BAHIR DAR UNIVESITY INSITITUTE OF TECHNOLOGY

FACULITY OF COMPUTING

Department Of Computer Science

Industrial projecton:-Online SelamBus Ticket Reservation System

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Declaration

The Project is our own and has not been presented for a degree in any other university and all the sources of material used for the project have been duly acknowledged.

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Faculty: Faculty of Computing

Program: Computer Science

Project Title: **Online Selam Bus Ticket Reservation System**

This is to certify that we have read this project and that in our opinion it is fully adequate, in scope and quality, as a project for the degree of Bachelor of Science.

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Name of Advisor   **Signature**

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1. Examiner 1

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It is approved that this project has been written in compliance with the formatting rules laid down by the faculty.

Acknowledgment

First we would like to thank almighty god who inspire us to start and finish the project in good way .and also next we would like to thank bahir dar university to formulate projects should did in computing faculty .Then We wish to express our sincere gratitude to the Faculty Of Computing, for providing as an opportunity to perform the project work on "Online Selam Bus Ticket Reservation System" .We sincerely thank our project Advisor, Mr. Muluadam/T for his kindness in advising and guiding us to through the right path, from the starting until the completion of this document. Last but not least.Finallywe would to thank for all class of fourth year computer sciences students and our friends for sharing many useful ideas.

List of Acronym

1. **BR**=Business Rule
2. **CSS**=Cascading Style Sheet
3. **HTML**=Hypertext Mark-up Language
4. **Info=**information
5. **PHP**=Hyper Text Preprocessor
6. **TDA**= Tigray Development Association
7. **UC**=Use Case
8. **UI**=User Interface
9. **UML**=Unified Modeling Language

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Abstract

The project which is the aim to build is online bus reservation system for Selam Bus Line Share which is a web based application that allows customer to check availability of ticket online at any time at any place and enable there customer to reserve a seat online without going to the office physically. After finishing of this project the company will get many advantages such as it will provide a good service to their customer this will lead the company to be profitable and it makes the data handling of the company organized. In recent year all projects are done by using an object oriented method because of it's convince to build a good and reliable system so we choose this method for our project to be successful. The project provides facilitieslike reservepassenger, schedule replay request response,

The document shows the detail study on ticket reservation system. Fact findingtechniques like interview and documents analysis have been used to collect information aboutthe system. The new system is proposed and analyzed using object oriented methods like Use Case Diagram, Activity Diagram, and Sequence Diagram. A specification of the new system isdesigned using deployment diagram and class diagram. A detailed algorithm is also developedfor each method identified in the class diagram. The design part also incorporates databasedesign at the back end and interface design at the front end.

Chapter one

1. Introduction

As there are many problems face human being throughout their life it is obvious to solve many of the problems using computers. When saying this as the computer is the modern technology problem solver any one can solve his/her problem by developing the software that make its work computerized. So we have prepared a project as a precondition for solving many of the problems of Selam bus ticket System that is implemented manually. Therefore, this work that manually performed needs to be automated to reduce the problem happened. The project includes the background of the company and also the systems performed are described. In addition, the conditions like the problems in the company, our objective, scope of the project are clearly specified. Finally, the tools and techniques we will use and the schedule is summarized as possible as to finish in the given time by using own methodologies.

1.1 Background

Selam Bus Transport Share Company was established by the Tigray Development Association (TDA) in 1996 to alleviate the prevailing nation-wide shortage of public transportation. The aim of *Selam Bus* Transport Company is "to render reliable, safest, comfortable & modern public transport service in Ethiopia". To this effect and in order to raise a capital that would enable it realize its mission and vision as well as have more service coverage, the company is selling 60% of its shares to Ethiopians in the different parts of the country.

Selam Bus is committed to maintain the ease and convenience as well as the comfort of its passengers by regularly making arrangements of efficient and standard reception services on their behalf and furthermore the aim is to raise its capital so as to give efficient and modern bus service by importing very modern buses possessing the state of the art technology including internal café and toilet services, all to the satisfaction of its clients.

At present the company is rendering service from Addis to Diredawa, Harrer, Jijiga, and jimma, Bahir Dar, Gondar, Dessie&Mekelle, Shire, Assosa, Arbaminch and Moyale on daily basis. The headquarter, bus terminal and garage of Selam Bus has been established in Addis Ababa with branch offices in all regional capitals. Buses departing from Addis Ababa to all the regional capitals providing all necessary information and entertainment services to the satisfaction of the passengers are expected to serve as the ambassadors of the region.

1.1.1. Vision

To be a leading multifaceted company that provides safest, convenient, efficient and high quality public transportation in the horn of Africa.

1.1.2. Missions

To connect our customers with the people, place and services that enhance the quality and enjoyment of their lives by providing equipment technology professional knowledge and experience required to manage and operate safety, comfortable and cost efficient ground transportation system.

1.1.3. Values

The value of the company is dedication to customer satisfaction, commitment to service excellence, good governance and honesty

1.2. Objective

1.2.1 General Objective

➢ To develop online Selam Bus Ticket reservation system that will replace the manual ticketing system this system helps the organization in different way like: reduce man power means that the system generally manage different activity that are related to ticket problems .

1.2.2 Specific Objective

In addition to our general objective the project will also contains the following specific Objective:-

 - ➢ Study the existing system and find out the problem.
 - ➢ Design the new system that can overcome the problem of the current system.
 - ➢ To enable customer to check the availability of the ticket.
 - ➢ To enable customer to check the time departure and arrival for every bus through the system.
 - ➢ To provide anytime service if the connection is available, customer can reserve a seat 24 hour a day and 7 days a week over the internet.
 - ➢ To enable customer access the system in speedy way means that customers can easily understand use of the system without ambiguous.
 - ➢ To enable customers confidentially to reserve ticket

1.3. Statement of problem

Currently the line share company performs ticket service with the old traditional manual system, due to this reason the current system is faced with the following problems. Such as:

 - ➢ Preparation of unlimited ticket paper.
 - ➢ It does not well-organized and updated working ticket process.
 - ➢ There is some ticket cheating which some passengers may do it.
 - ➢ Unwanted amount of resource is missing with improper usage.
 - ➢ Customers might made errors in filling the information on the ticket form paper means that when the customer tells unwanted personal information to the ticket officer.
 - ➢ The customer may be tied up with extra work to buy ticket
 - ➢ The ticket buying time may be finished when customers does not reach the office in case of transportation
 - ➢ Their client who is responsible person to give ticket might not be present by that time.

- ➤ Employees might be made complaint with some passengers.
- ➤ It may lacks security means that any unauthorized person might see the customer's data the data is handled by manually.

1.4. Significance of project

The project is very important to the organization and organization's customer

For the organization

- ➤ It increases their profit by making their expenditure less.
- ➤ It increases customer satisfactions.
- ➤ It reduces the required man power.
- ➤ It helps the organization to handle customer information in an organized way.

For the customer
- ➤ It reduces the wastage of time and money.
- ➤ Reduce energy

1.5 Limitation of the project

At the end of this project the new functionality in each module will be able to solve many of the problems in the existing system. But, even the proposed system will perform most of the activities the system will not perform online payment, the system only give service for those users have already an account, no language choice i.e. only In English reader and write and the system will not allow the organization to communicate with other private transport organization.

1.6. Existing System Study

1.6.1. Existing System Function

The existing selam bus ticket function is performed by manually when the traveler is coming.

