysis system and generate code by using MS-Access as back end and VB as front end		

4. MAPPING COURSE OBJECTIVES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Objectives	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
I		✓	✓									✓	✓		
II		✓	✓									✓	✓		
III					✓									✓	
IV		✓							✓					✓	
V					✓									✓	

5. SYLLABUS:

CASE TOOLS LABORATORY

IV Semester: IT								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AIT103	Foundation	L	T	P	C	CIA	SEE	Total
		-	-	3	2	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes: 36			
OBJECTIVES: The course should enable the students to: I. Understand the concept of modeling and mechanism involved in UML. II. Learn the classes and different types of relationships in classes, objects and terms related to diagrams. III. Examine fundamental object-oriented analysis and design techniques. IV. Apply design patterns for viewing a system as a set of procedures. V. Prepare case studies for analyzing modeling techniques.								
WEEK-1	I NTRODUCTION TO UML							
Study of UML.								
WEEK-2	ONLINE PURCHASE SYSTEM							
Create a UML model for Online Purchase system.								
WEEK-3	LIBRARY MANAGEMENT SYSTEM							

Create a UML model for Library Management system.	
WEEK-4	E-TICKETING
Create a UML model for E-TICKETING.	
WEEK-5	QUIZ SYSTEM
Create a UML model for Quiz system.	
WEEK-6	STUDENT MARK ANALYZING SYSTEM
Create a UML model for Student Mark Analyzing system.	
WEEK-7	E-MAIL CLIENT SYSTEM
Create a UML model for E-Mail Client system.	
WEEK-8	TELEPHONE PHONE DIALING
Create a UML model for Telephone phone Dialing.	
WEEK-9	POINT OF SALE
Create a UML model for Point of Sale.	
WEEK-10	WORKING COMPANY
Create a UML model for Working Company.	
WEEK-11	ATM TRANSACTIONS
Create a system to design Bank ATM Transactions and generate code by using MS-Access as back end and VB as front end.	
WEEK-12	STUDENT MARK ANALYSIS
Create a system to design Student Mark Analysis System and generate code by using MS-Access as back end and VB as front end.	
REFERENCE BOOKS:	
<ol style="list-style-type: none"> 1. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", Pearson Education, 2nd Edition, 2004. 2. Craig Larman, "Applying UML and Patterns: An Introduction to Object Oriented Analysis and Design and Iterative Development", Pearson Education, 3rd Edition, 2005. 	
WEB REFERENCES:	
<ol style="list-style-type: none"> 1. www.uml.org 2. www.holub.com/goodies/uml/ 3. www.uml-diagrams.org/ 4. https://www.utdallas.edu/~UML.../Rumbaugh--UML_2.0_Reference_C... 	
SOFTWARE AND HARDWARE REQUIREMENTS FOR A BATCH OF 36 STUDENTS:	
HARDWARE:	
Desktop Computer Systems: 36 Nos	
SOFTWARE:	
Application Software: Rational Rose	

6. INDEX:

S. No	Experiment	Page No
1	INTRODUCTION TO UML	
2	ONLINE PURCHASE SYSTEM	
3	LIBRARY MANAGEMENT SYSTEM	
4	E-TICKETING	
5	QUIZ SYSTEM	
6	STUDENT MARK ANALIZING SYSTEM	
7	E-MAIL CLIENT SYSTEM	
8	TELEPHONE PHONE DIALING	
9	POINT OF SALE	
10	WORKING COMPANY	
11	ATM TRANSACTIONS	
12	STUDENT MARK ANALYSIS	

CASE TOOLS LABORATORY

WEEK-I	INTRODUCTION TO UML
ANALYSIS AND DESIGN <p>The application's method recommends the use of static and dynamic views of a logical model and a physical model to capture the in-process products of object-oriented analysis and design. Using the notation, the application enables you to create and refine these views within an overall model representing your problem domain and software system.</p> <p>This overall model contains classes, use cases, objects, packages, operations, component packages, components, processors, devices and the relationships between them. Each of these model elements possesses model properties that identify and characterize them. The notation provides graphical icons to represent each kind of model element and relationship.</p> <p>A model also contains diagrams and specifications, which provide a means of visualizing and manipulating the model's elements and their model properties. Since diagrams are used to illustrate multiple views of a model, icons representing a model element can appear in none, one, or several of a model's diagrams. The application therefore enables you to control, which element, relationship, and property icons appear on each diagram, using facilities provided by its application window. Within its application window, it displays each diagram in a diagram window, and each specification in a specification window.</p>	
USE CASE VIEW <ul style="list-style-type: none">• Contains the use case models, flow of events and supplementary documentation.• It is a contract between customer and developer.• It is essential for analysis, design and test activities.• It also contains activity diagrams.• It contains the use case diagrams.• It is the heart of the other views that represent the required behaviour of the system.	
LOGICAL VIEW <ul style="list-style-type: none">• It supports the functional requirements of the system.• It includes the use case realization, class diagram, interaction diagram, state chart and activity diagram.	
PROCESS VIEW <ul style="list-style-type: none">• It addresses the performance, scalability and throughput of the system.• It includes the threads and the processes that found the system concurrency and synchronization mechanism.• It is not necessary for single processing environment.	

COMPONENT VIEW

- The component view addresses the ease of development management of software assets, reuse, subcontracting and of the shelf components.
- Describes the organization of static software, like source code files components in terms of packaging, layering and configuration management.

DEPLOYMENT VIEW

- It addresses the issue like deployment installation and performance.
- The deployment view is used for distributed systems only.
- It shows the various executables like a runtime components and computing modes.
- It contains deployment diagrams.