Functions like:-

- ✓ Supply ticket.
- ✓ Register the traveler.
- ✓ Receive the cost in manually.
- ✓ Record seat number.

1.6.2 Existing System Problem

Selam bus Transportation Company uses manual system which requires a lot of resource like, man power, stationary materials and so forth. And also the system is slow and inaccessible to their customer.

From the point of view of customer the current system is very wasteful which require a lot of time and money. For example if a person wants to reserve a place in the bus he must go to the office his/her time and money are lost.

1.7. Proposed System

The online selam bus ticket reservation system is built in order to eliminate the problem of the current system. It allows the traveler to register their movement destination. This enables the traveler to access the system easily.

With the proposed system the online selam bus ticket reservation system will be able the company to monitor the satisfaction of their traveler and also increase their security.

1.8. Scope of the Project

Our system performs the following functions.

- ✓ **Make reservation**:-the system supports the actors of the system i.e. managers to make reservation for passengers.
- ✓ **Show availability of ticket**:-the proposed system of the project is support the passengers to see availability of tickets in the system.

- ✓ **Show availability of seat**:-the system show availability of seat numbers of the passengers so the passenger see his/her own seat numbers based on the system required personal information from users.
- ✓ **Cancellation of reservation ticket**:-the proposed system also cancels tickets i.e. tickets have already used and the system needs to replace old tickets to new tickets.
- ✓ **Generate report**: - the system supports the managers to generate reports that are related to passengers and actors of the data.
- ✓ **Assign bus:-**the system supports to assign bus for the reservation.
- ✓ **Postpone reservation:** the system include postponing reservation for the next and the day that any case related to the company and the users.
- ✓ **Search, insert; delete, view traveler's data:-**from the system database the authorized user can view data's, delete, and insert appropriate information.
- ✓ **Update data;-**the system also support to update accounts of user by authorized actor.

1.9. Method of data collection

The method of Requirement gathering that is used on this project includes Interview, questionery,Observation and document analysis to collect/ gather information and data of the existing system to develop new system.

Interview: - we contact the representative of the organization and then exchange some ideas about their current system, how it has been working and the structure of this organization. As a general, we gather enough data in order to prepare our project

Observation: we will look and examine how the workers are doing their work so that I could understand the existing system. We will observe the actual work in scheduling staff of the organization to gather additional data (i.e. manual class scheduling system) being done by the organization and consolidated with what was obtained through observation.

Questioner: - by preparing question papers we will try to get necessary information about the organization and helps us to do the system in a good way.

Document analysis: reading the document available in the organization .and by visiting the organization.

Chapter two

2. System feature
2.1 Introduction /overview

This chapter covers introduction of the existing system, role of the existing system, and major functions/activities of the proposed system. This chapter also covers practices to be preserved from the existing system ,proposed solution of the existing system that address problems of the existing system and requirements of the proposed system.

2.2 Existing system description

The existing system that has been practiced in selam bus organization is manual system and ticket reserving systems are monitored with paper work. Workers and passengers are move to the ticket office in directly going to the office room to another room in the organization, workers communicate manually. The major stakeholders of the current system are passenger, ticket officer, system admin and manager of the organization.

The main role of passenger: - the role of passenger in the system is to become: reserve ticket, give comment to the organization, fill his /her own personal data, and know route information.

The main role of ticket officer: the role of ticket officer is the system is to become confirm reservation, deactivate the reserved ticket, view comment that already written by passengers, and also know the passengers data in the database.

The main role of system admin: the role of the system admin in the system is to become: create account to both manager and ticket officer, update the account that already created in manager and ticket officer, reset password, post notice and events that related in the user and also view comment of the user.

The main role of manager: the role of the manager in the system is to become: postpone reservation, generate report for the concern one, view comment that comes to users, and also to delete and update bus information and update the passenger's data.

Basics existing system description

Ticket reservation it is done by storing the details of the reserved ticket by a paper file and sometimes by simply a word document in the office computers. This act of ticket reservation is not reliable for future usage of the data; it may be lost by different reasons like computer hard disk failure, data corruption by malware and even by catastrophic damages.

Ticket cancellation in the organization is done like reservation means that to cancel the reserve ticket that already usable it is difficult because there is occurrence of redundant data, may be the document that handle the ticket is lost or damaged at that time the organization become loss and difficult to calculate amount of reserve ticket and cancel the ticket if the ticket document is lose or hide.

Postpone reservation in the existing system users don't have known whether the reserve ticket is reserve or postpone .so in this time the organization is not option to address the ticket is postpone to the next day or the day after tomorrow to users, to inform the organization may use different materials like: magazine, newspapers, leaflet but this act of distribution information is not available in some area. All individual not access the posted information.

Comment writing: when the user went to give the comment they came to the organization and give their comment orally to the servants or write on a paper depend on customer issue. In case this is bother for the servants and the customer to work. Also the organization may be busy

2.3 Proposed system

By carefully analyzing and observing the problem of existing system we came up with a solution that the current manual system should be computerized. The computerized system will eliminate/reduce the problem on time, work load and complexity on storing passenger's information and ticket related information. The system will include a database for recording tickets and the passenger's data that facilitate fast information retrieval, modifying, inserting and deleting. It also includes an attractive user interface that facilitates accessing the database.

The system gives an id for those ticket reserve registered in the organization to reserve ticket. So that it is easy to work with all the processes in the organization. The user registers them so the system will give an id number to the passengers. Based on the id number the manager will record the passenger information on to the system .If manager wants to know necessary information then the manager goes to the passengers data and then the manager use basic identification numbers So based this on the manager ordered the passenger.

After studying the existing system and identifying the limitation we will design the following system features.

- ✓ The system is aimed to make improvement on the area of reserving the ticket and assigning the route.
- ✓ The system is providing that to make customer accesses easily.
- ✓ The system is providing that reduce the risk of labor lose and customer time.
- ✓ The system reduce that the risks of the information or data lose.
- ✓ The proposed system controlled by the manager, ticket officer, system admin. That means the data input from the passenger to be given appropriate information.
- ✓ The system will include a database for recording tickets and the passenger data that facilitate fast information retrieval, modifying, inserting and deleting.
- ✓ The system will be approving the manual system form.
- ✓ The system gives an id for those ticket reserve registered in the organization to reserve ticket. To order the passenger seat without any complain to managing easily.
- ✓ Ensure fast and accurate record keeping mechanisms. All records about the ticket and passenger data will be stored on the central database.
- ✓ Every request towards the organization related to ticket will be answered.
- ✓ Ensure the reports and status is easily generated.
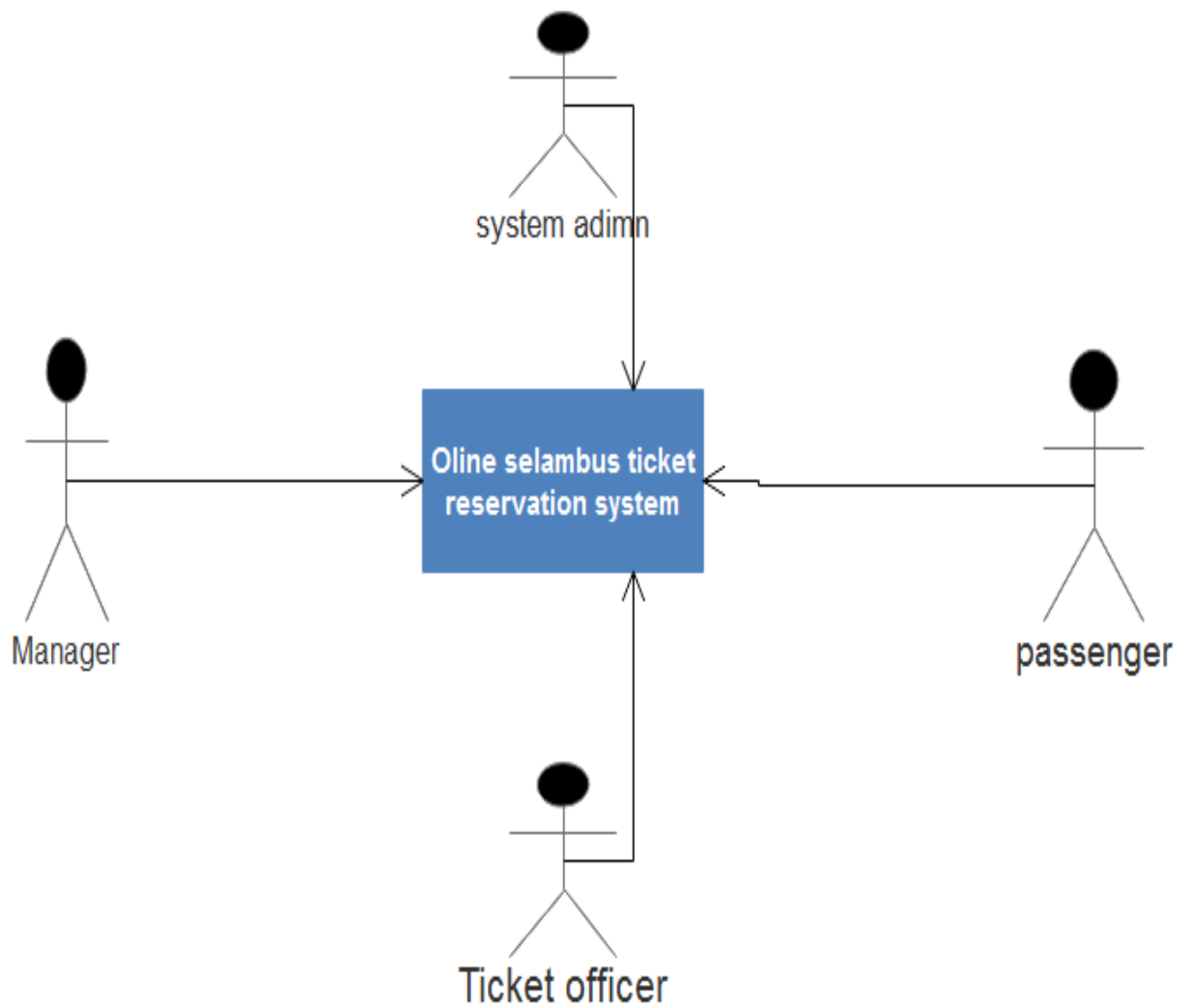
Figure 2.1work flow of proposed system diagram

2.4 Requirement Analysis

2.4.1 Functional requirements of the proposed System

The functional requirement of the proposed system is defines its function and component of work flow. The system shows the all over order of the status systematically way and easily accessing way in detail.

The new system should provide the following functionalities:-

Manager

1. Generate report:-The manager generate the report for the customized user about the work range and use status.

2. Cancel reserve ticket:-The manager will be canceling reserved ticket after the passenger well come.

3. Update passenger data:-The manager will be updating the passenger's information to revise as new status.

4. View passenger data:-The passenger data or information will be seen that they were filled form properly.

5.Postpone reservation:-The manager can postpone the reserve ticket that may be the passenger has get unfortunately conditions are not comfort to start the journey in the expected day and also the ticket is not fully reserved by the passengers.

6. View comment:-The manager replay the comment when users send comment .users may give comment whether the organization service is satisfy or not and also related things that approach to the system.

System Admin

1. Create account: - The system admin creates an account of the system.

2. Reset password: - The administrator reset the password when the user unexpected lily lose or forgot the given password in case the admin going to set again.

3. Update account: - The authorized users of the system can add, modify or change both managers and ticket officer account information whenever necessary.

5. Post notice/news: -The system shall provide notice and news when the organization is become to attract users in different situations may be the situation of the organization is related to the organization.

6. View comment:-The system should provide the comment that is necessary for users so users discover (browse), view and visit information at their level.

Ticket Officer

1. View passenger data:-The system shall allow ticket officers to view and visit passengers comment.

2. Cancel reserve ticket:-The system shall allow the ticket officer to cancel the ticket already usable by users so as to reduce the ticket redundancy

3. View comment: - The system should provide the comment that is necessary for users so users discover (browse), view and visit information at their level.

4. Confirm reservation:-The system shall allow the ticket officer to confirm the ticket when the user send request to reserve ticket.

5. Assign Bus: - from the system the ticket officer assign or provide bus to users for reservation.

Passenger

1. View payment status:-The system allows the passengers to see the payment status or information of the ticket.

2. Give comment:-The system allows the passengers to give and provide positive or negative feelings about the organization services.

3. Reserve ticket:-The main aim of the system next to the above is to allow the passengers to reserve ticket.

4. View route of information: - The system shall provide the route information to the passengers.

5. See availability of tickets:-The system allows passengers to see availability of the ticket.

6. See availability of seats:-The system allows the passengers to see availability of seats.

2.4.2 Non-Functional requirements

Non-Functional requirements are often associated with the state of the system and not with the functionality that the system should offer. The overall qualities of the system are usability, maintainability, portability, availability and security.

Non-functional requirements for our system are listed below:-

Usability

➢ The system should provide a help and support menu in all interfaces for the user to interact with the system.

Security

➢ The system should be secured from external attackers and internal misuse. It should have a user's database and should authenticate each user on log in and should grant user specific services.

Maintainability

➢ The System should be easily maintainable in case of problems and gives consistent service at all times without fluctuation until there is internet connection and should be testable.

Availability

➢ The system should always be available for access with connected network and power source.

Portability

➢ The system should run on every version of web browsers. The system should run in every server and client computer.

2.4.3 System Use Case

A use case diagram describes how a system interacts with outside actors. It is a graphical representation of the interaction among the actors and systems. Use case identifies the functionality of a system.

The use case diagram models the user's expectation for using the system. The people and systems that interact with the system are called the actors. The features of the system that the actors use are called the use cases.

➢ **Use cases.** A use case describes a sequence of actions that provide something of measurable value to an actor and is drawn as a horizontal ellipse.

- ➢ **Actors**. An actor is a person, organization, or external system that plays a role in one or more interactions with your system. Actors are drawn as figures.