WEEK-2

ONLINE PURCHASE SYSTEM

1. ANALYSIS

Identifying the Actors

Identifying the Use Cases

2. REQUIREMENTS

System Requirements

Software Requirements

3. DESIGN

Use Case Diagram

Class Diagram

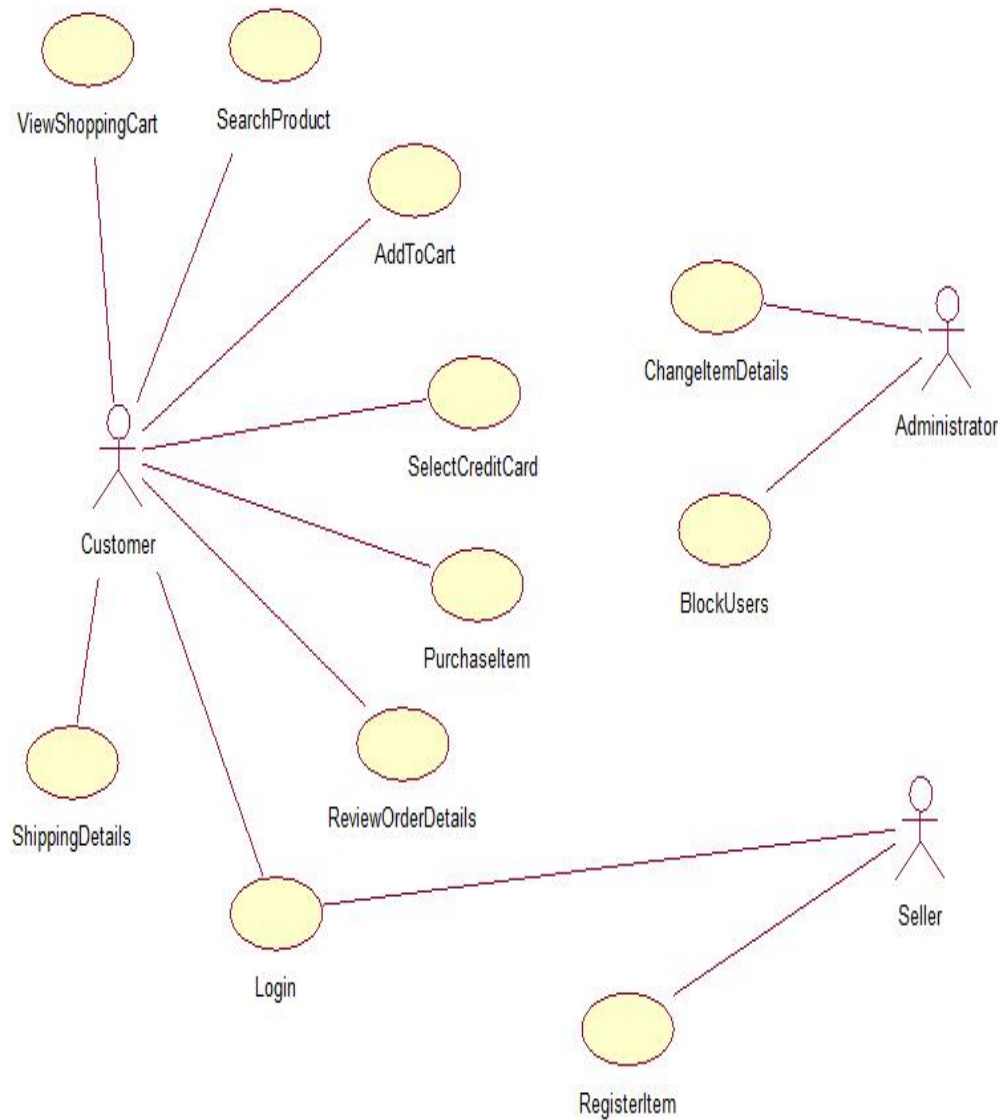
Sequence Diagram

Collaboration Diagram

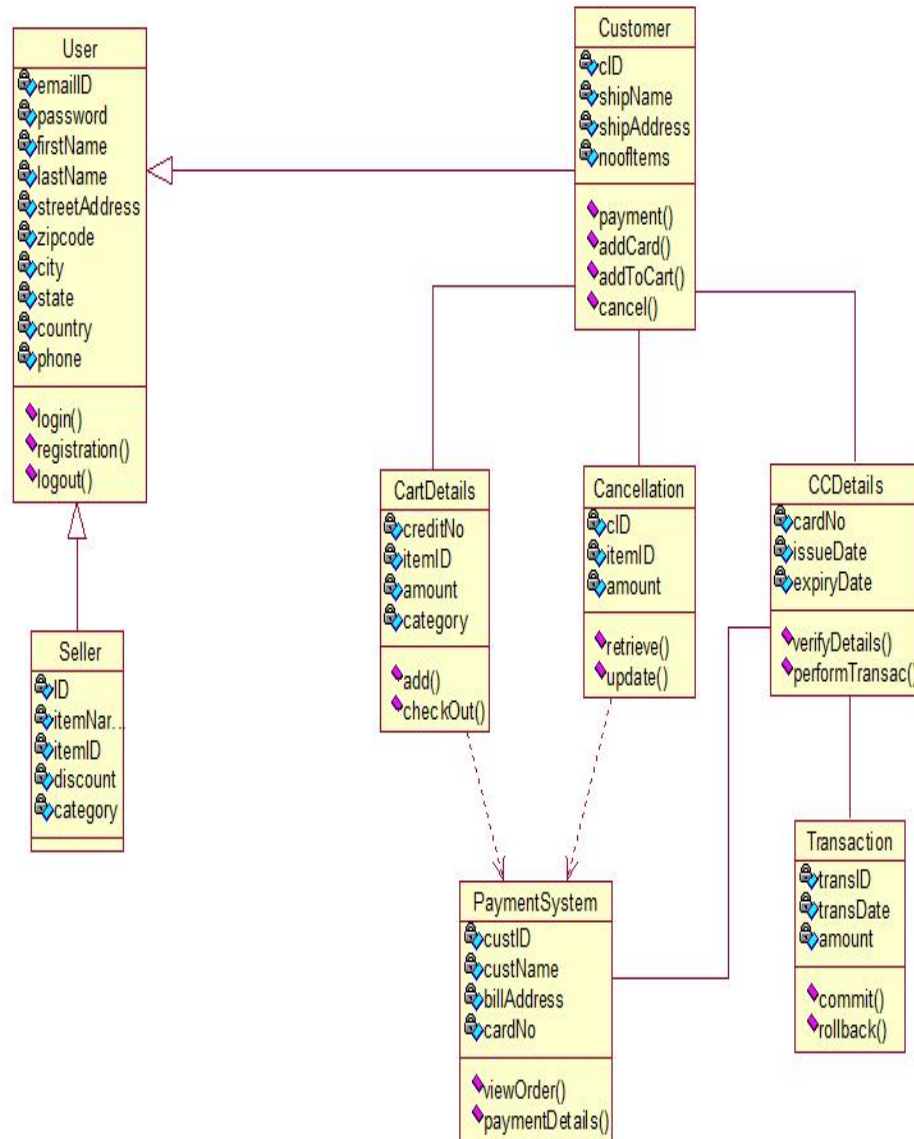
Activity Diagram

State Diagram

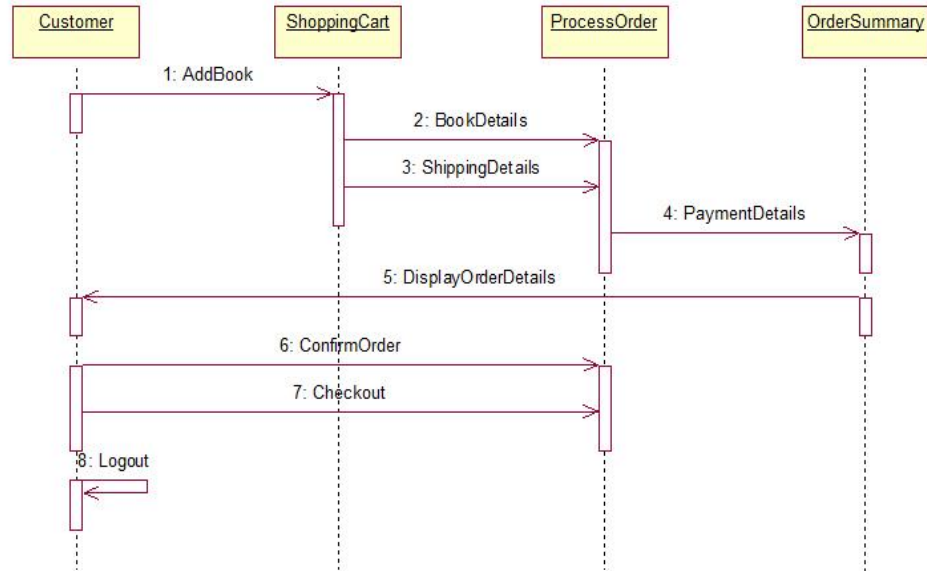
ONLINE PURCHASE USE CASE DIAGRAM



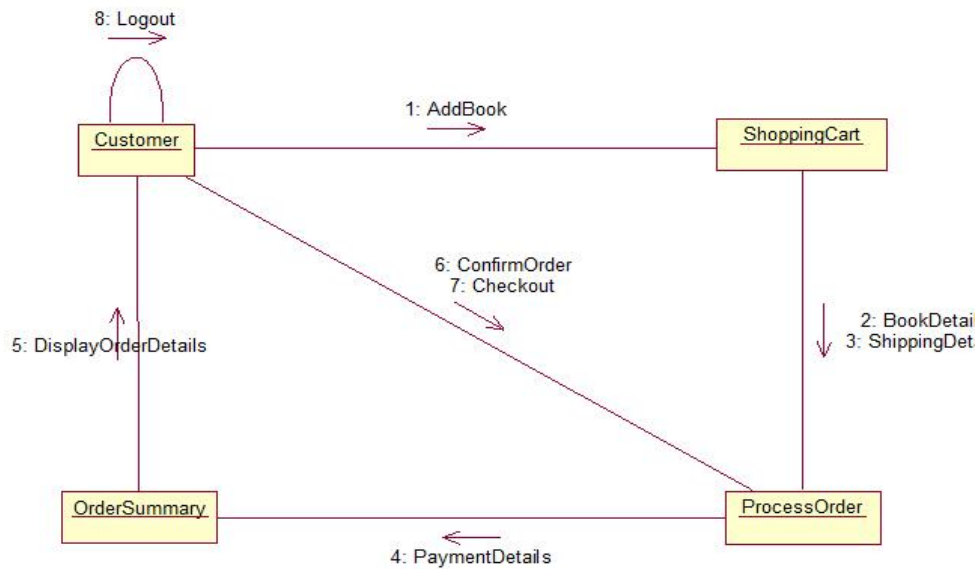
ONLINE PURCHASE CLASS DIAGRAM



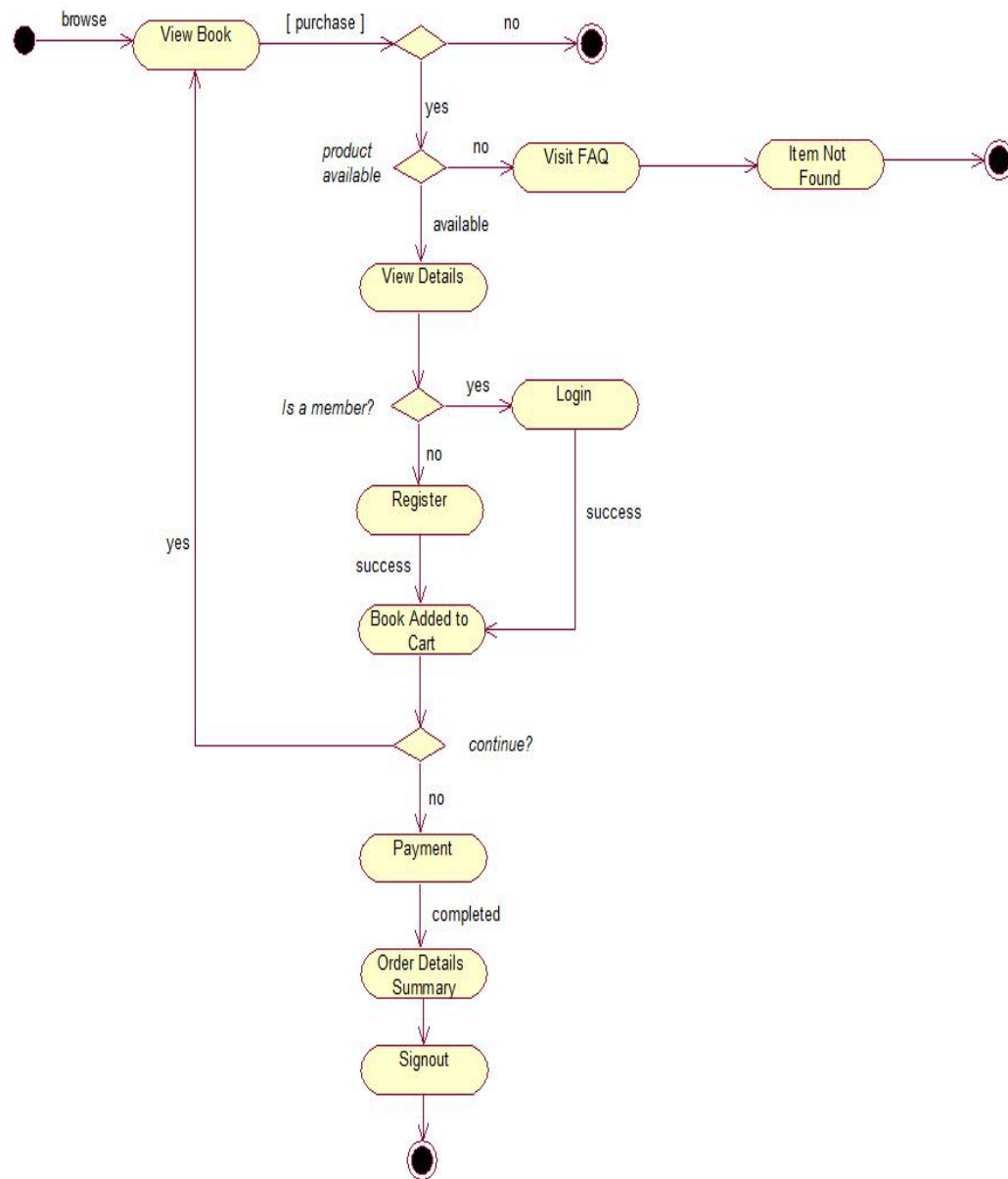
ONLINE PURCHASE SEQUENCE DIAGRAM



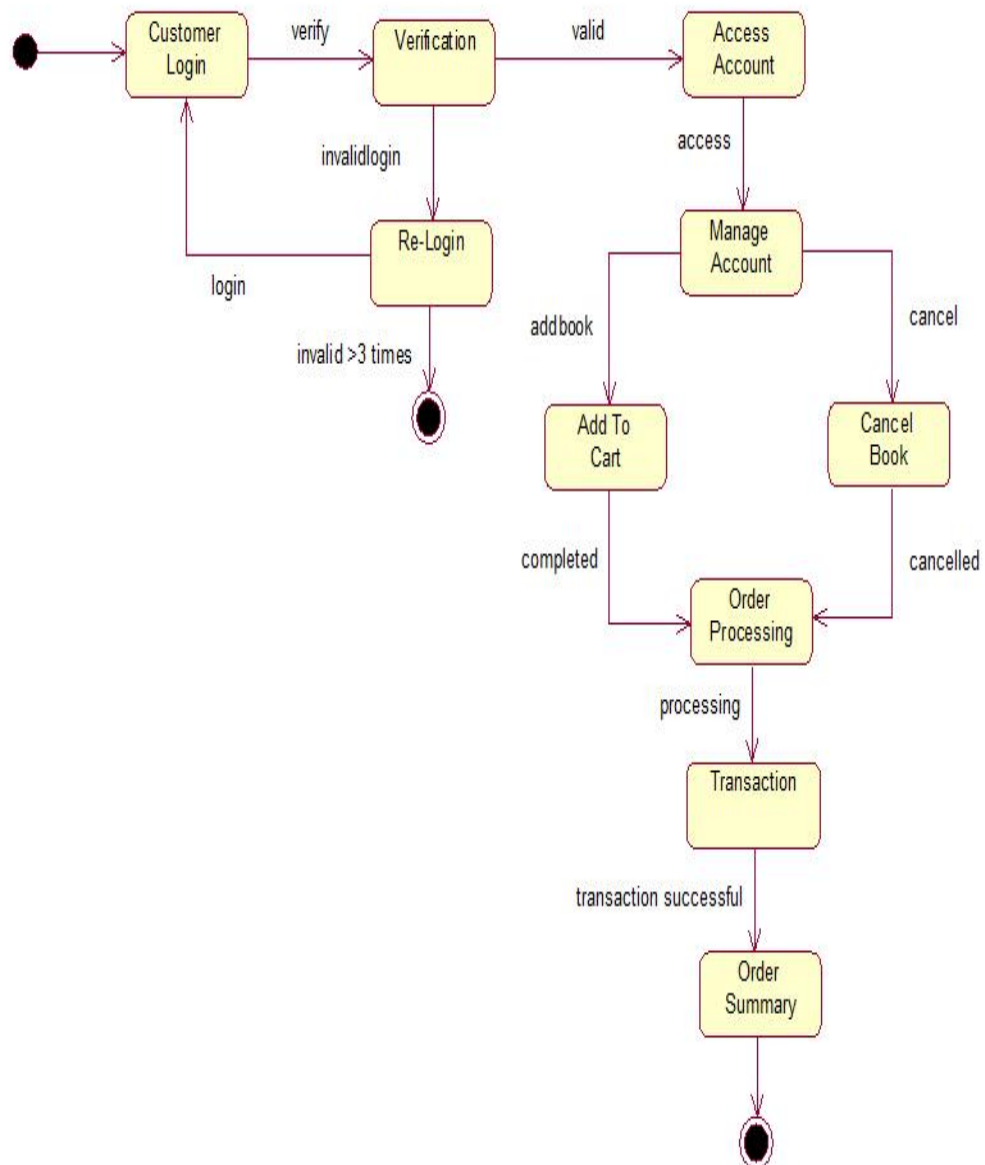
ONLINE PURCHASE COLLABORATION DIAGRAM



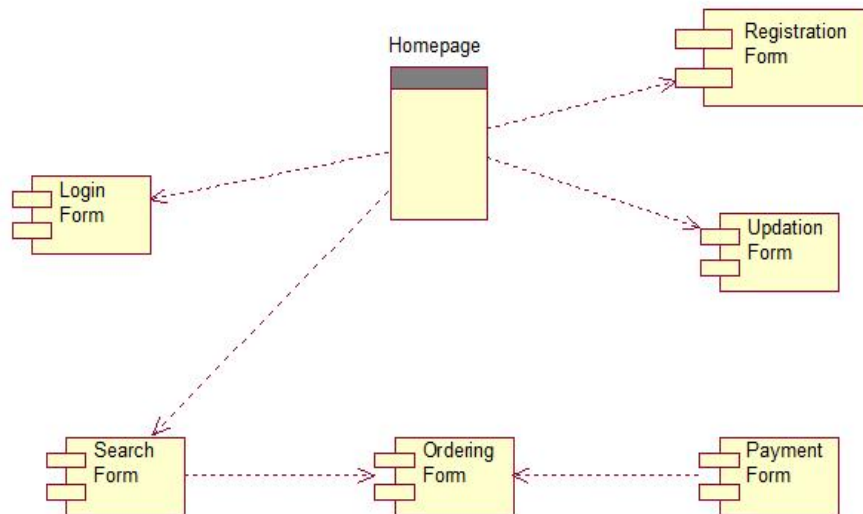
ONLINE PURCHASE ACTIVITY DIAGRAM



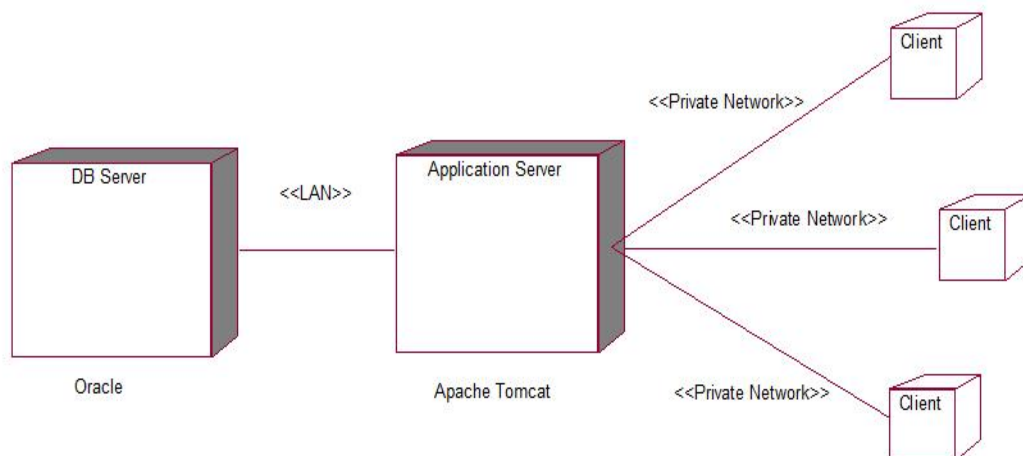
ONLINE PURCHASE STATECHART DIAGRAM



ONLINE PURCHASE COMPONENT DIAGRAM



ONLINE PURCHASE DEPLOYMENT DIAGRAM



RESULT:-

This project was carried out in a sequential manner to design and implement the “ONLINE PURCHASE SYSTEM”. Thus the outcome of the project is efficient. The ONLINE PURCHASE SYSTEM caters the varied requirements of the user to perform various options.

MODULE DESCRIPTION**Module 1**

- Provide a user interface for getting the user's login details.
- Verify login ID and if correct, provide access to the library database.

Module 2

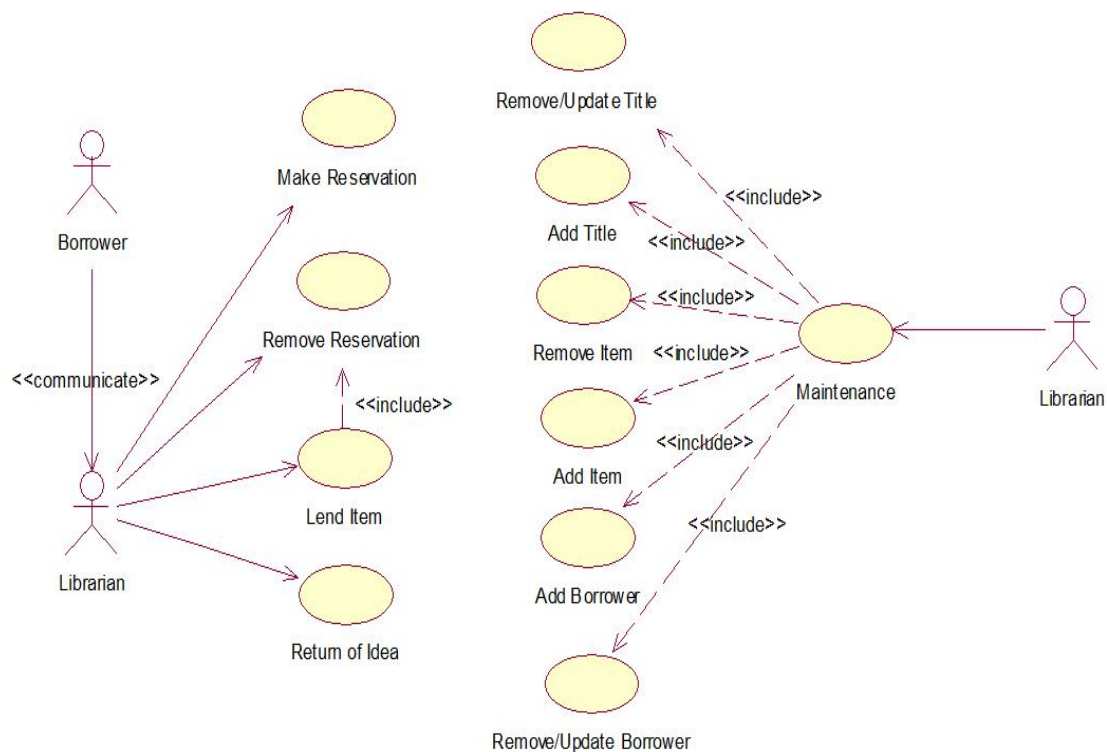
- Provide a search mechanism to search for a particular book.
- Input the book name and the author's name.

Module 3

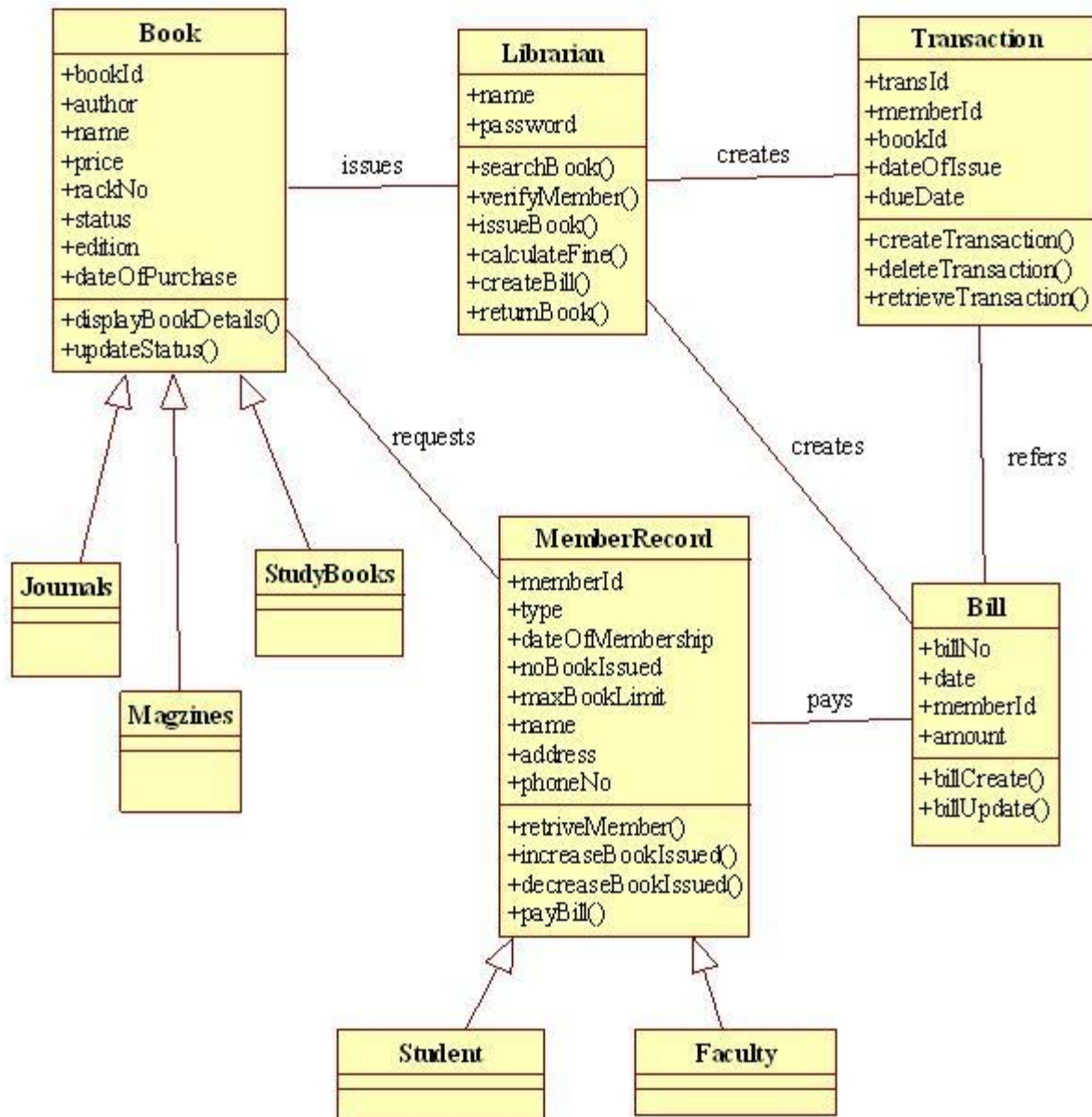
- Get the book details from the database.
- Display the book details on the screen.

Module 4

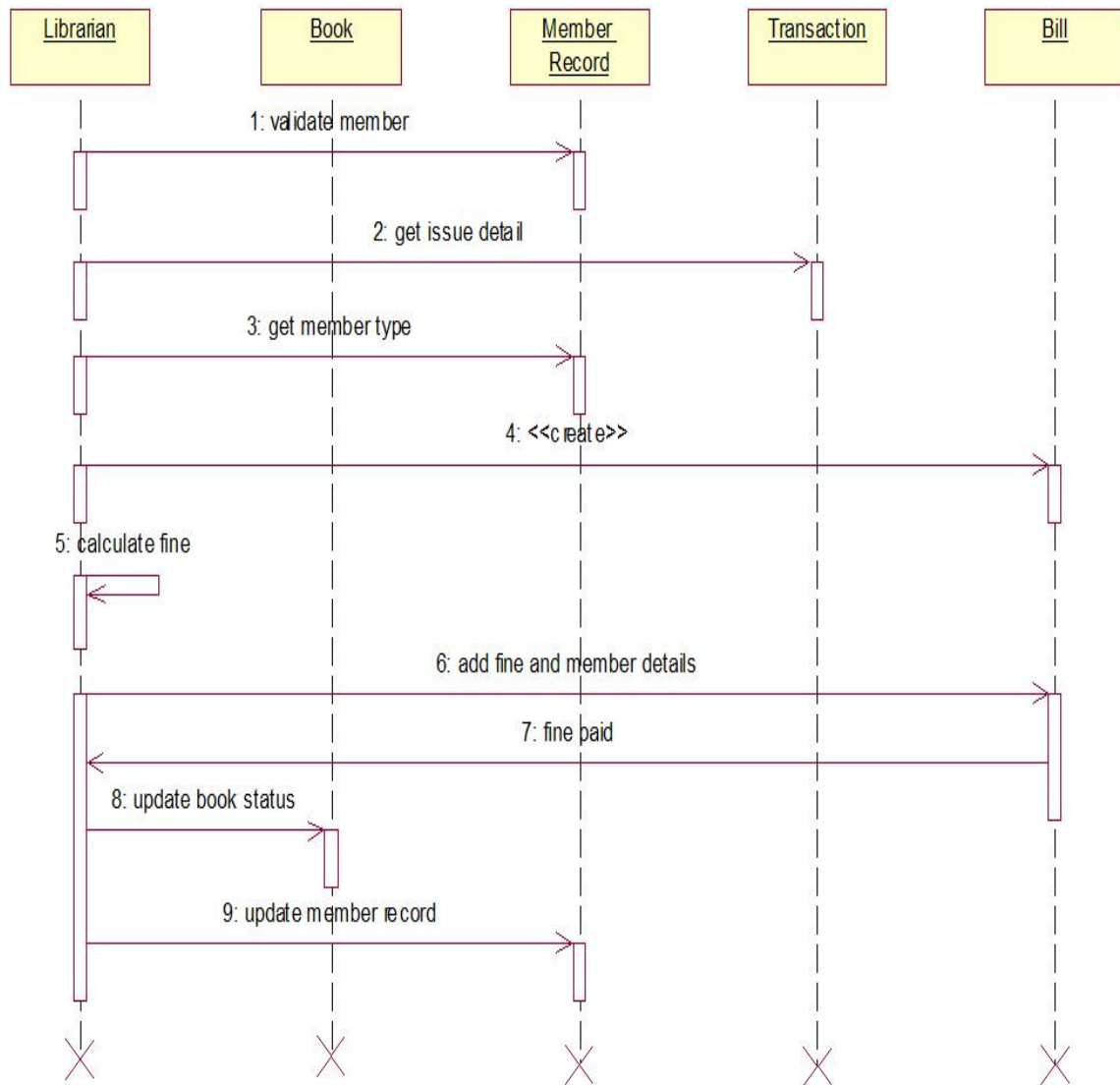
- Allow the user to select the book for checking out.
- Issue the book.