There are 20 use cases in this System:

Use case 1: login

Use case 2: View Payment Status

Use case 3: See Availability of Ticket

Use case 4: Give comment

Use case 5: Reserve Ticket

Use case 6: view Route information

Use case 7: see Availability of seats

Use Case 8: View Passenger Data

Use Case 9: Generate Report

Use Case 10: cancel Reserve Ticket

Use Case 11: Postpone Reservation

Use Case 12: Assign bus

Use Case 13: Update Ticket

Use Case 14: View comment

Use Case 15: Create Account

Use Case 16: Reset Password

Use Case 17: Update Account

Use Case 18: Post notice/news

Use Case 19: Confirm Reservation

Use Case 20: Logout

Identified actors that will be participating in the system are:-

- ➢ Passenger
- ➢ Ticket officer
- ➢ System Admin
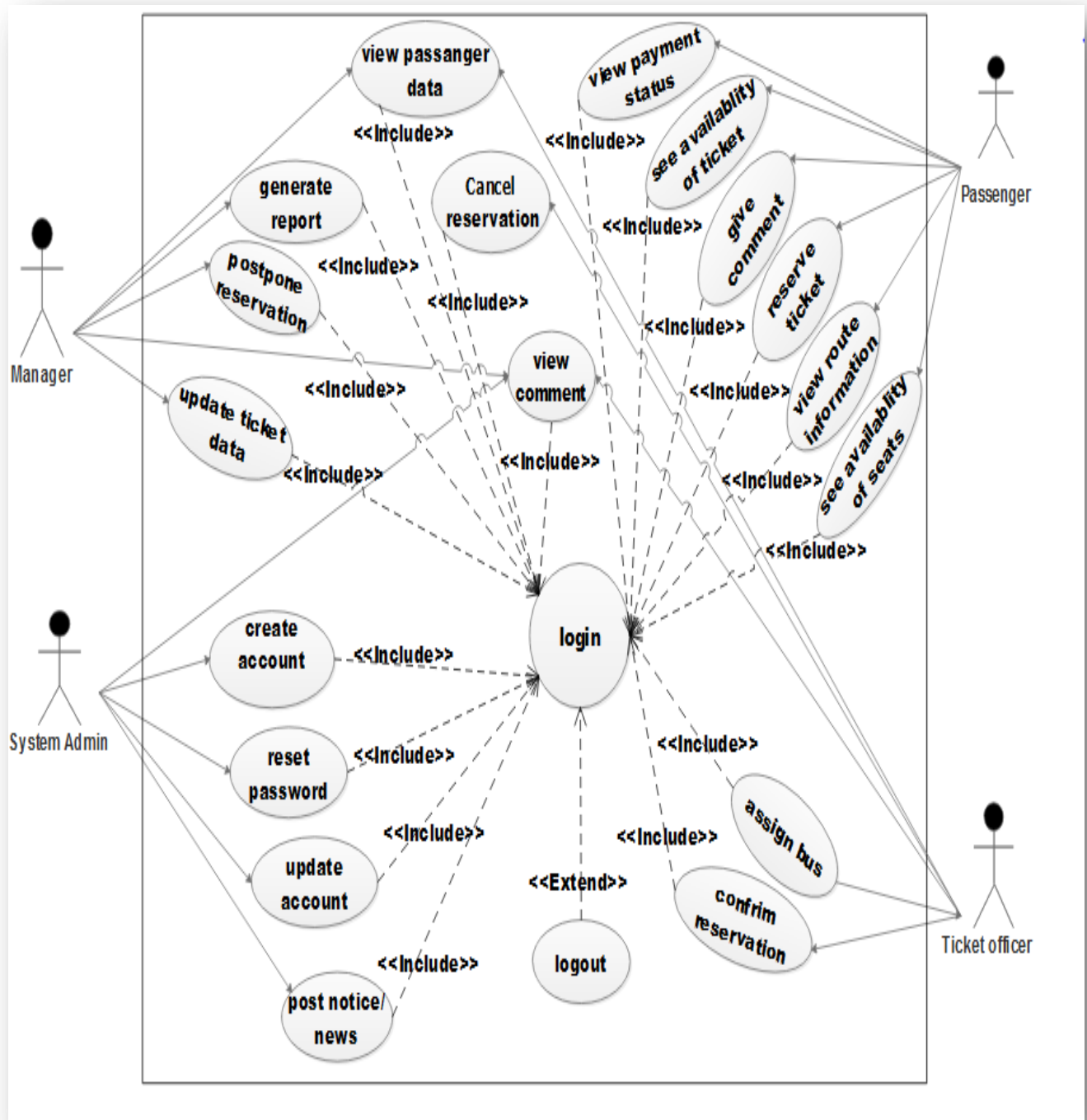- ➢ Manager

Figure 2.2use case diagram

Use Case ID:	UC-ID1	
Use Case Name:	See availability of ticket	
Actor:	Passenger	
Description:	The User must know detail of ticket availability	
Preconditions:	First The user must login into the system and know the information	
Post conditions:	The availability of ticket information must added into the database	
Normal Course of Events:	User action	System response
	1. User opens the documented page of tickets.	2. The system will display documented page ticket availability.
	3. User clicks the view button	4. The system checks the correctness of the input data.
		5 The system display availability ticket.
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2. 1use case description for availability of ticket

Use Case ID:	UC-ID2	
Use Case Name:	See availability of seats.	
Actor:	Passenger	
Description:	The User must know detail of seat availability	
Preconditions:	First The user must login into the system and know the information	
Post conditions:	The availability of seat information must added into the database	
Normal Course of Events:	User action	System response
	1. User opens the documented page of seat.	2. The system will display documented page seats availability.
	3. User clicks the view button	4. The system checks the correctness of the input data.
		5 The system display availability seats.
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.2use case description for availability of seats

Use Case ID:	UC-ID3	
Use Case Name:	Give comment	
Actor:	Passenger	
Description:	The User should open comment writing form	
Preconditions:	The user must be registered and login into the system	
Post conditions:	The comments report must added into the database	
Normal Course of Events:	User action	System response
	1. User opens the comment writing form. 3. User fills the comment and send. 6. Use case end.	2. The system will display writing comment form. 4. The system sees the input message. 5. The system display "sends successfully".
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.3use case description for give comment

Use Case ID:	UC-ID4	
Use Case Name:	Reserve ticket	
Actor:	Passenger	
Description:	The User should fill the ticket reservation form form correctly	
Preconditions:	The user must be registered and login into the system	
Post conditions:	The reserve tickets must added into the database	
Normal Course of Events:	User action	System response
	1. User open the form that to reserve ticket page.	2. The system display ticket form.
	3. Userfills the form and submits.	4. The system checks the correctness of the input data.
		5. The system display "reserve successfully".
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.4 use case description for reserve ticket

Use Case ID:	UC-ID5	
Use Case Name:	view route information	
Actor:	Passenger	
Description:	The User should view the route information.	
Preconditions:	The user must be registered and login into the system	
Post conditions:	The route information details must added into the database	
Normal Course of Events:	User action	System response
	1. User opens the documented page of route information.	2. The system wills the documented information.
	3. User fills the form and submits.	4. The system checks the correctness of the input data.
		5. The system display "fills successfully".
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.5 use case description of view route information

Use Case ID:	UC-ID6	
Use Case Name:	View passenger data	
Actor:	Ticket officer ,manager	
Description:	The ticket officer know the the users data in details	
Preconditions:	The user must login into the system	
Post conditions:	The users data must added into the database	
Normal Course of Events:	User action	System response
	1. Ticket office opens the documented page of the user.	2. The system will display option (which type of documented information want to see.
	3. User fills the form and submits.	4. The system checks the required filed input data.
	6. Use case end.	5. The system displays the available information.
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.6 use case description for view passenger data

Use Case ID:	UC-ID7	
Use Case Name:	Cancel reservation	
Actor:	Ticket officer, manager	
Description:	The ticket officer and the manager cancel the ticket that ticket already gives service for user means that the ticket is expired.	
Preconditions:	The ticket officer and manager must login into the system	
Post conditions:	The reserved ticket must added into the database	
Normal Course of Events:	User action	System response
	1. Ticket office opens reserve ticket page. 3. The user click cancel reservation button.	2. The system will display reserve ticket page
		4. The system checks the required filed entered correctly.
	6. Use case end.	5. The system display cancel "reserve ticket successfully "message.
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.7 use case description for Cancel reservation

Use Case ID:	UC-ID8	
Use Case Name:	View comment	
Actor:	Ticket officer ,system admin	
Description:	The ticket officer and system admin see the comment which given to them and take as advice manage and improve it.	
Preconditions:	The ticket officer and system admin must login into the system	
Post conditions:	The users comment must added into the database	
Normal Course of Events:	User action	System response
	1. Ticket officer and system admin opens the comment of the user page.	2. The system will display option (which type of revised comment information want to see.
	3. User fills the form and submits.	4. The system checks the required filed input data.
		5. The system displays the available
	6. Use case end.	information.
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.8 use case description for view comment

Use Case ID:	UC-ID9	
Use Case Name:	Confirm reservation	
Actor:	Ticket officer	
Description:	The ticket officer confirms reserved ticket from the user and user sees successful conformation.	
Preconditions:	The ticket officer must login into the system.	
Post conditions:	The users reserved ticket must add into the database.	
Normal Course of Events:	User action	System response
	1. Ticket officer opens the form of the user.	2. The system will display option (which type of conform information want to see.
	3. User fills the form and submits.	4. The system checks the required filed input data.
		5. The system displays the available
	6. Use case end.	information.
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.9 use case description for confirm reservation

Use Case ID:	UC-ID10	
Use Case Name:	Assign bus	
Actor:	Ticket officer	
Description:	The ticket officer assign bus for the user and user sees buses and going to select and make reservation.	
Preconditions:	The ticket officer must login into the system.	
Post conditions:	The buses info must add into the database.	
Normal Course of Events:	User action	System response
	1. Ticket officer opens the form or the page to assign bus. 3. User fills the form or opens the page and submits. 6. Use case end.	2. The system will display the page or the form that to assign the bus 4. The system checks the required filed input data. 5. The system displays the available information.
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.10 use case description for Assign bus

Use Case ID:	UC-ID11	
Use Case Name:	Generate report	
Actor:	Manager	
Description:	The User should open generated report to understand the case.	
Preconditions:	The manager must be login into the system	
Post conditions:	The generate report must added into the database	
Normal Course of Events:	User action	System response
	1. Manager open the generate report text area.	2. The system will display generate report text area.
	3. User fills and submits.	4. The system sees the input message.
		5 the system display "the report generate successfully".
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.11 use case description for generate report

Use Case ID:	UC-ID12	
Use Case Name:	Update Ticket	
Actor:	Manager	
Description:	The Manager know the users data in details	
Preconditions:	The user must login into the system	
Post conditions:	The users data must added into the database	
Normal Course of Events:	User action	System response
	1. Manager opens the documented page of the user.	2. The system will display option (which type of documented information want to see.
	3. User fills the form and submits.	4. The system checks the required filed input data. 5. The system displays the available information.
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.12 use case description for update Ticket

Use Case ID:	UC-ID13	
Use Case Name:	Postpone reservation	
Actor:	Manager	
Description:	The User should open postpone reservation to understand the case.	
Preconditions:	The manager must be login into the system	
Post conditions:	The reserve ticket that was postpone related information must added into the database	
Normal Course of Events:	User action	System response
	1. Manager open the postpone reservation form.	2. The system will display postpone reservation form.
	3. User fills and submits.	4. The system sees the input message.
		5. the system display "the ticket is reserved"
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.13 use case description for postpone reservation

Use Case ID:	UC-ID14	
Use Case Name:	view comment	
Actor:	Manager	
Description:	The manager should open to the request comment	
Preconditions:	The manager must be login into the system	
Post conditions:	The comment that was send by passengers or users must add into the database.	
Normal Course of Events:	User action	System response
	1. Manager opens the request comments that come into users.	2. The system will display the request comment area reservation form.
	3. Manager replay comments and send the request comment.	4. The system sees the input message.
		5. the system display "the comment is send successfully"
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.14 use case description for view comment

Use Case ID:	UC-ID15	
Use Case Name:	Create account	
Actor:	System admin	
Description:	The user creates account to become an authorized.	
Preconditions:	The user should access the system website and there must be an internet connection	
Post conditions:	The user accesses the action page of the system.	
Normal Course of Events:	User action	System response
	1 the user open create account page	2. The system will display account page creation
	3. The user the form correctly.	4. The system checks the form fill correctly.
		5. the system display "create account successfully"
	6. Use case end	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.15 use case description for create account

Use Case ID:	UC-ID16	
Use Case Name:	Update account	
Actor:	System admin	
Description:	The administrator updates the status of each.	
Preconditions:	The administrator must login in the system.	
Post conditions:	The user status updated from the system database.	
Normal Course of Events:	User action	System response
	1 the administrator open update account page	2. The system will display update page.
	3. The administrator fills the update form correctly	4. The system checks the form fill correctly.
		5. the system display "update successfully"
	6. Use case end.	
Alternative Courses:	A4: User enters invalid data	
	A4:1The system displays error messages	
	A4:2 Go to step 2	

Table 2.16 use case description for update account

Use Case ID:	UC-ID17	
Use Case Name:	View comment.	
Actor:	System admin	
Description:	The administrator view comment from the passengers	
Preconditions:	The system admin must login in the system	
Post conditions:	The given comment must available in the database.	
Normal Course of Events:	User action	System response
	1 The administrator opens the posted pages available. 3. users fill the form and adds the documented notice pages and submit 6. Use case end.	2. The system will display documented post form page. 4. The system checks the form fill correctly. 5. the system display "successfully posted"
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.17 use case description for view comment

Use Case ID:	UC-ID18	
Use Case Name:	Post notice/news.	
Actor:	System admin	
Description:	The system admin post news and notice that concern users like: photos, textual.	
Preconditions:	The system admin must login in the system	
Post conditions:	Those posted news and notice must available in the organization website or in the system of database.	
Normal Course of Events:	User action	System response
	1 The administrator opens the posted pages available. 3. users fill the form and adds the documented notice pages and submit 6. Use case end.	2. The system will display documented post form page. 4. The system checks the form fill correctly. 5. the system display "successfully posted"
Alternative Courses:	A4: User enters invalid data A4:1The system displays error messages A4:2 Go to step 2	

Table 2.18 use case description for post notice/news

Use Case ID:	UC-ID19	
Use Case Name:	Logout	
Actor:	System admin, ticket officer, passenger and manager.	
Description:	When each user wants to logout he/she click logout link.	
Preconditions:	User should will to logout.	
Post conditions:	User will go login interface of the system.	
Normal Course of Events:	User action	System response
	1 User clicks the logout link.	2. The system will go to login page.

Table 2.19 use case description for logout

2.4.4 Business Rule Documentation

Policy of the system must satisfy the users when the user ordered by the rule. It is also about the controls and guidelines fulfilled by the formal requirements. A user should be able to:

BR1:-once passenger or users are going to reserve themselves.

BR2:-Then the passenger fills the reservation form.