USE CASE DIAGRAM

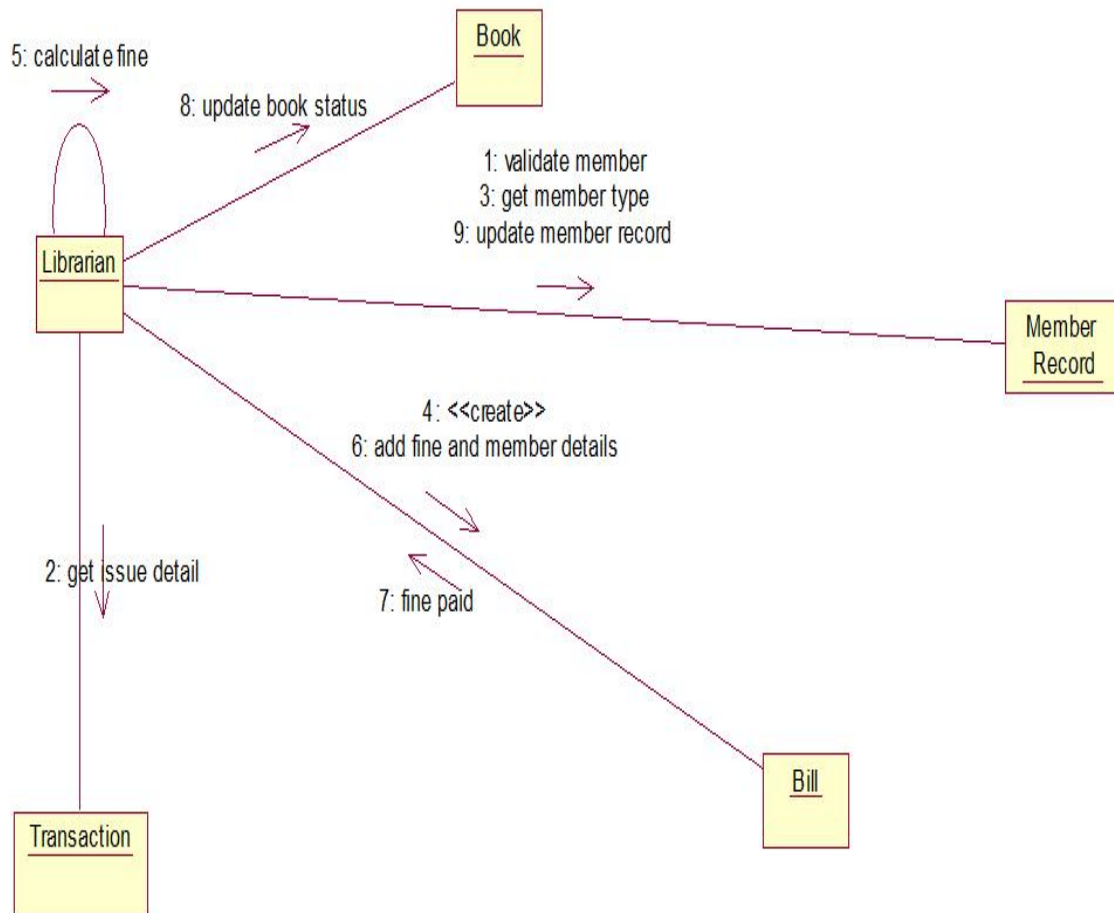
CLASS DIAGRAM



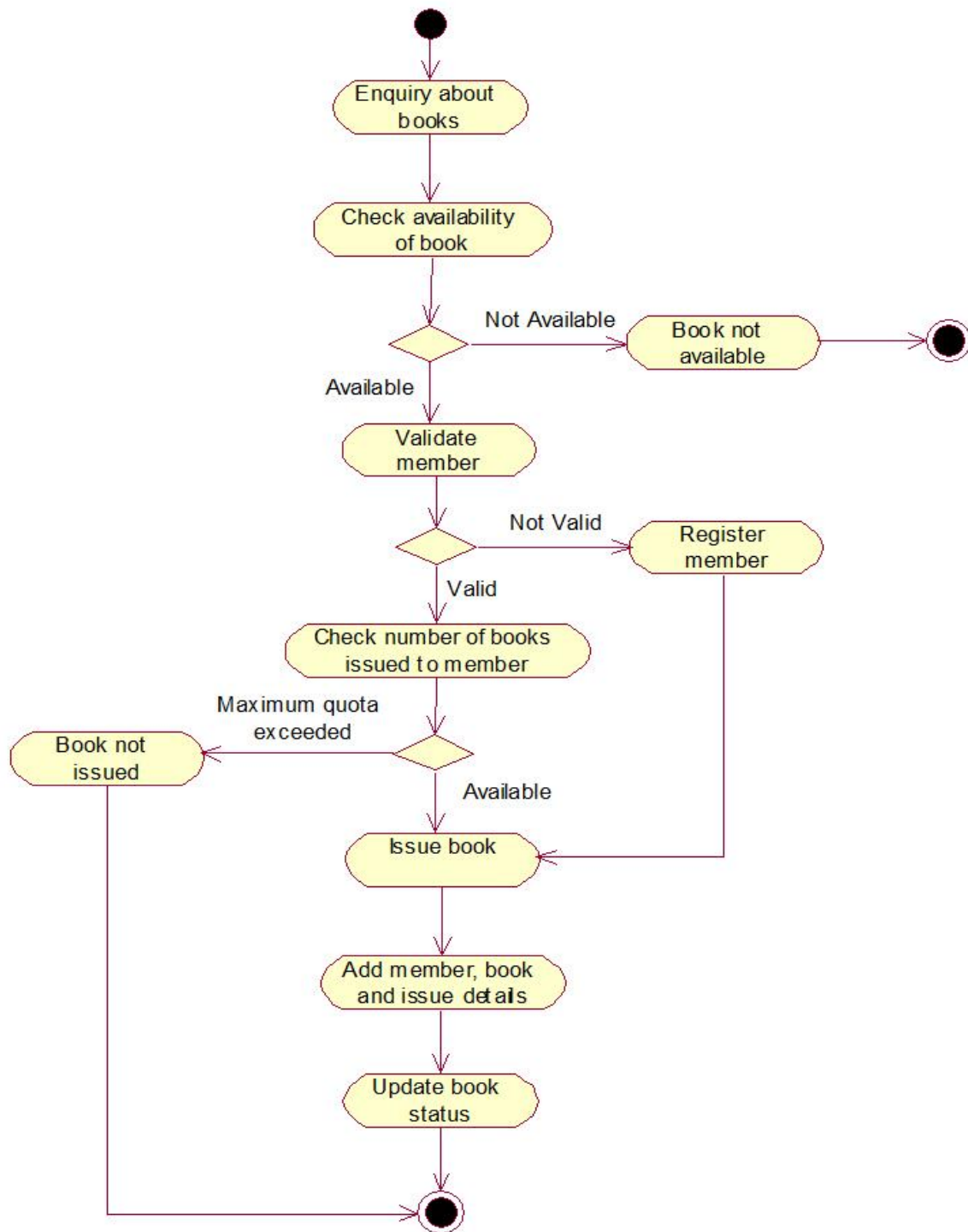
SEQUENCE DIAGRAM



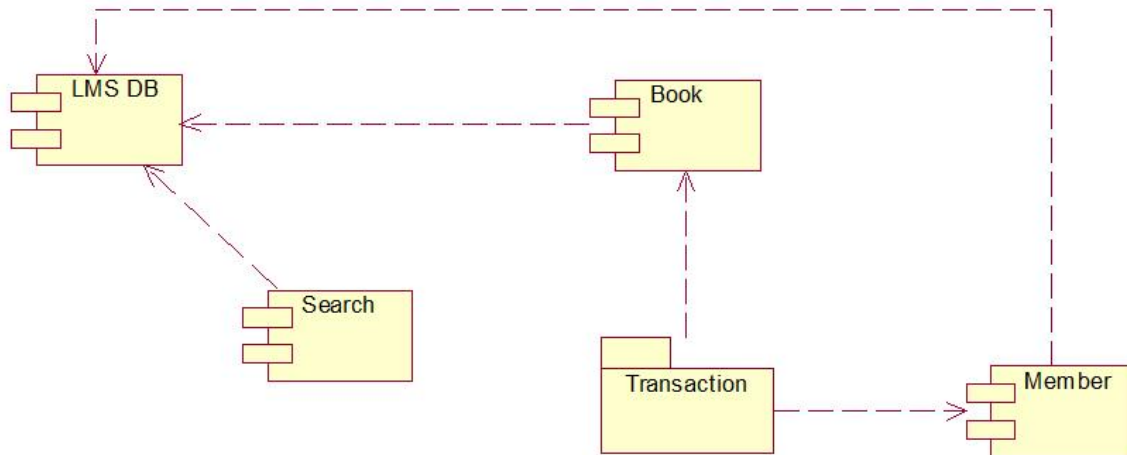
COLLABORATION DIAGRAM



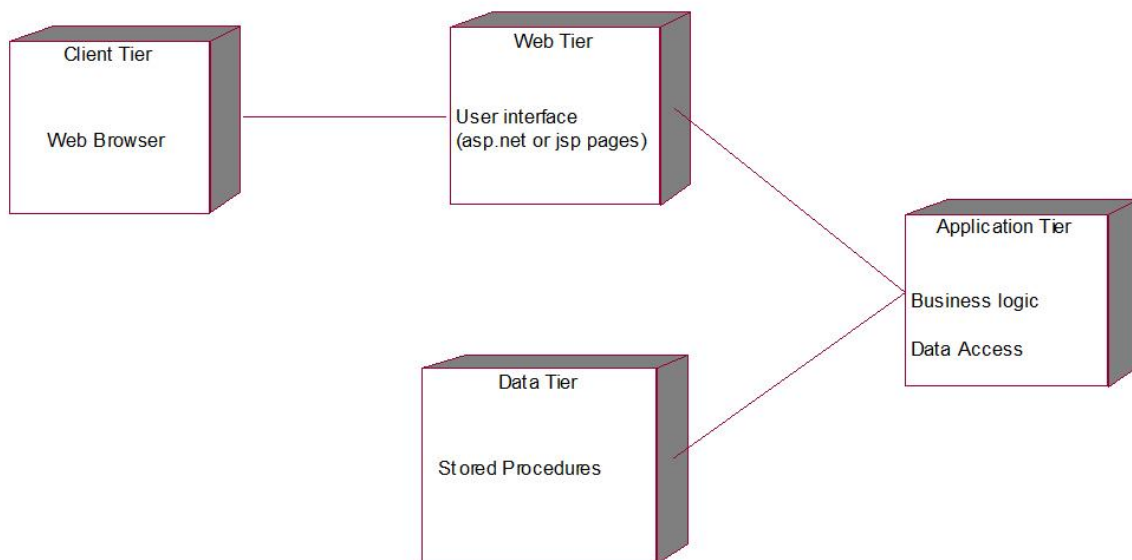
ACTIVITY DIAGRAM



COMPONENT DIAGRAM



DEPLOYMENT DIAGRAM



RESULT:

This project was carried out in a sequential manner to design and implement the “LIBRARY MANAGEMENT SYSTEM”. Thus the outcome of the project is efficient. The LIBRARY MANAGEMENT SYSTEM caters the varied requirements of the user to perform various options.

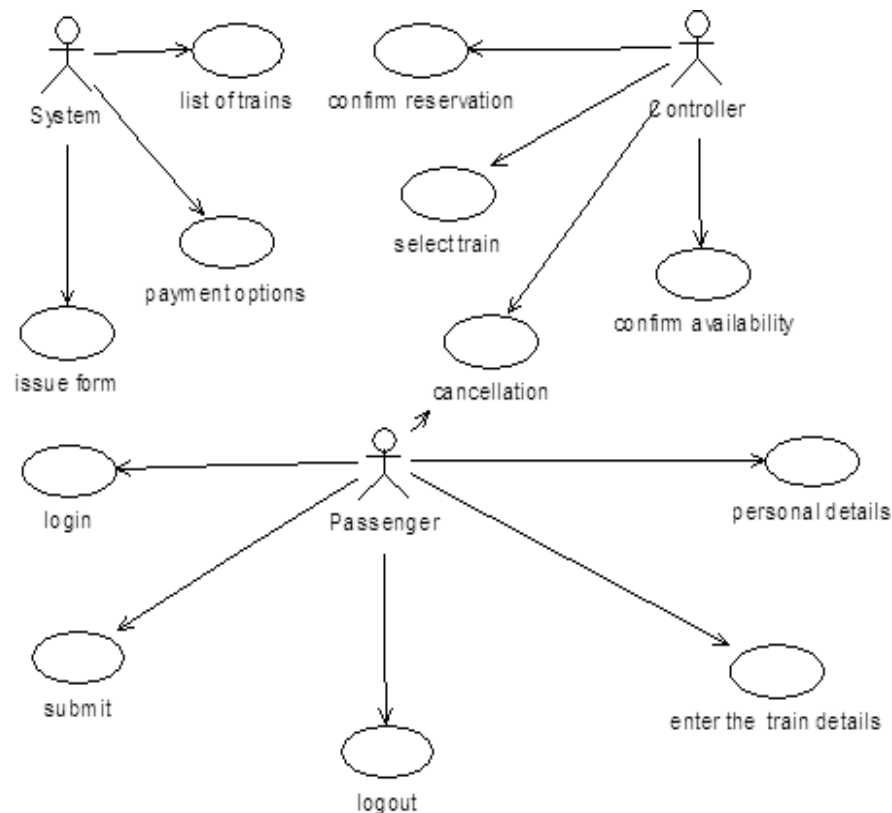
MODULAR DESCRIPTION**RESERVATION MODULE:**

This module allows the user to reserve tickets for a particular train on a particular date if there is a vacancy. The user can know about the vacancy details of the train through the enquiry module.

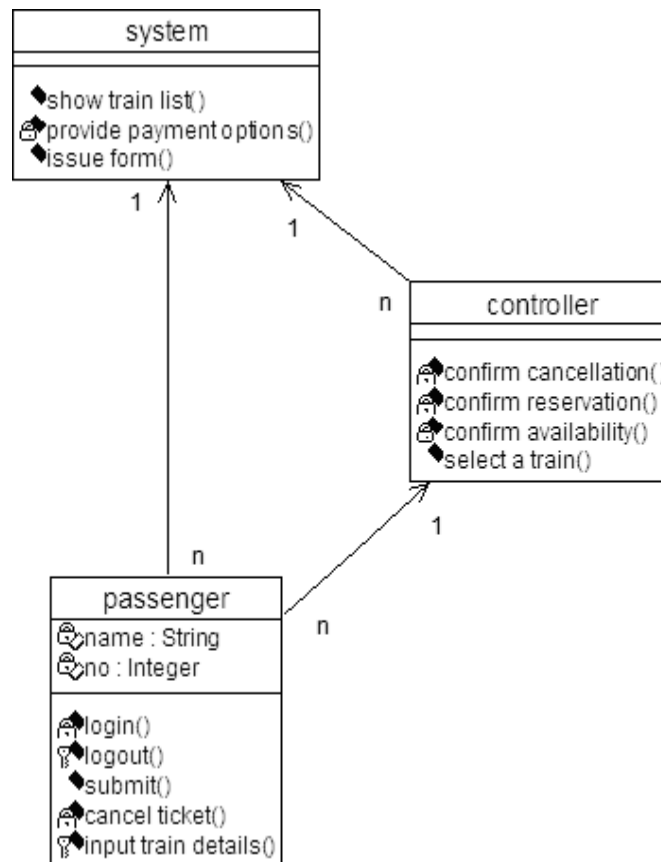
CANCELLATION MODULE:

This module allows the user to cancel the tickets to a train for a particular date through the reservation officer (System). This module permits the user to know the status of the reserved ticket before and after cancellation.

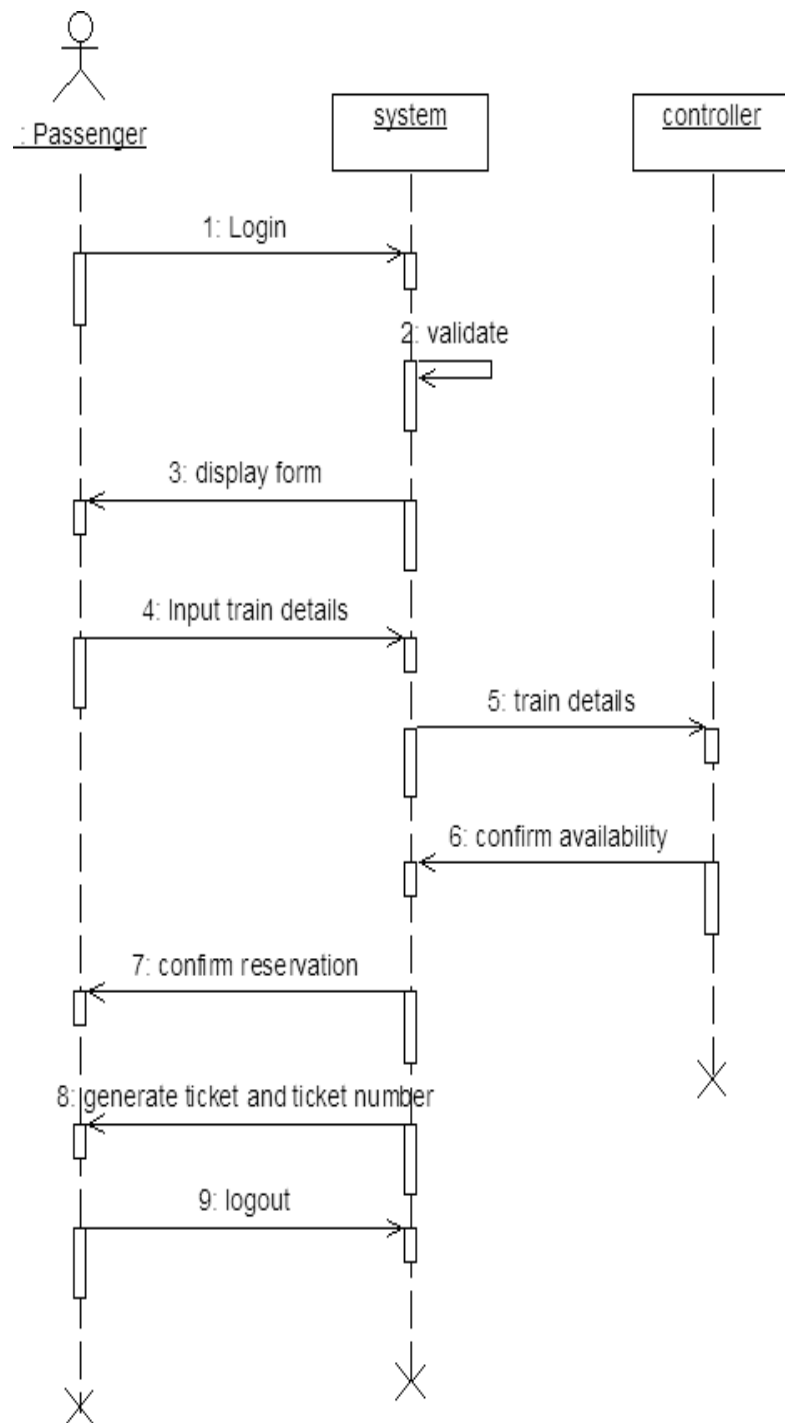
All these modules together prove to be a flexible Online Reservation System and it provides complete flexibility and reliability to the end users and it assures the desired performance.

USE CASE DIAGRAM

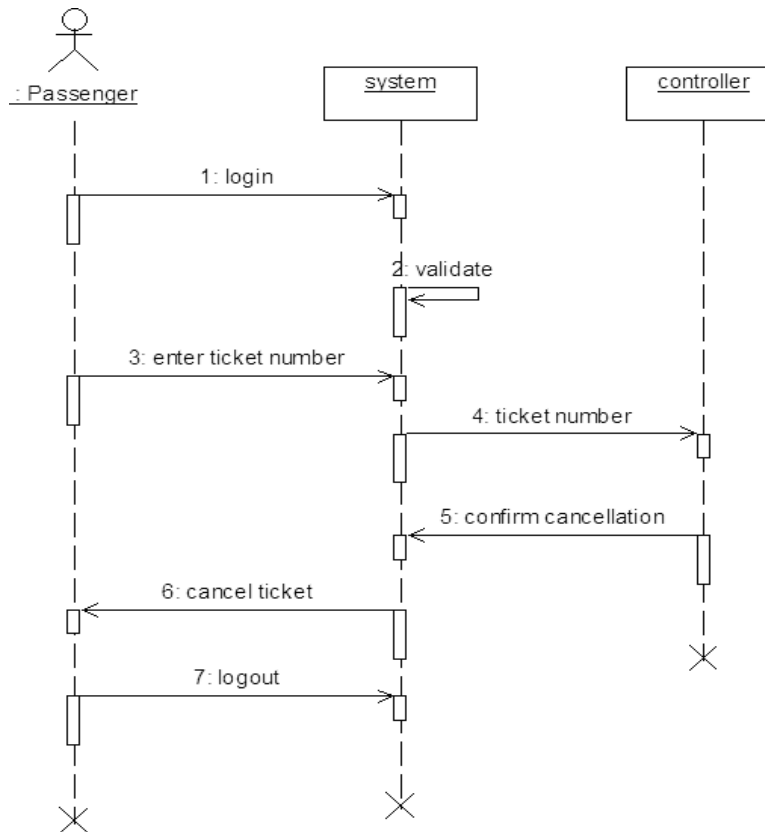
CLASS DIAGRAM



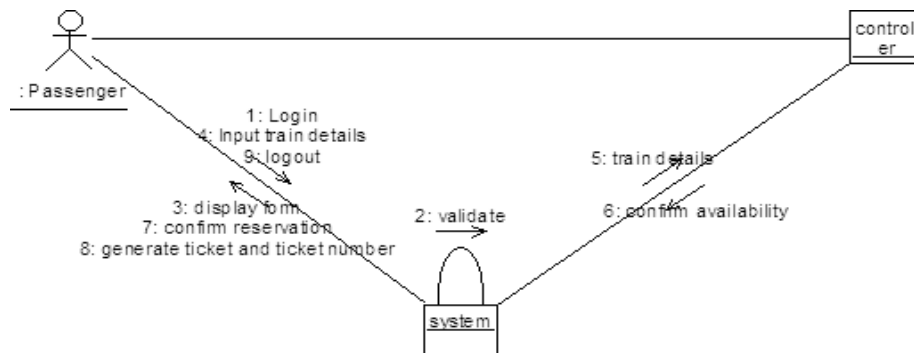
SEQUENCE DIAGRAM
(Ticket reservation)



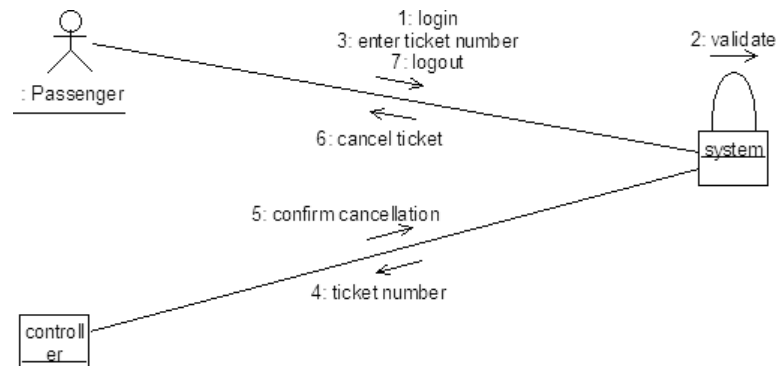
SEQUENCE DIAGRAM (Ticket cancellation)



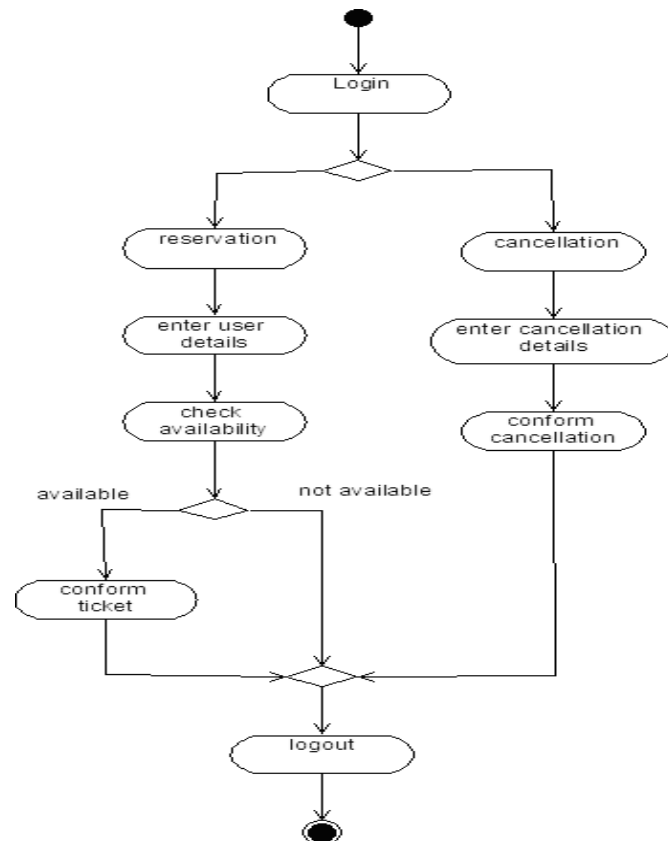
COLLABORATION DIAGRAM (Ticket Reservation)



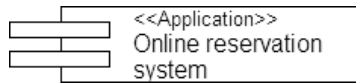
COLLABORATION DIAGRAM (Ticket Cancellation)



ACTIVITY DIAGRAM



COMPONENT DIAGRAM



RESULT:

This project was carried out in a sequential manner to design and implement the “ONLINE RESERVATION SYSTEM”. Thus the outcome of the project is efficient. The ONLINE RESERVATION SYSTEM caters the varied requirements of the user to perform various options.

MODULAR DESCRIPTION**REGISTRATION MODULE:**

This module enables the end users to register themselves to the online quiz competition through two-way communication between the coordinator and the participant. This is the most important module as it maintains the details of the participants in the database and it is the preliminary stage of the online quiz system.

DISPLAY MODULE:

This module provides the user with the fields i.e. the questions for which they have to answer and it displays the answers of those questions when required by the coordinator.

EVALUATION MODULE:

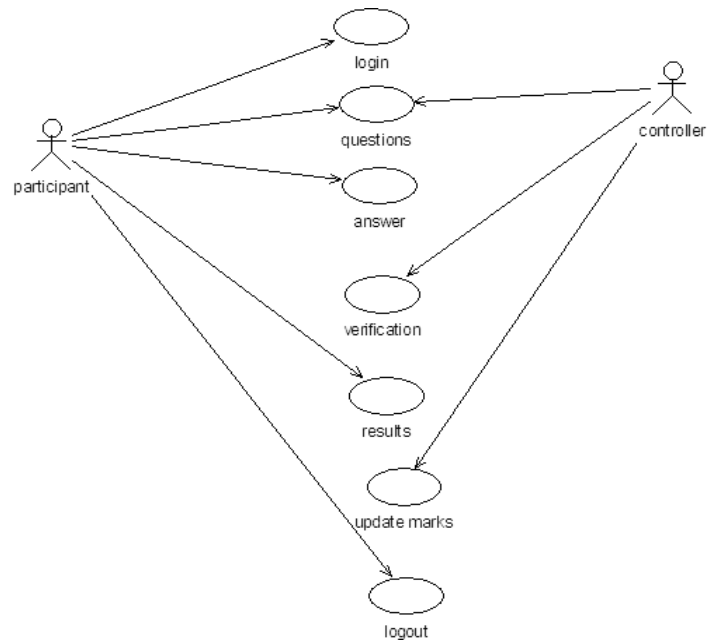
This module evaluates the answers that are given by the users i.e. the participants with that of the corresponding answers in the database. Either they are correct or wrong, in both the cases the scores of the corresponding participant or team will be updated accordingly.

ANNOUNCEMENT MODULE:

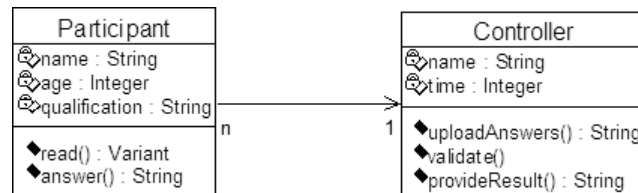
This module is used to display the results of the quiz competition irrespective of the status of the result and it also displays the scores acquired by each participant or team at the end of the quiz competition.

All these modules together prove to be a flexible Online Quiz System and it provides complete flexibility and reliability to the end users and it assures of the desired performance.

USE CASE DIAGRAM

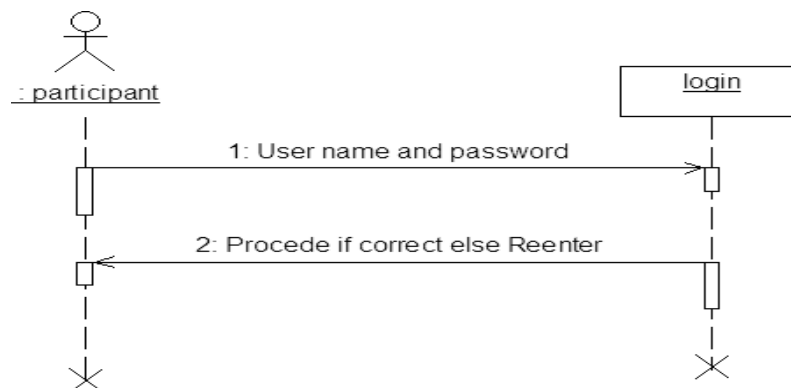


CLASS DIAGRAM



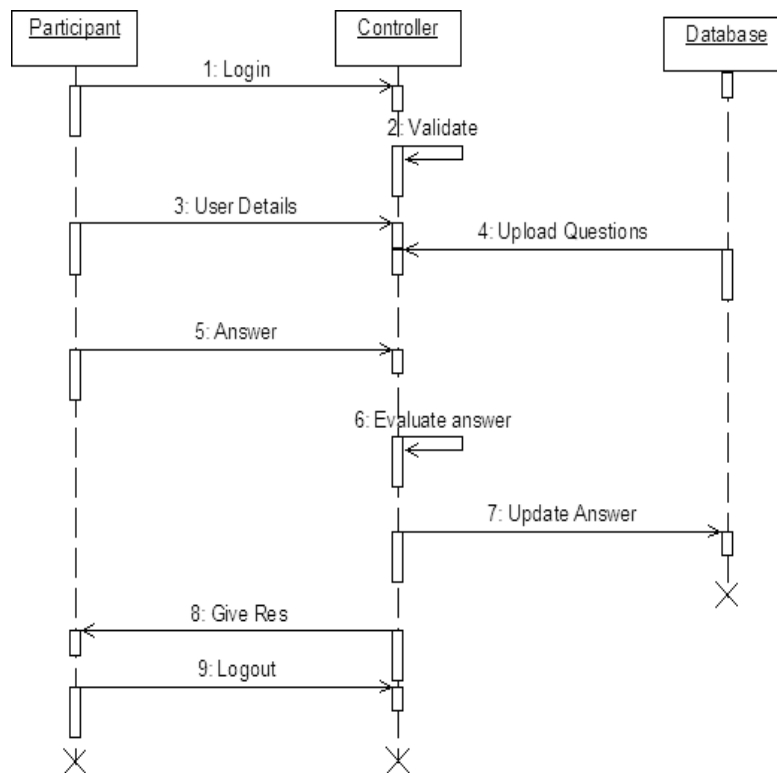
SEQUENCE DIAGRAM

(Log in)



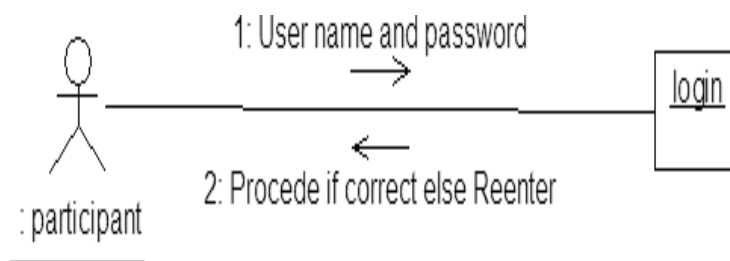
SEQUENCE DIAGRAM

(Quiz)



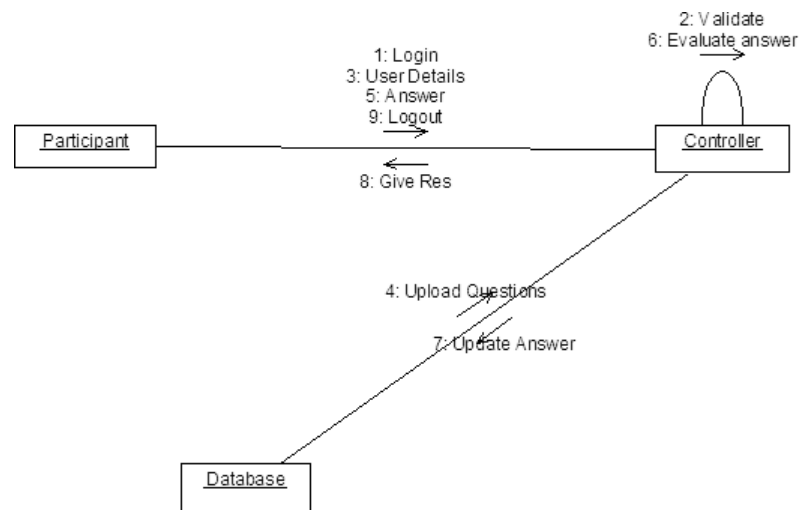
COLLABORATION DIAGRAM

(login)

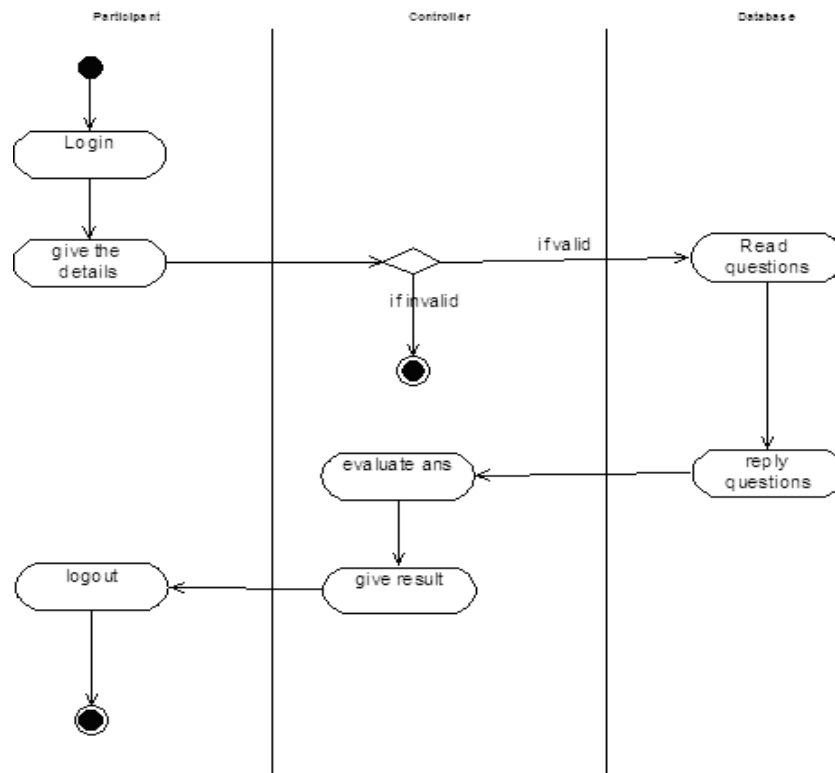


COLLABORATION DIAGRAM

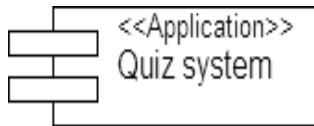
(Quiz)



ACTIVITY DIAGRAM



COMPONENT DIAGRAM



RESULT:

This project was carried out in a sequential manner to design and implement the “ONLINE QUIZ SYSTEM”. Thus the outcome of the project is efficient. The ONLINE QUIZ SYSTEM caters the varied requirements of the user to perform various options.

MODULAR DESCRIPTION**RECORD MARKS MODULE:**

This module enables the authenticated users to record the marks and thereby their respective grades in a database. This is the most important module as it maintains the details of the marks scored by the students in the database and it is the first and the foremost step in this system.