BR3:-Then the passengers Reservation is confirm by ticket officer.

BR4:- after this the passenger reserves ticket.

BR5:-after confirmation the passenger knows the availability ticket, view route information and their seat number.

BR6:- See his/her current reservation system.

BR7:- Cancel reservation may occur in case of user or organization discomfortness.

BR8:- Able to choice seats.

BR9:- Finally the passenger prepares themselves for journey

2.4.5 User Interface prototype

User interface (UI) prototyping is an iterative analysis technique in which users are actively involved in making up of the UI for a system. Interface prototyping is a technique used in user interface design to create and test the design of an interface. The outcome of interface prototyping is a visual representation of an interface in the form of an interface prototype.
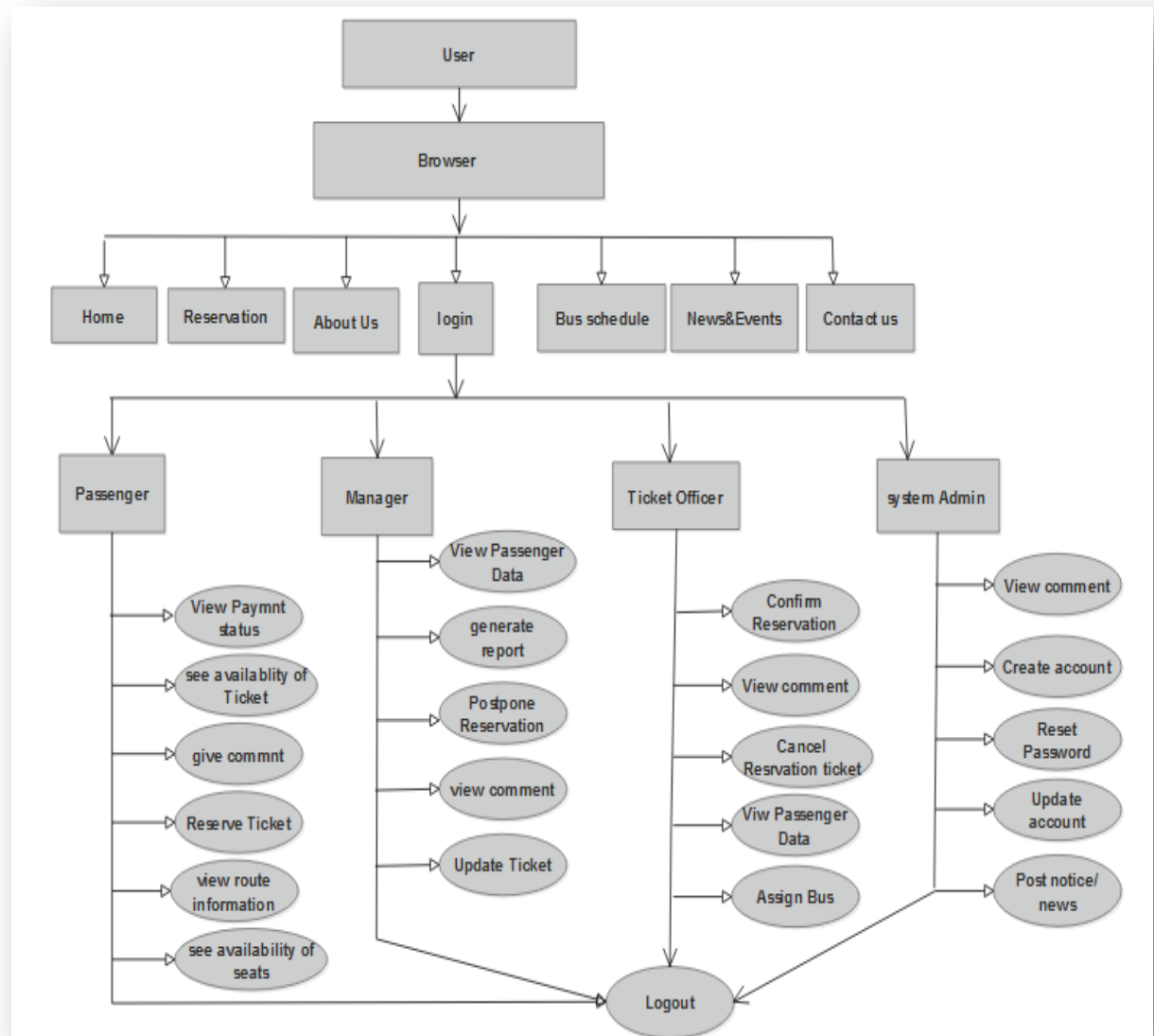
Figure 2. 3User Interface prototype

2.4.6 Activity Diagram

An activity diagram is used to model a large activity's sequential work flow by focusing on action sequences and respective action initiating conditions. An activity diagram is represented by shapes that are connected by arrows. Arrows run from activity start to completion and represent the sequential order of performed activities. Circles represent an initial workflow state. Circle indicates an end state. Rounded rectangles represent performed actions, which are described by text inside each rectangle.

A diamond shape is used to represent a decision, which is a key activity diagram concept. Upon activity completion, a transition (or set of sequential activities) must be selected from a set of alternative transitions for all use cases

Synchronization bars indicating the start or completion of concurrent activities are used to represent parallel sub flows.

The following are sample activity diagrams for Online selambus Ticket Reservation system
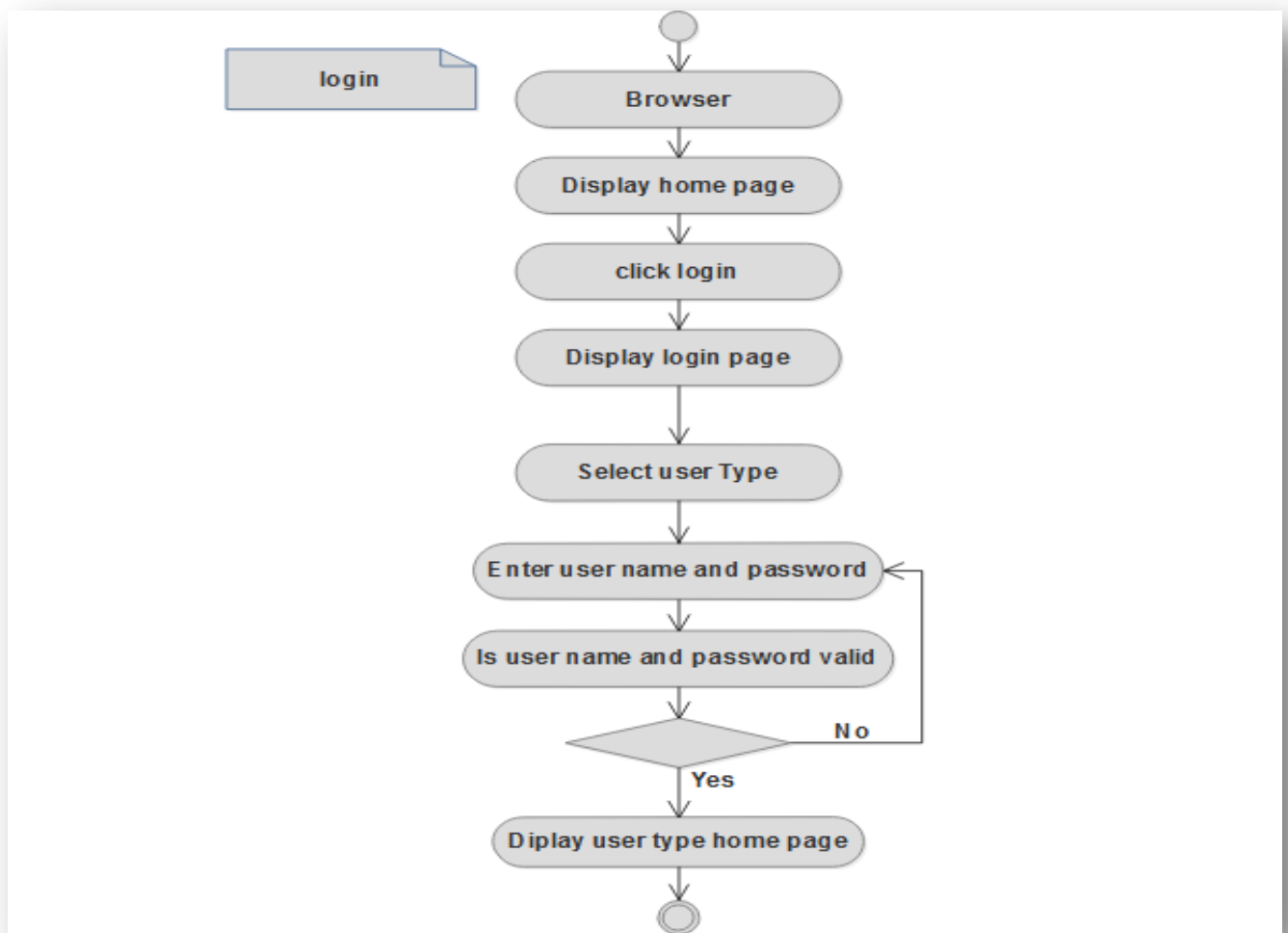
Figure 2.4activity diagrams for security login