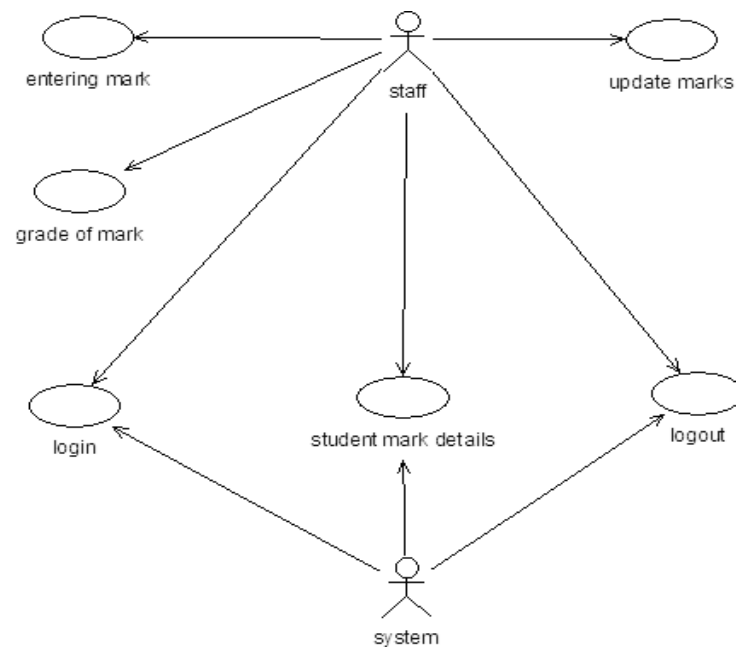
VIEW GRADES MODULE:

This module permits the respective users to view their grades as and when necessary after their identification through their login name and password. This module proves to be the simplest as it does not allow the user to modify or update any information except viewing them.

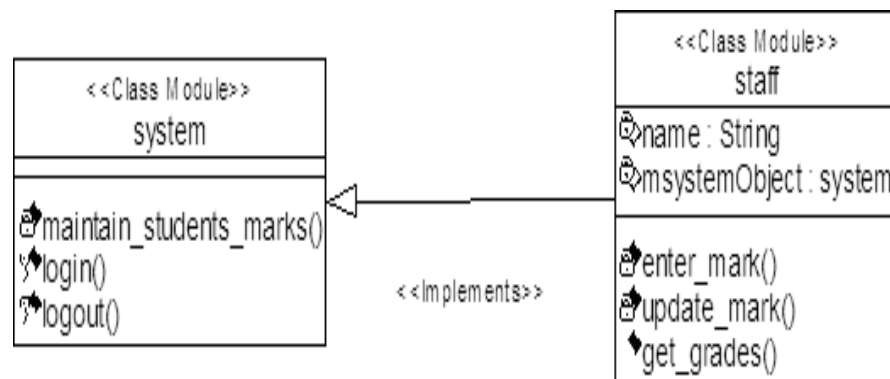
UPDATE MARKS MODULE:

This module enables the authenticated users to update the marks of the students after each and every test in order to update the data to the present existing grades of the students. This module just allows the user to modify or update the grades of the students alone but not their personal details. This module does not allow any user just like that only authenticated users are allowed to update the necessary data after their identification through their login name and password.

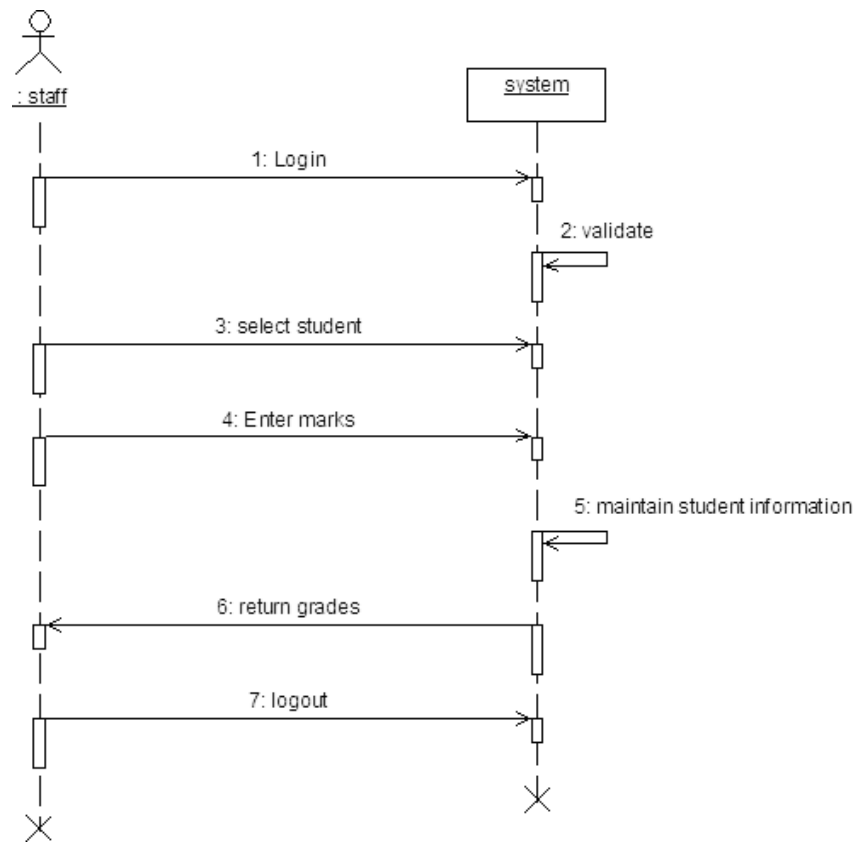
USE CASE DIAGRAM:



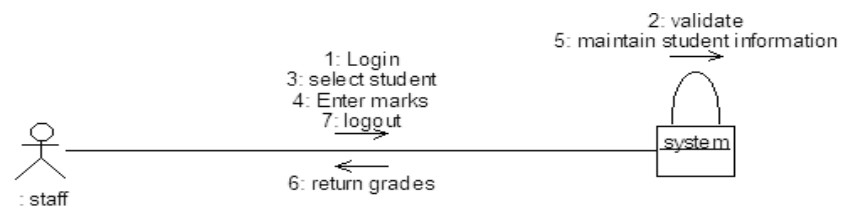
CLASS DIAGRAM:



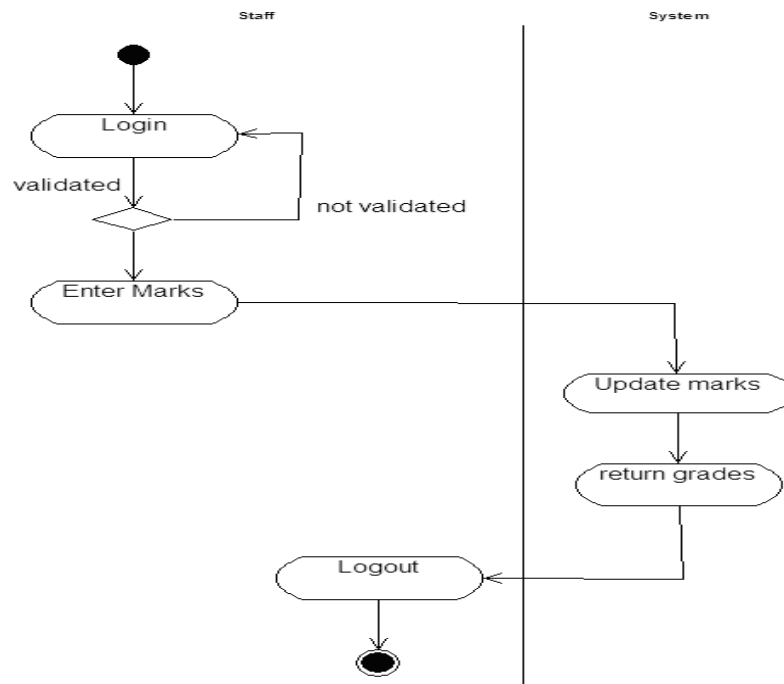
SEQUENCE DIAGRAM:



COLLABORATION DIAGRAM:



ACTIVITY DIAGRAM:



COMPONENT DIAGRAM:



RESULT:

This project was carried out in a sequential manner to design and implement the “STUDENT MARK ANALYSIS SYSTEM”. Thus the outcome of the project is efficient. The STUDENT MARK ANALYSIS SYSTEM caters the varied requirements of the user to perform various options.

1. ANALYSIS

Identifying the Actors

Identifying the Use Cases

2. REQUIREMENTS

System Requirements

Software Requirements

3. DESIGN

Use Case Diagram

Class Diagram

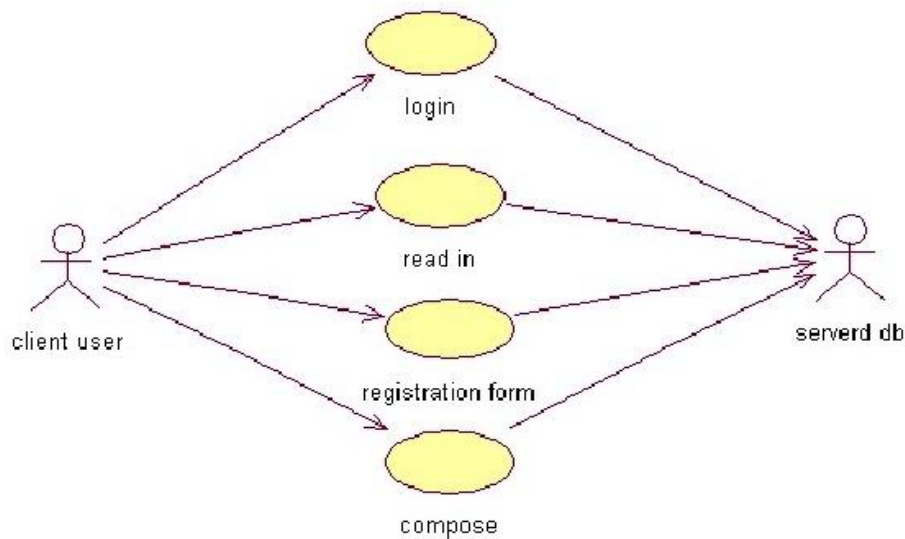
Sequence Diagram

Collaboration Diagram

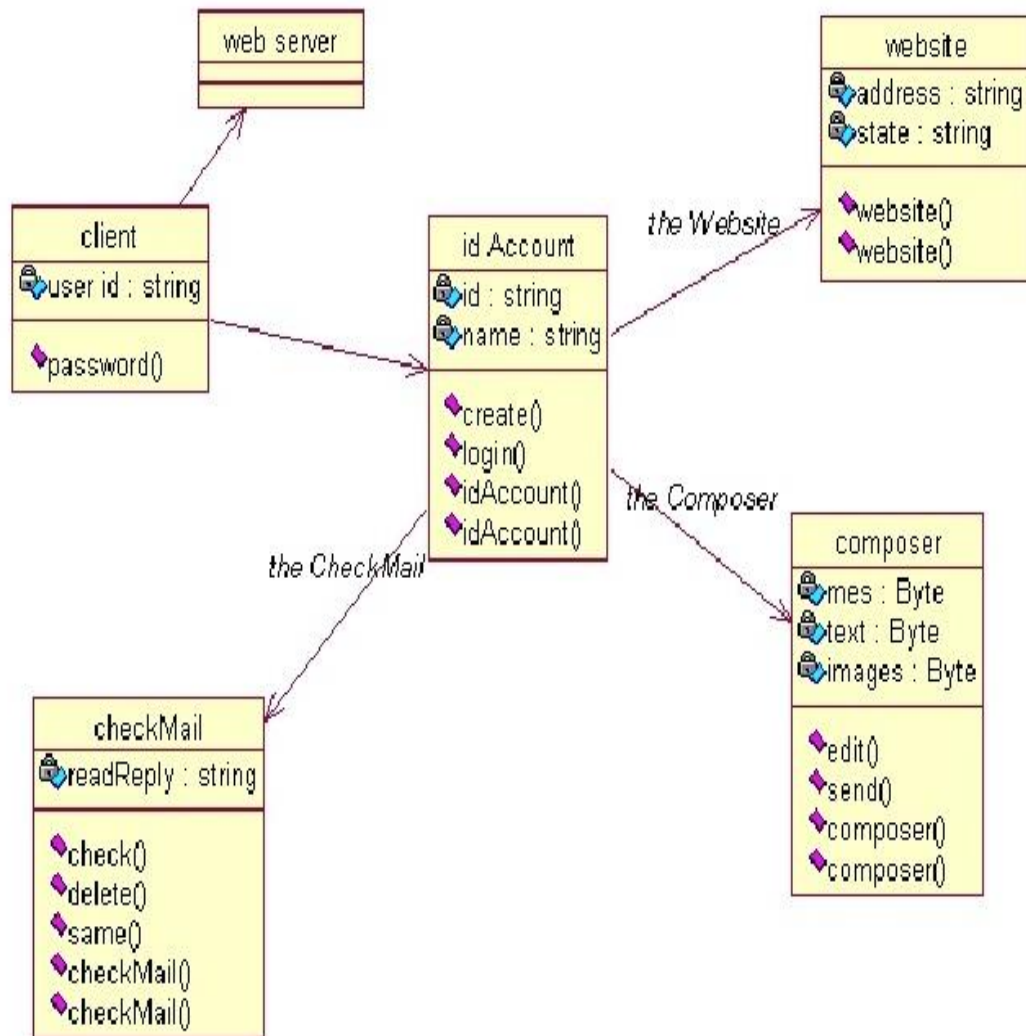
Activity Diagram

State Diagram

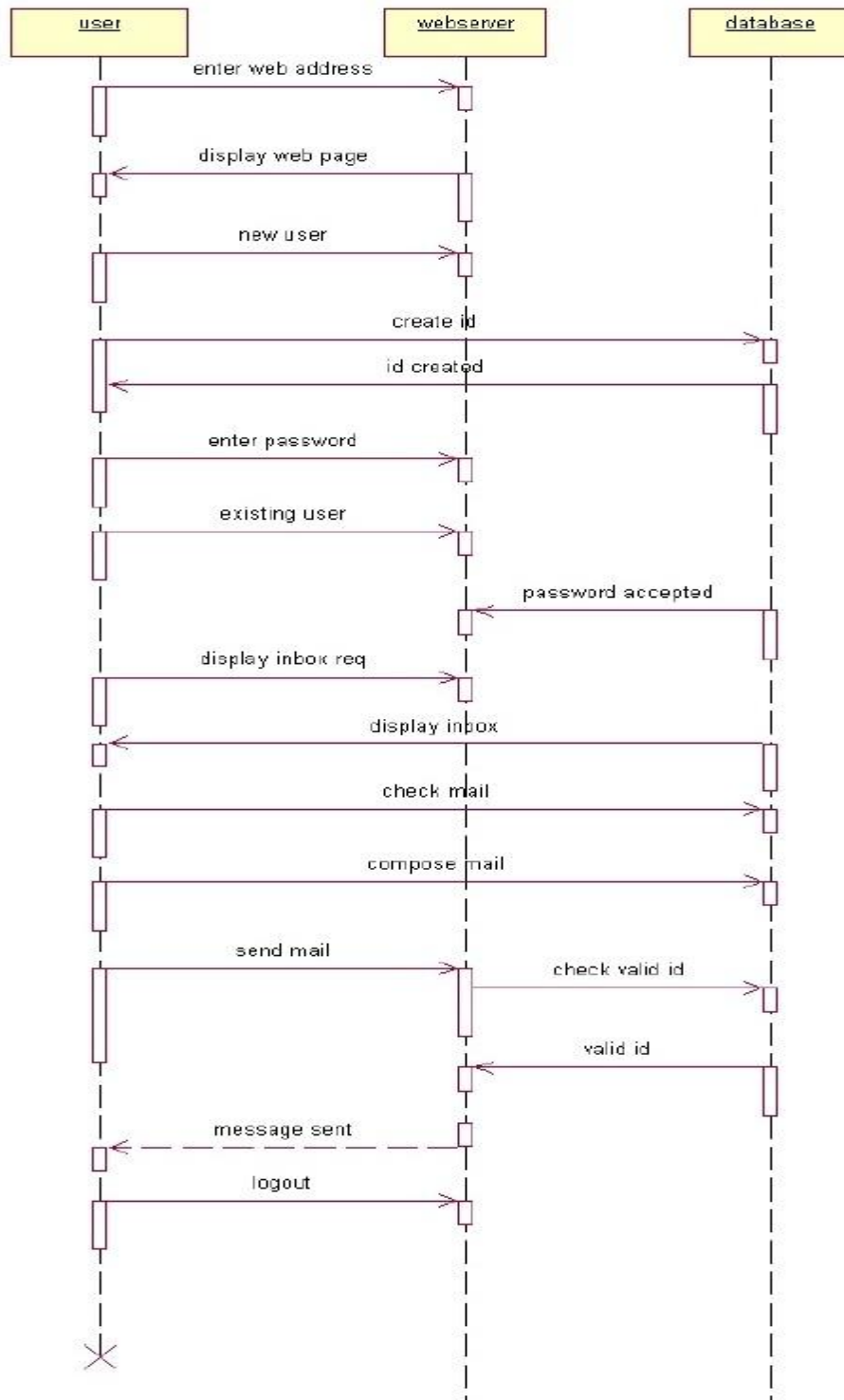
USECASE DIAGRAM:



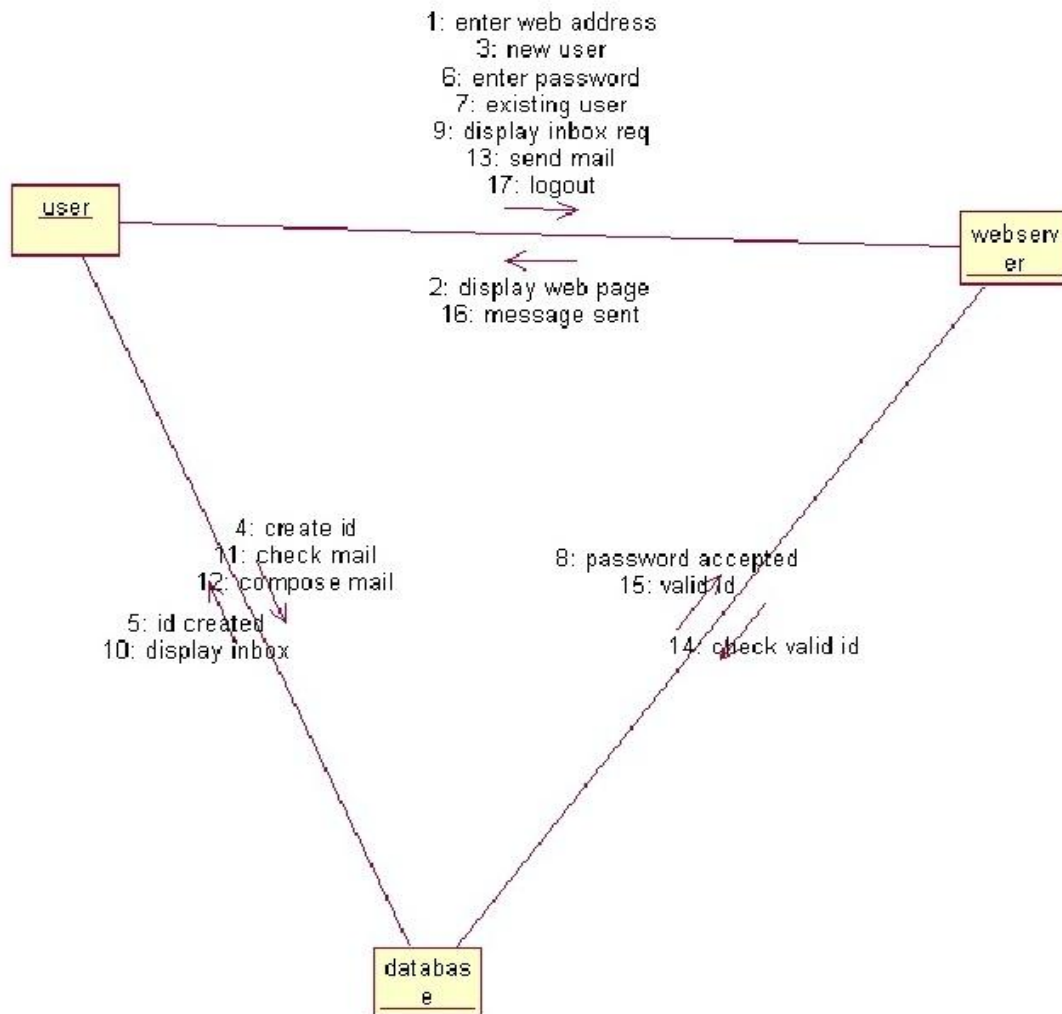
CLASS DIAGRAM



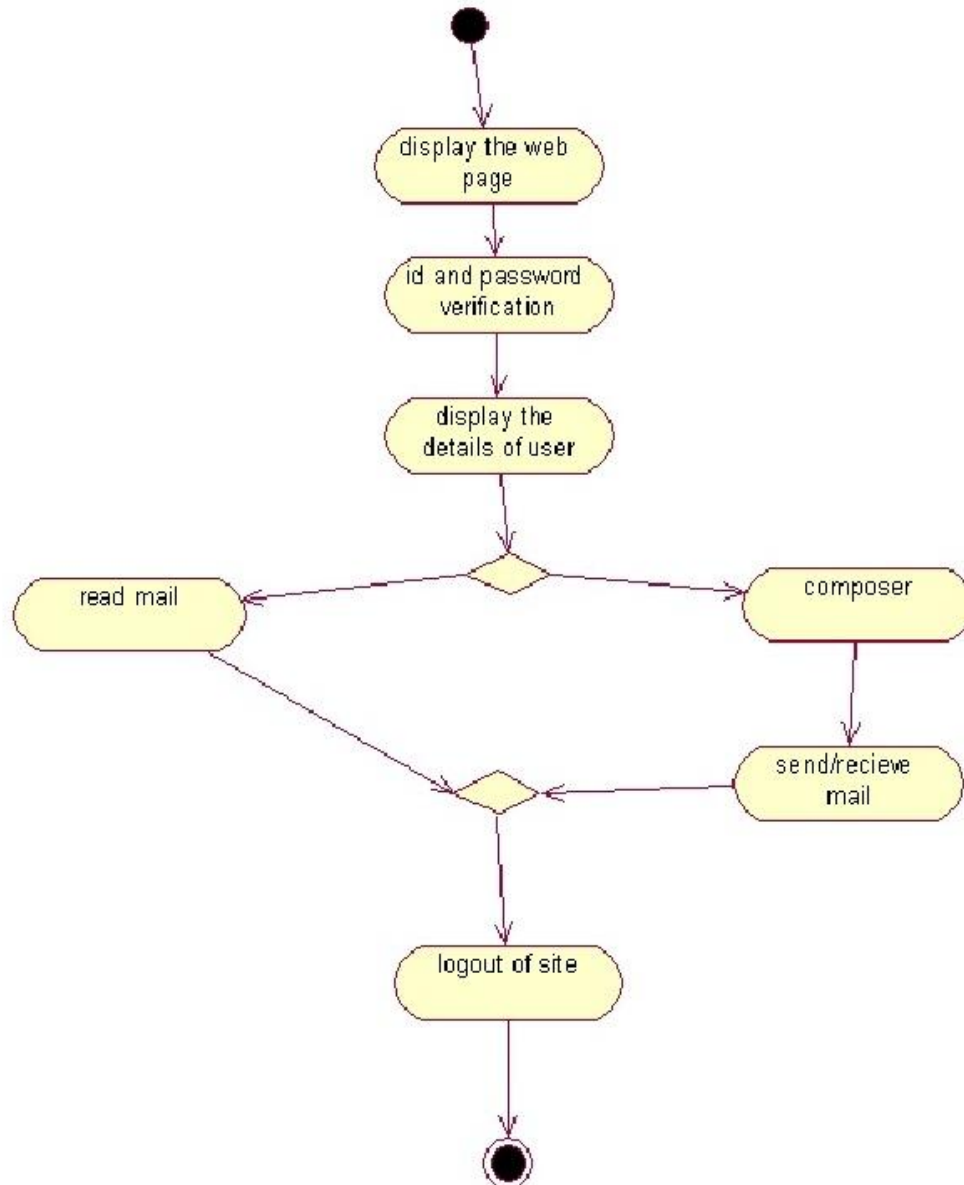
SEQUENCE DIAGRAM



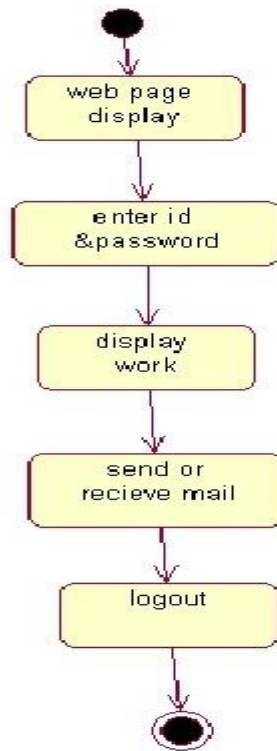
COLLABORATION DIAGRAM



ACTIVITY DIAGRAM



STATE CHART DIAGRAM



RESULT:

This project was carried out in a sequential manner to design and implement the “E-MAIL CLIENT SYSTEM”. Thus the outcome of the project is efficient. The E-MAIL CLIENT SYSTEM caters the varied requirements of the user to perform various options.

1. ANALYSIS

Identifying the Actors

Identifying the Use Cases

2. REQUIREMENTS

System Requirements

Software Requirements

3. DESIGN

Use Case Diagram

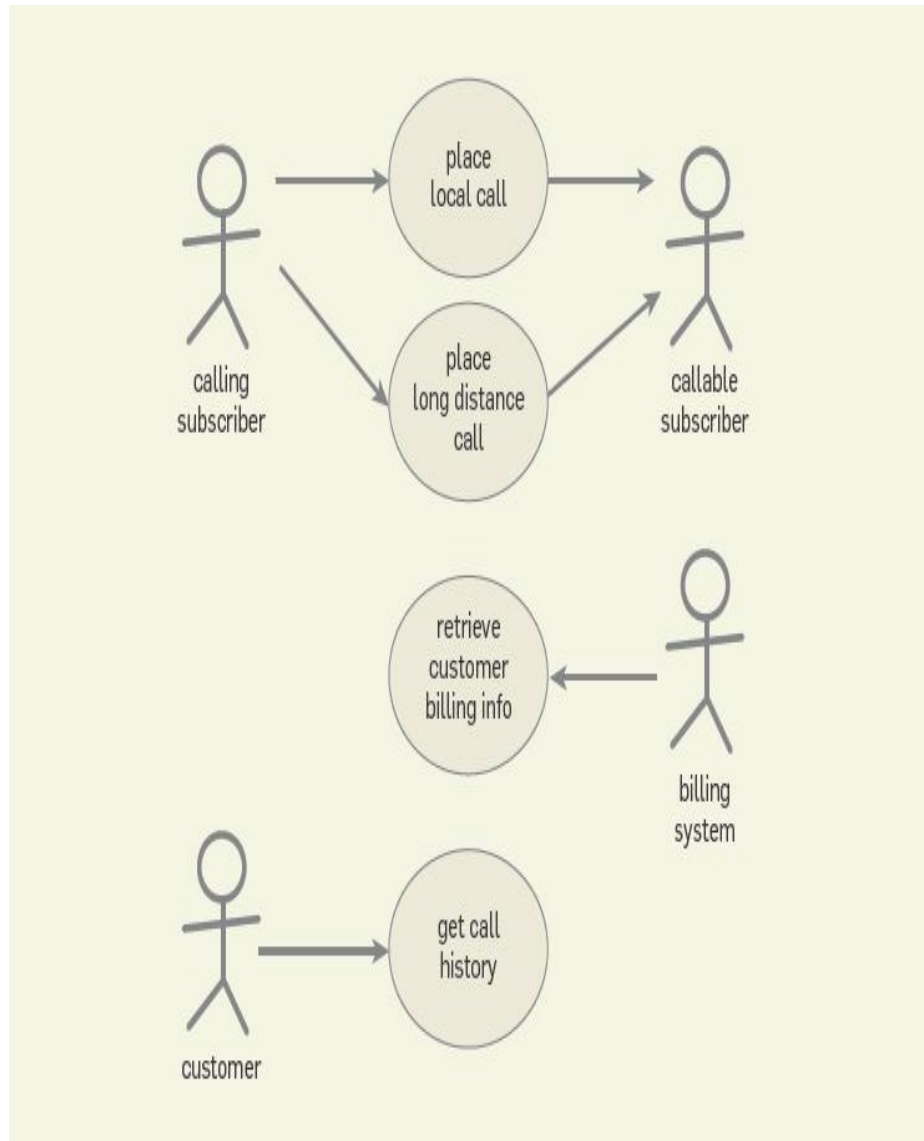
Class Diagram

Sequence Diagram

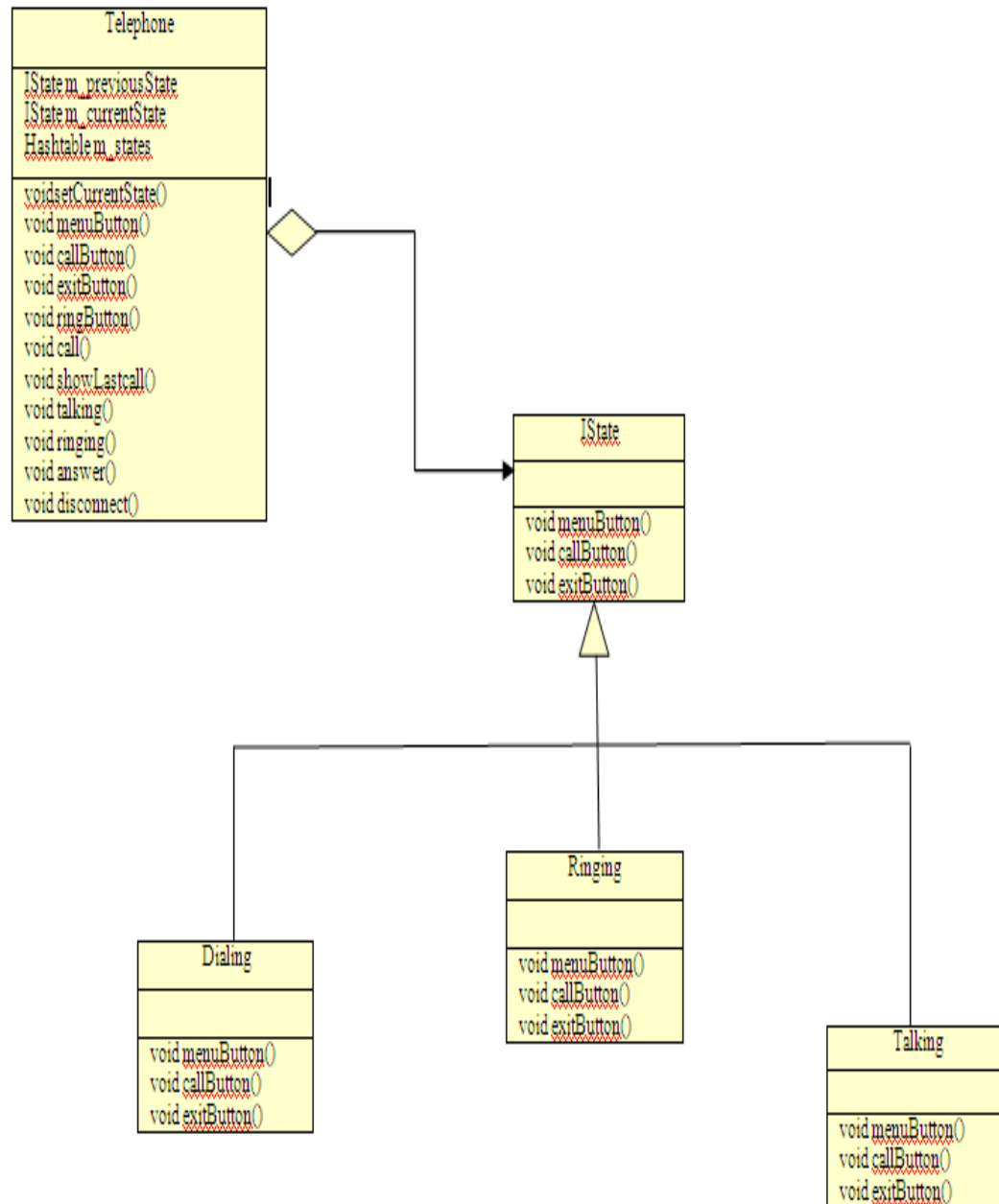
Collaboration Diagram

State Diagram

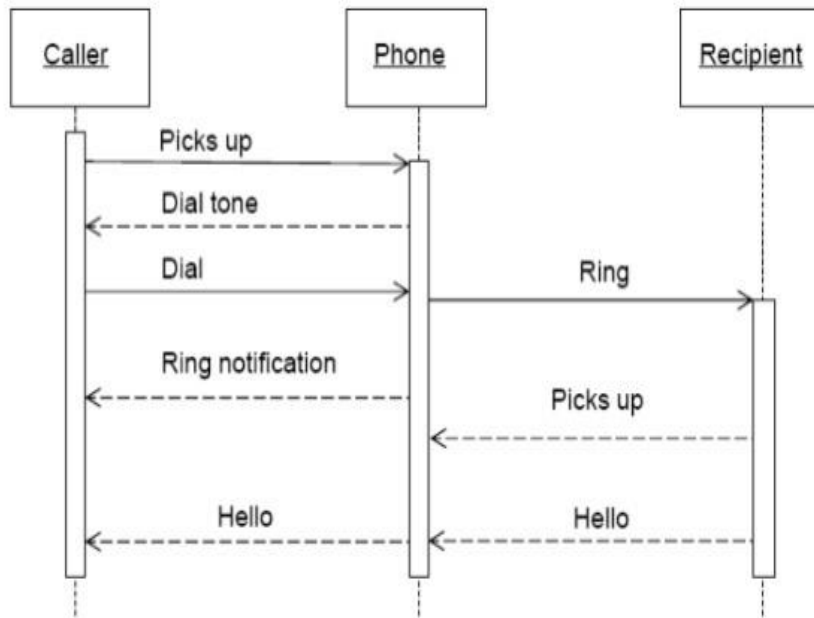
USECASE DIAGRAM



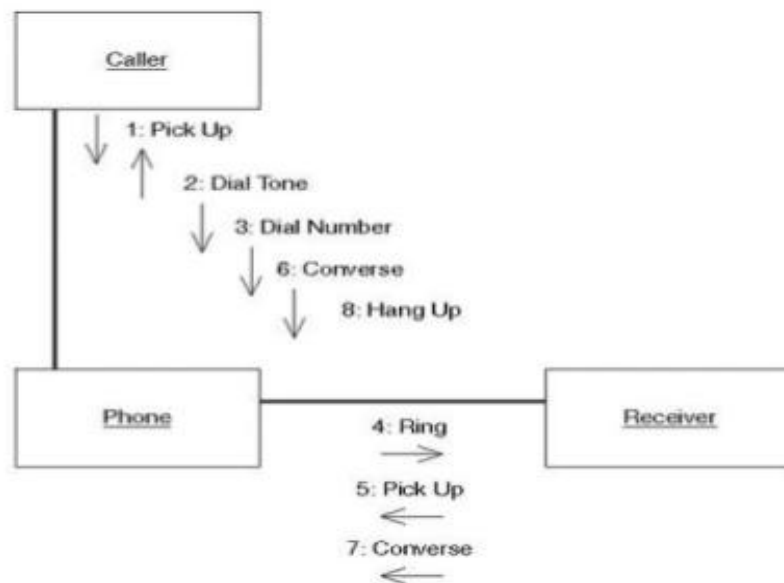
CLASS DIAGRAM



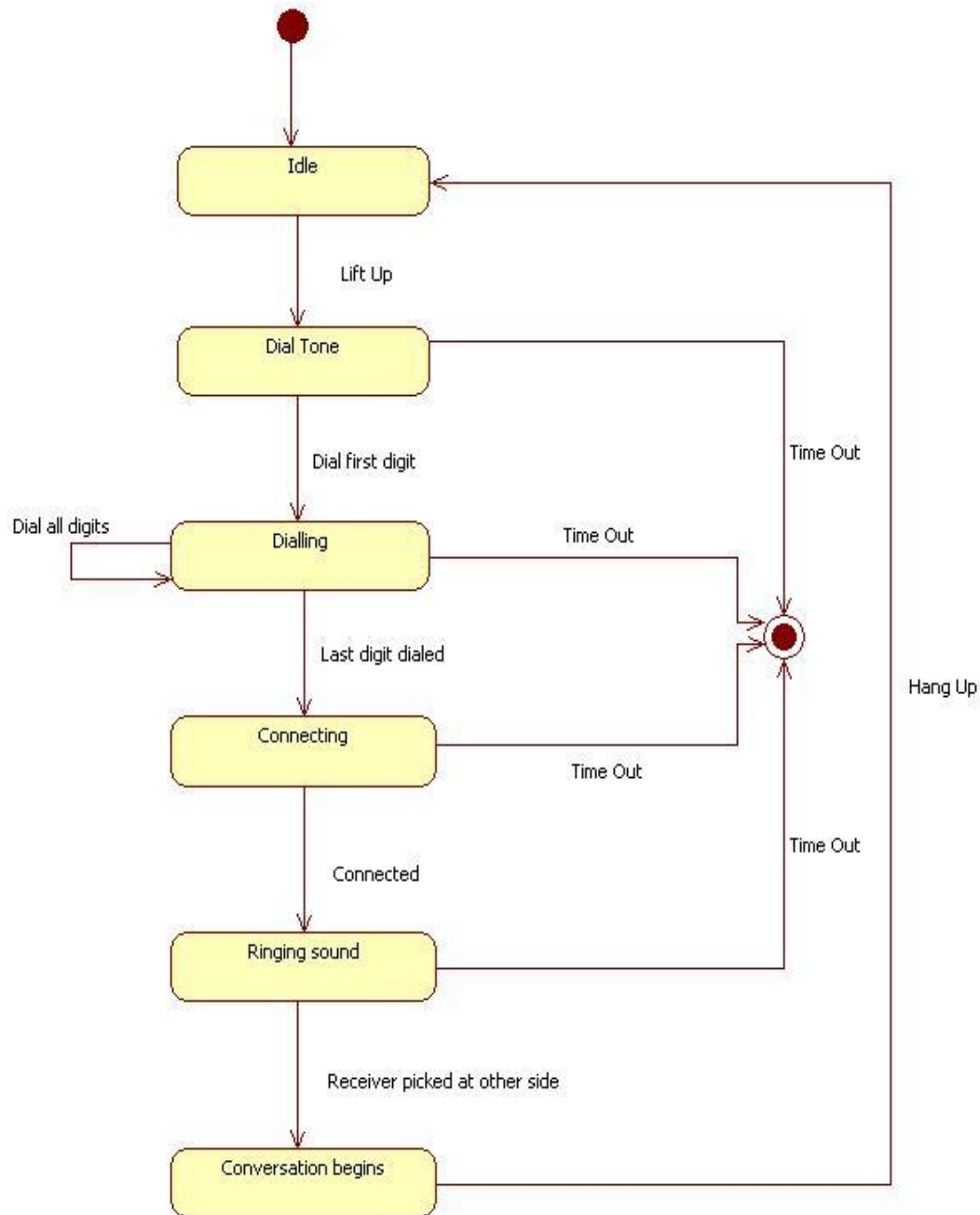
SEQUENCE DIAGRAM



COLLABORATION DIAGRAM



STATE CHART DIAGRAM



RESULT:

This project was carried out in a sequential manner to design and implement the “TELEPHONE DIALING SYSTEM”. Thus the outcome of the project is efficient. The TELEPHONE DIALING SYSTEM caters the varied requirements of the user to perform various options.