confrim reservation

ticket officer login into the system

user opens confrim reservation page

system display confrim reservation page

user fill the form and submit

system check the correctness of users input

incorrect

correct

reservation is confrim sucessfully
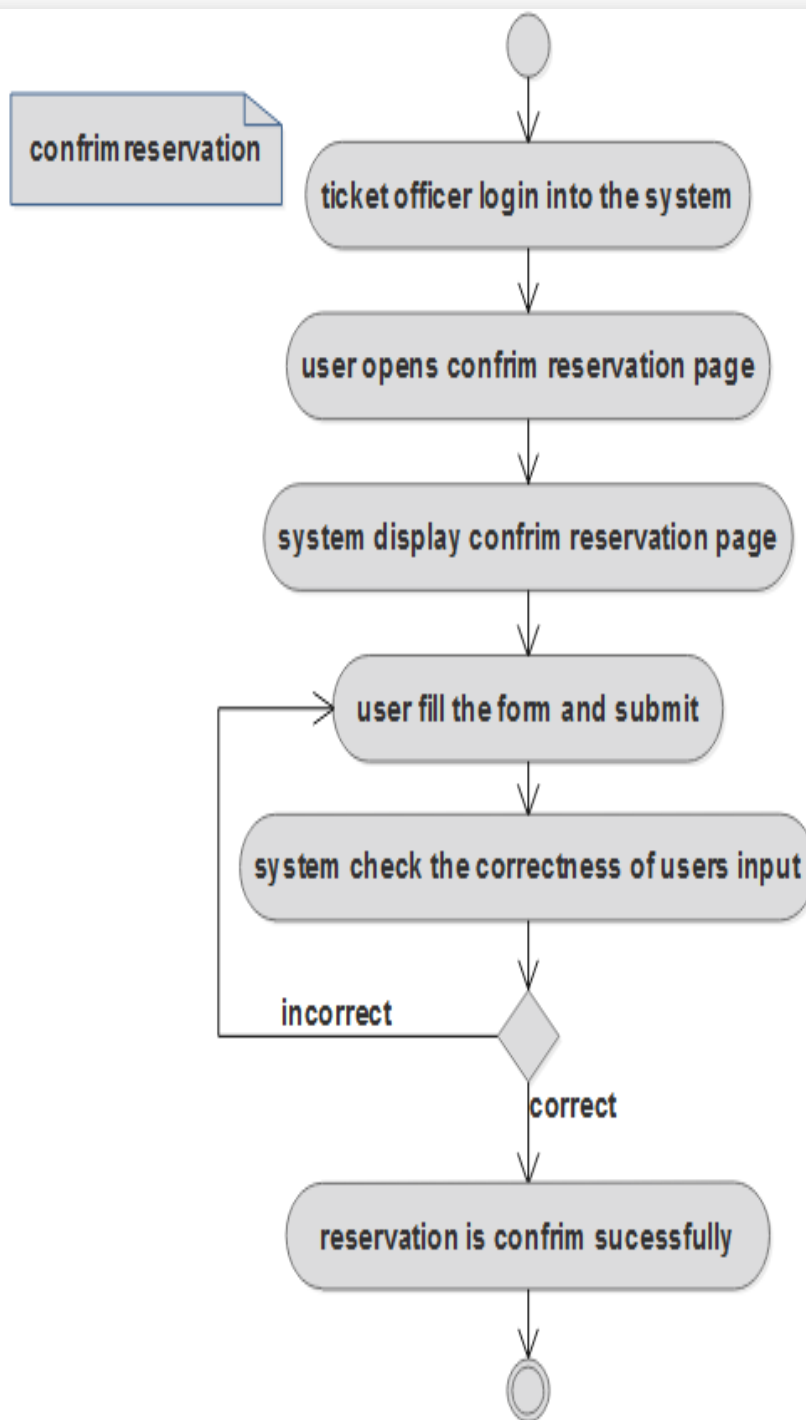