A retail POS system typically includes a computer, monitor, keyboard, barcode scanners, weight scale, receipt printer, credit card processing system, etc. and POS terminal software.

When the customer arrives at the post check point with the items to purchase. The cashier records each item, price and adds the item information to the running sales transaction. The description and price of the current item are displayed. On completion of the item entry the cashier informs the sales total and tax to the customer. The customer chooses payment type (cash, cheque, credit or debit). After the payment is made the system generates a receipt and automatically updates the inventory. The cashier handovers the receipt to the customer.

1. ANALYSIS

Identifying the Actors

Identifying the Use Cases

2. REQUIREMENTS

System Requirements

Software Requirements

3. DESIGN

Use Case Diagram

Class Diagram

Sequence Diagram

Collaboration Diagram

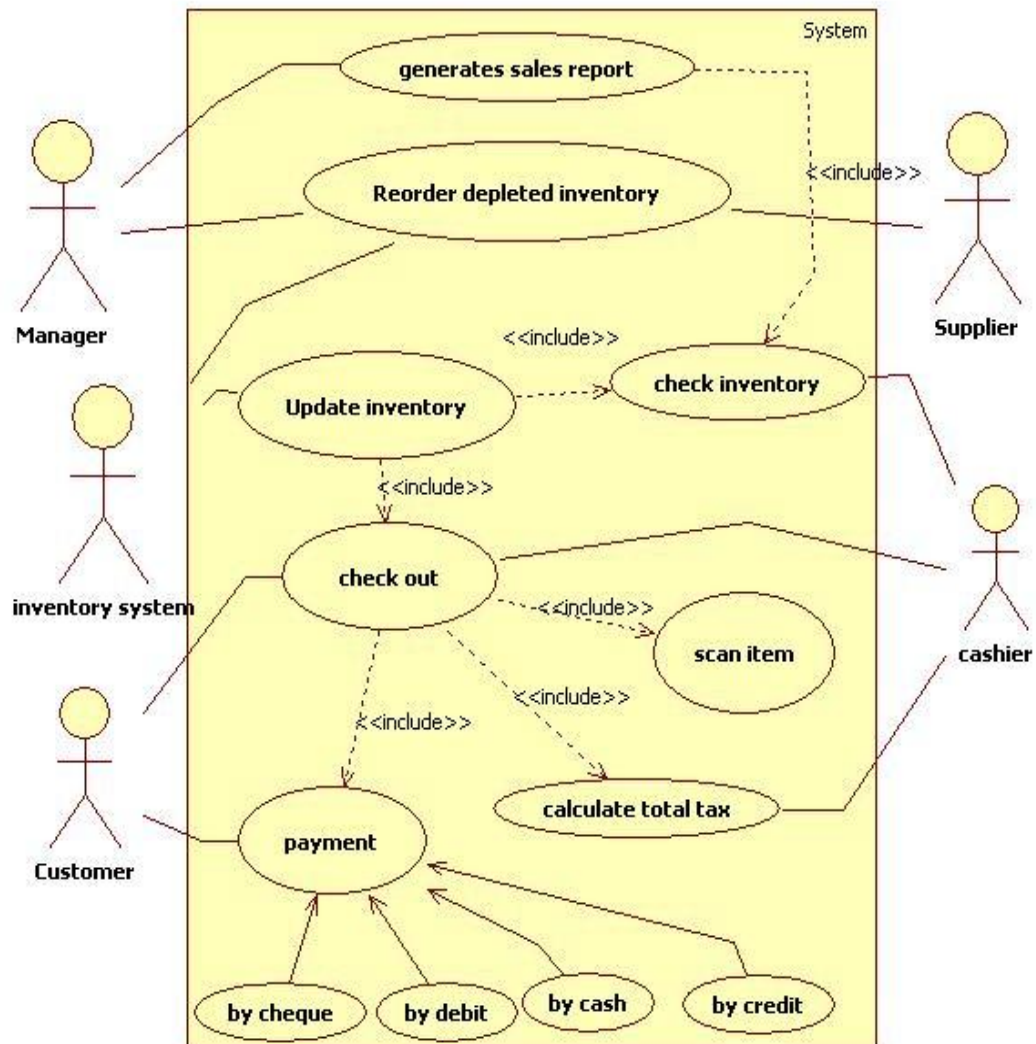
Activity Diagram

State Chart Diagram

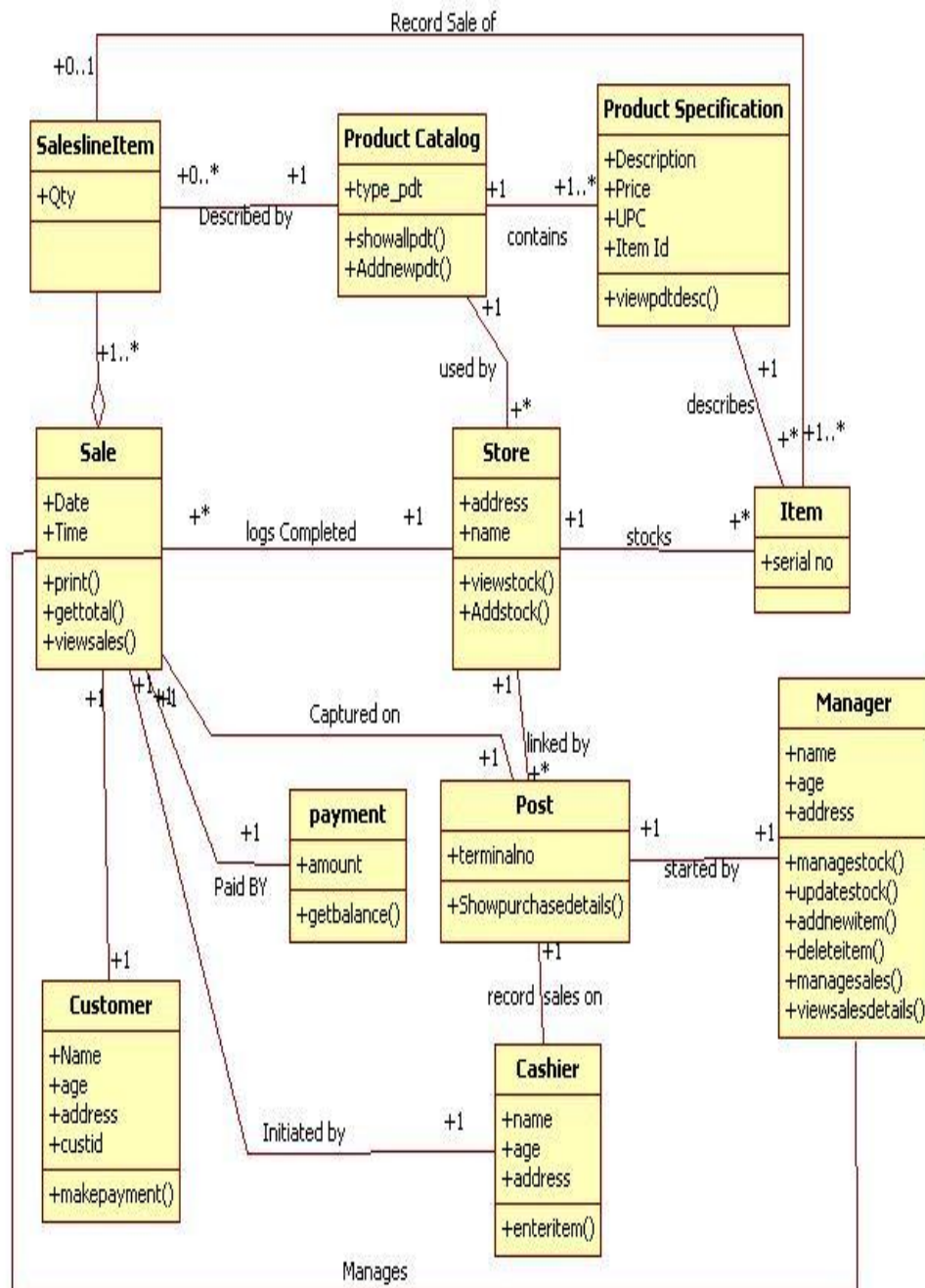
Deployment Diagram

Component Diagram

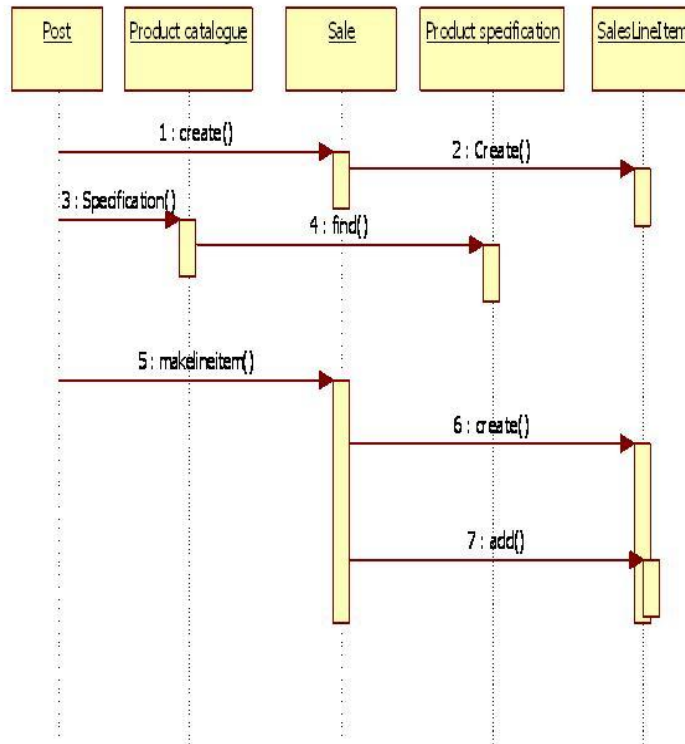
USECASE DIAGRAM



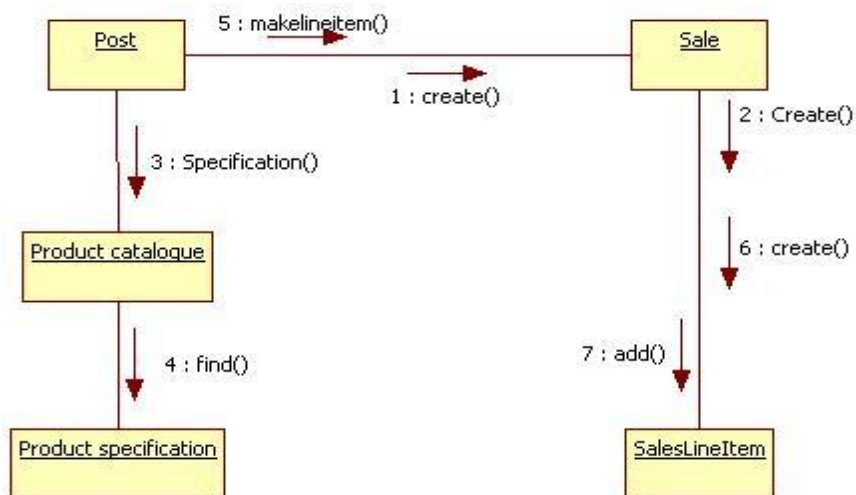
CLASS DIAGRAM



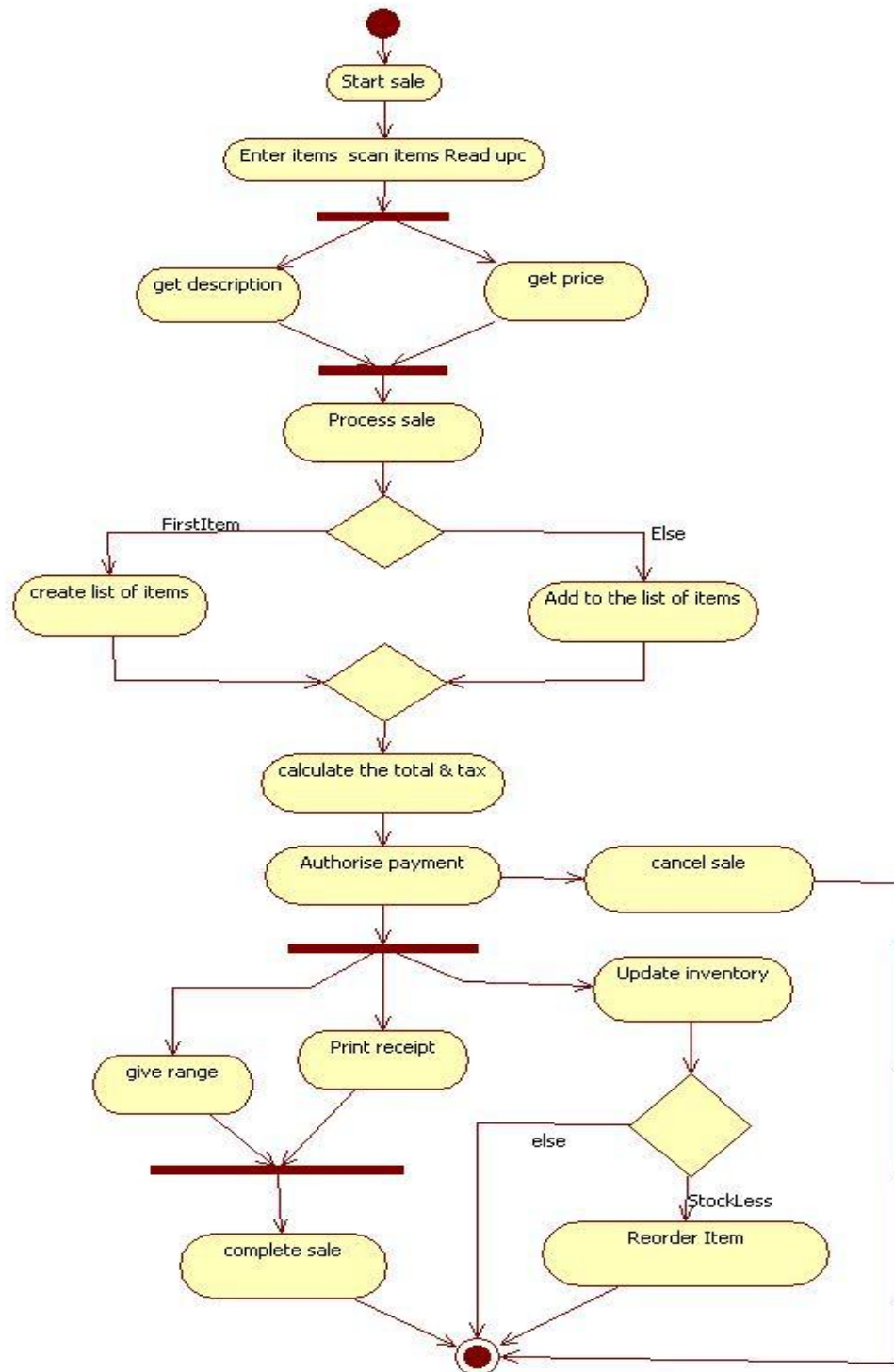
SEQUENCE DIAGRAM



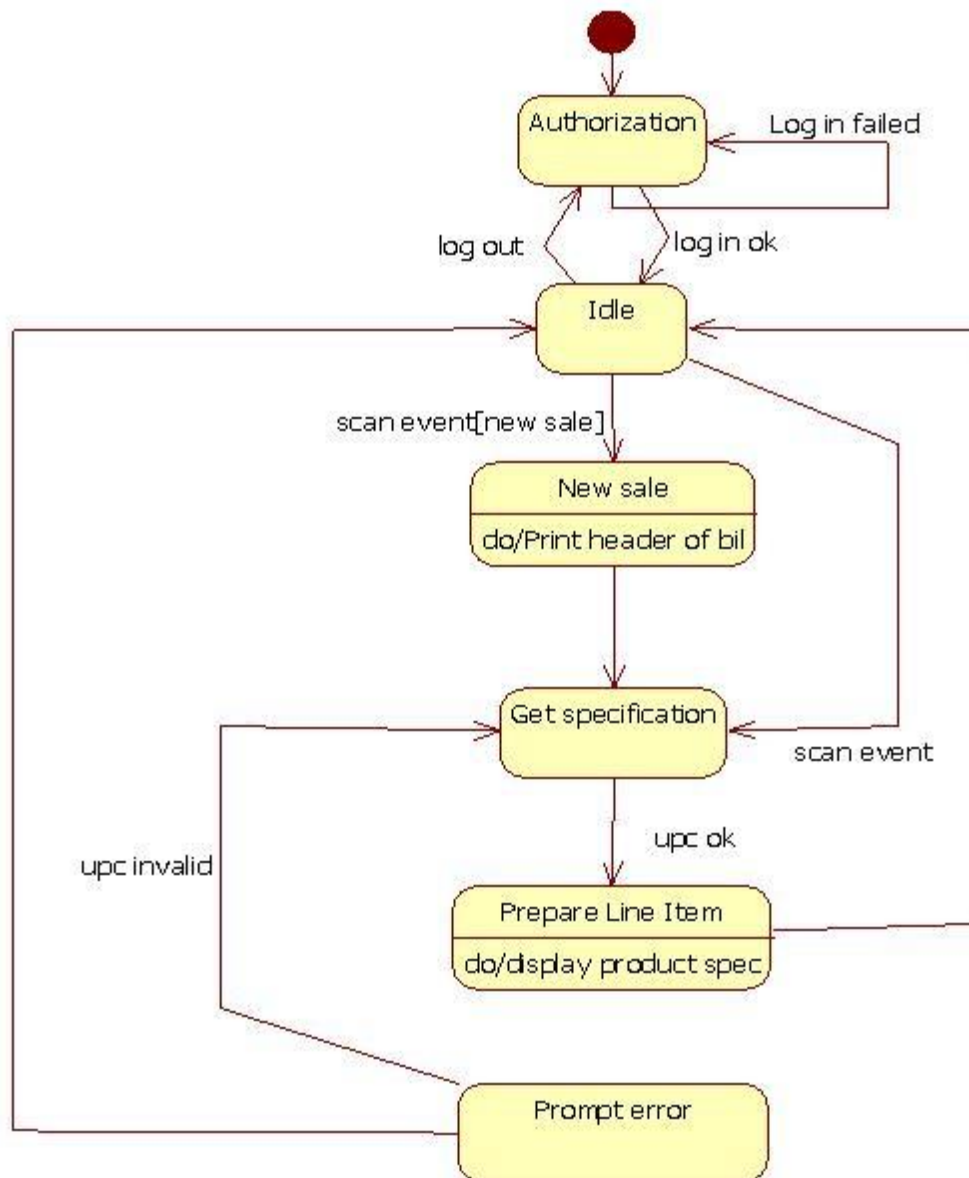
COLLABORATION DIAGRAM



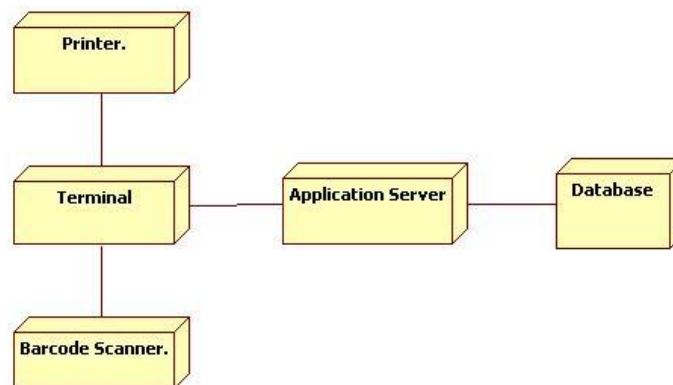
ACTIVITY DIAGRAM



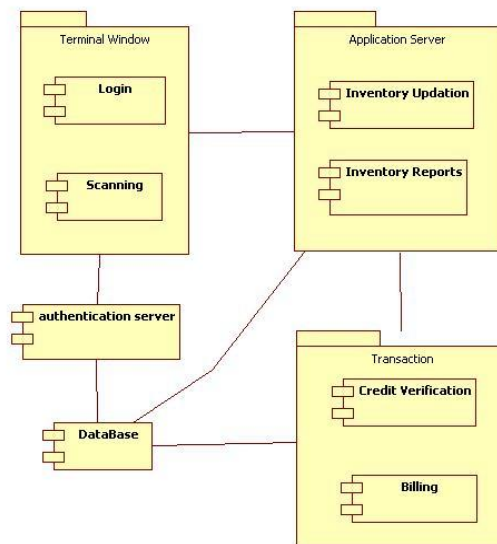
STATE CHART DIAGRAM



DEPLOYMENT DIAGRAM



COMPONENT DIAGRAM



RESULT:

This project was carried out in a sequential manner to design and implement the “POINT OF SALE”. Thus the outcome of the project is efficient. The POINT OF SALE caters the varied requirements of the user to perform various options.

MODULAR DESCRIPTION – (Ex: CAR RENTAL MANAGEMENT SYSTEM)**ADMIN**

Like every other management system the car rental management system will have the admin. The admin will be the entity that will monitor the activities and the records of whole system.

- Following are the some main facts related to the admin of the system.

There will be only one admin in the system.

Admin can view other users' profile.

The admin will have the power to delete any other users from the records or update the data of any other users.

Any car or the payment deal will be approved by the admin.

CUSTOMER

Customers are the reason why I feel to introduce the car rental management system, to make their journey wonderful, to get them fit for the environment they are traveling into.

DEALER

The Car dealer is a person or an organization that provide their cars on the contract basis. This module is the complementary for the customers in car rental management system.

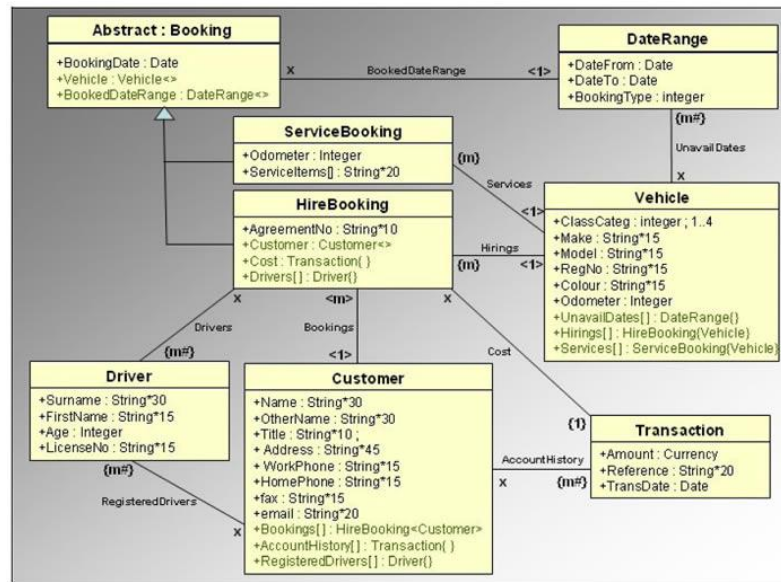
ACCOUNTANT

The accountant will retain the financial details of the car rental management system. The accountant will handle all the payments that are done the customers and the accountant will redirect this information to the invoice department, so that invoice can be generated for every car is rented. There are others financial issues also such as maintenance charges, employee salary etc. which is handled by the accountant.

INVOICE MANAGEMENT

After the amount is paid by the customers, the invoice department will generate the bill of the car used and will reflect into the customers' account. This department will also keep the receipts of newly car is brought to the system so that it can further be used for analysis purpose.

CLASS DIAGRAM



Week-11

ATM TRANSACTIONS

MODULAR DESCRIPTION

VERIFICATION OF ATM CARD

For the verification of ATM card by the system, the user will enter the secret code. The pin number or code number is verified with the database of the customers. If the code exactly is matched with database of that of the customers then transaction can be performed. If the code does not match with the database of the customer then the user is requested again to re-enter the pin number of the access card and is continued further.

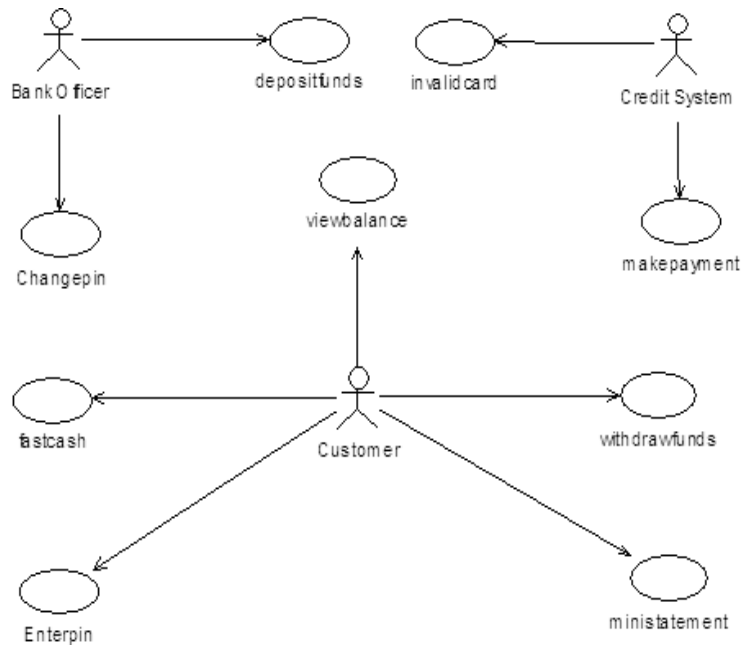
TRANSACTION

In this module, the necessary transaction to be performed by the user is displayed as option by the system. The transaction options are withdrawal, deposit, balance enquiry, mini statement, pin change. The users can withdraw the amount from their account if the amount is available in their account. The users can also deposit the amount in their account either by cash or cheque. This module helps the users to check their balance in their account through balance enquiry and also they can get the mini statement for recent transaction done over their account. This module allows the users to change their pin number if they need.

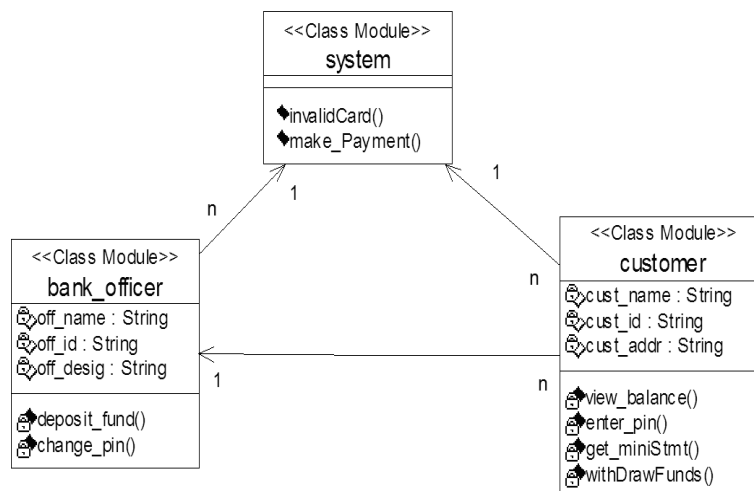
DISPLAY AND RECEIPT

In this module, after the user performs the transaction process the system displays the balance amount available in the account and the amount withdrawn by the user through receipt. The receipt will be provided at the end of the transaction process.

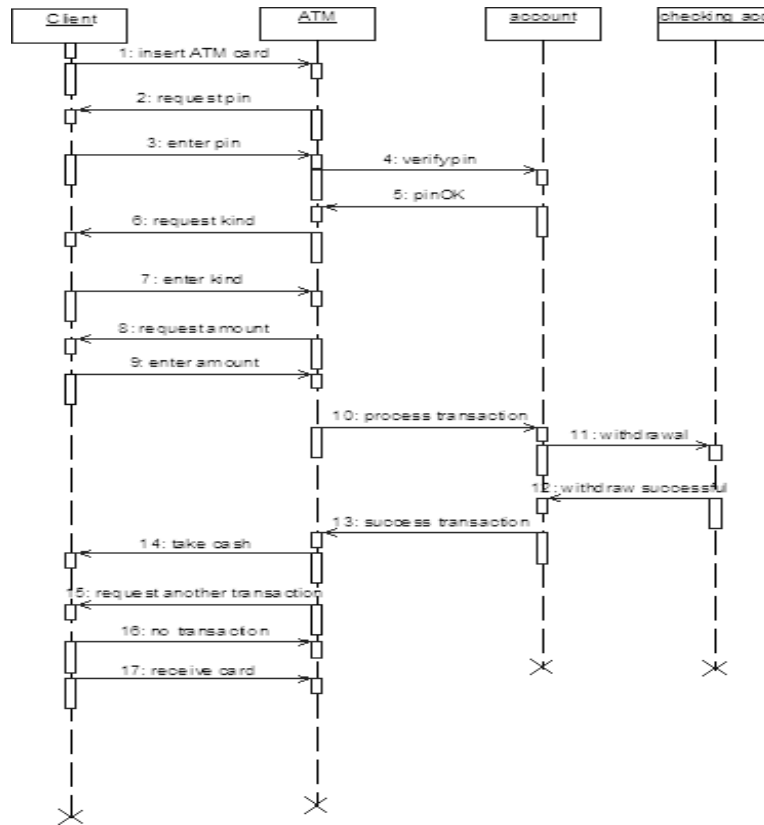
USE CASE DIAGRAM:



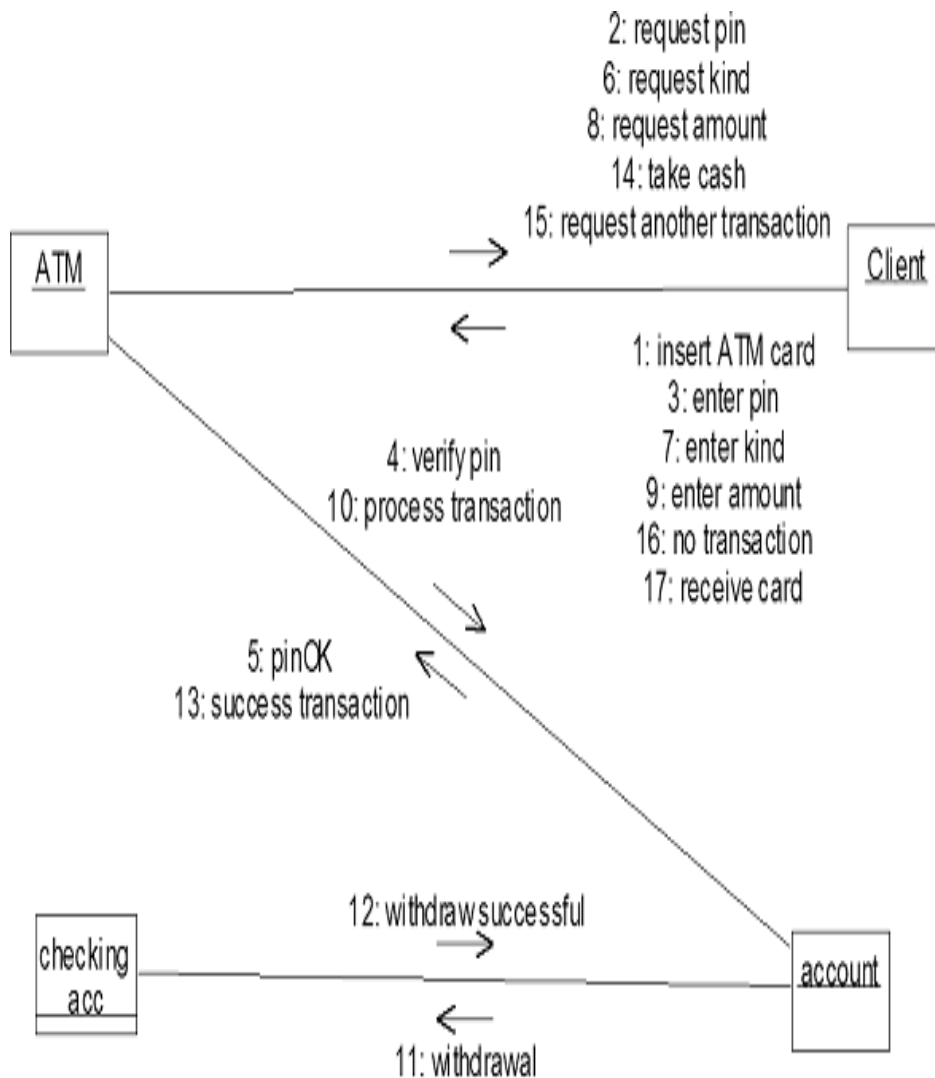
CLASS DIAGRAM



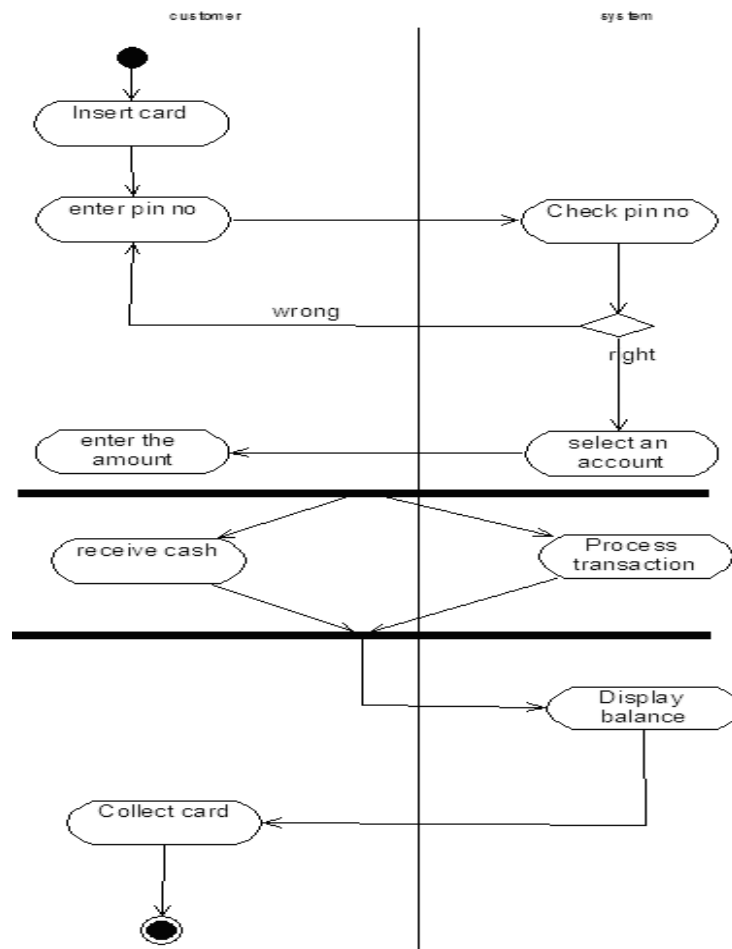
SEQUENCE DIAGRAM



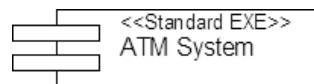
COLLABORATION DIAGRAM



ACTIVITY DIAGRAM



COMPONENT DIAGRAM:



RESULT:

This project was carried out in a sequential manner to design and implement the “ATM SYSTEM”. Thus the outcome of the project is efficient. The ATM system caters the varied requirements of the user to perform various options.