Figure 2.5activity diagrams for confirm reservation
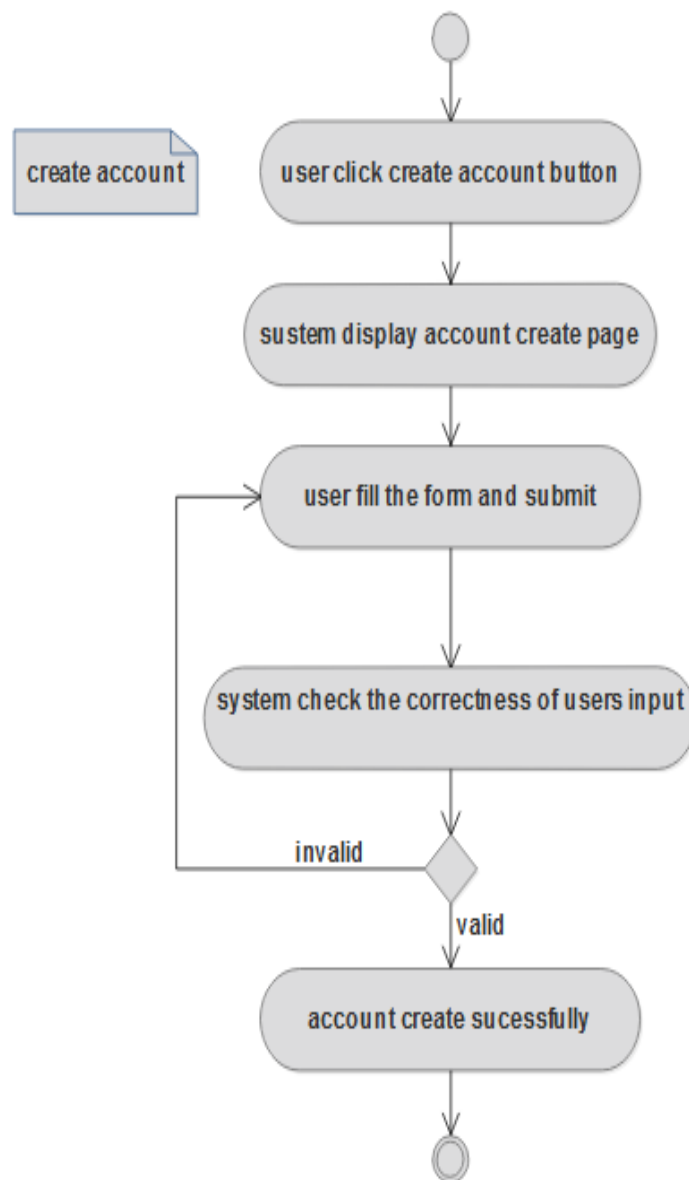
Figure 2.6 activity diagrams for create account
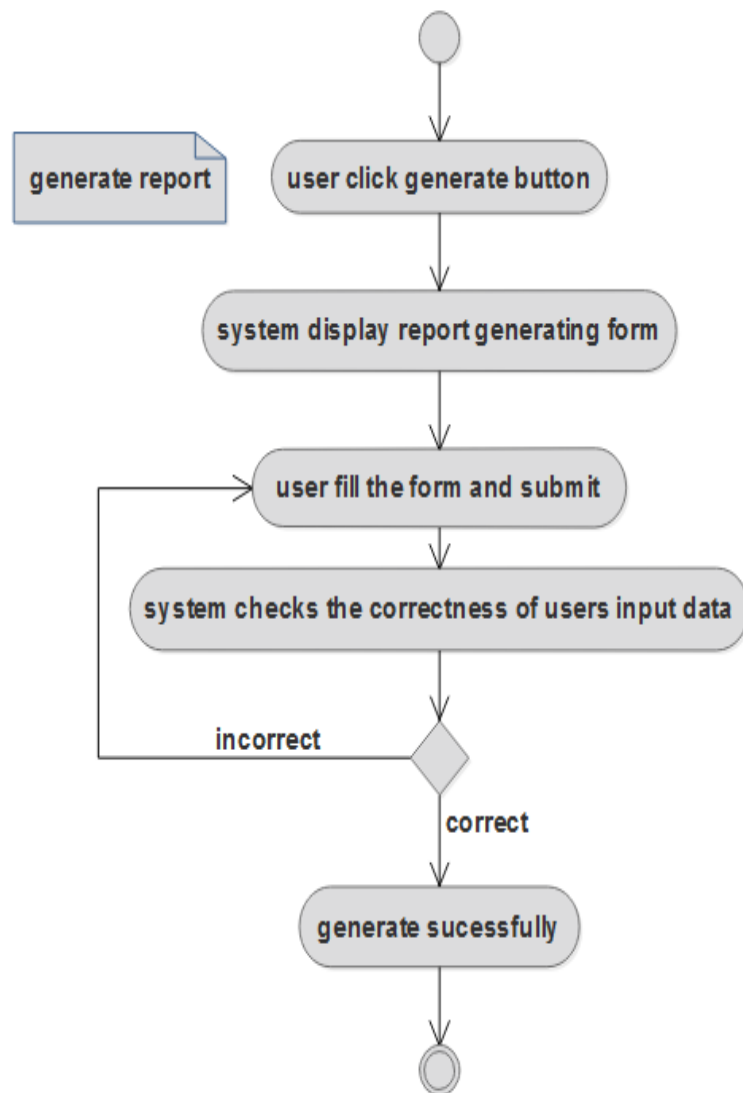
Figure 2.7 activity diagrams for generate report
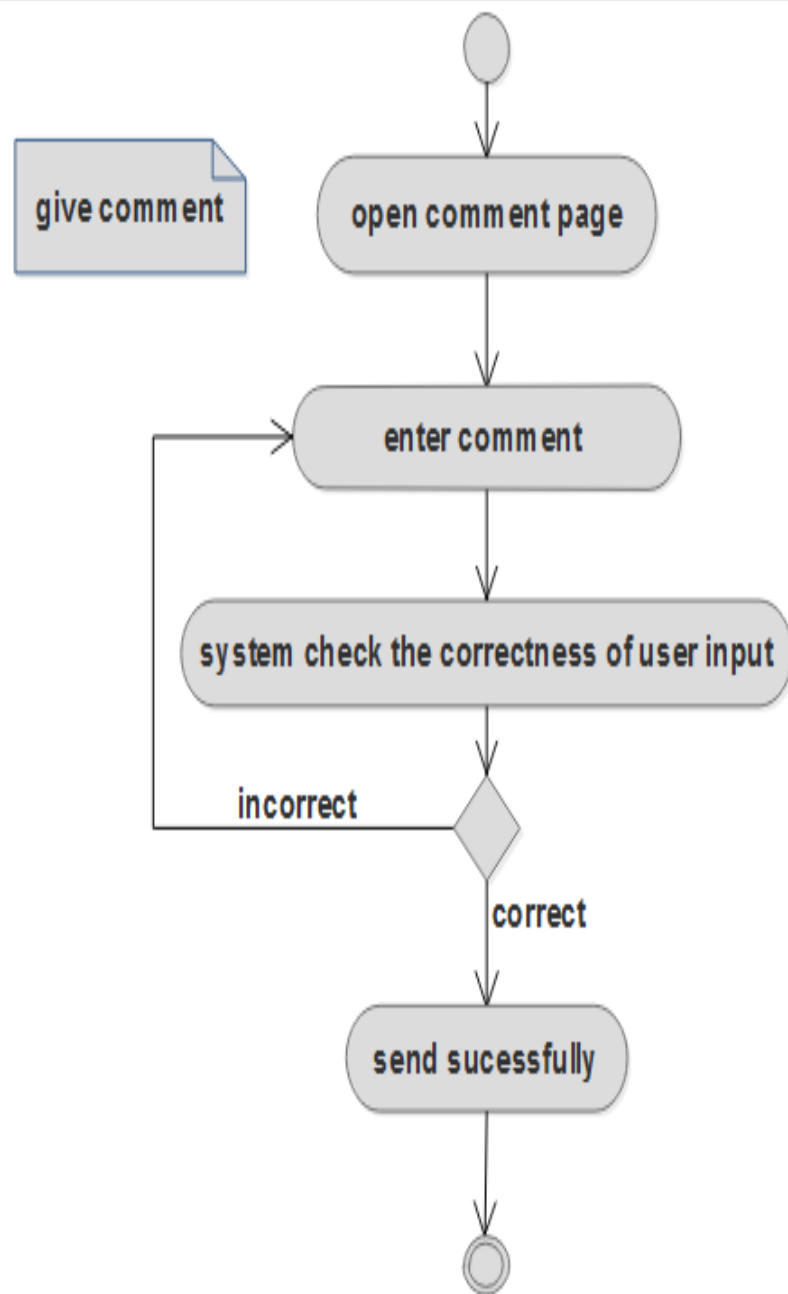
Figure 2.8 activity diagrams for give comment
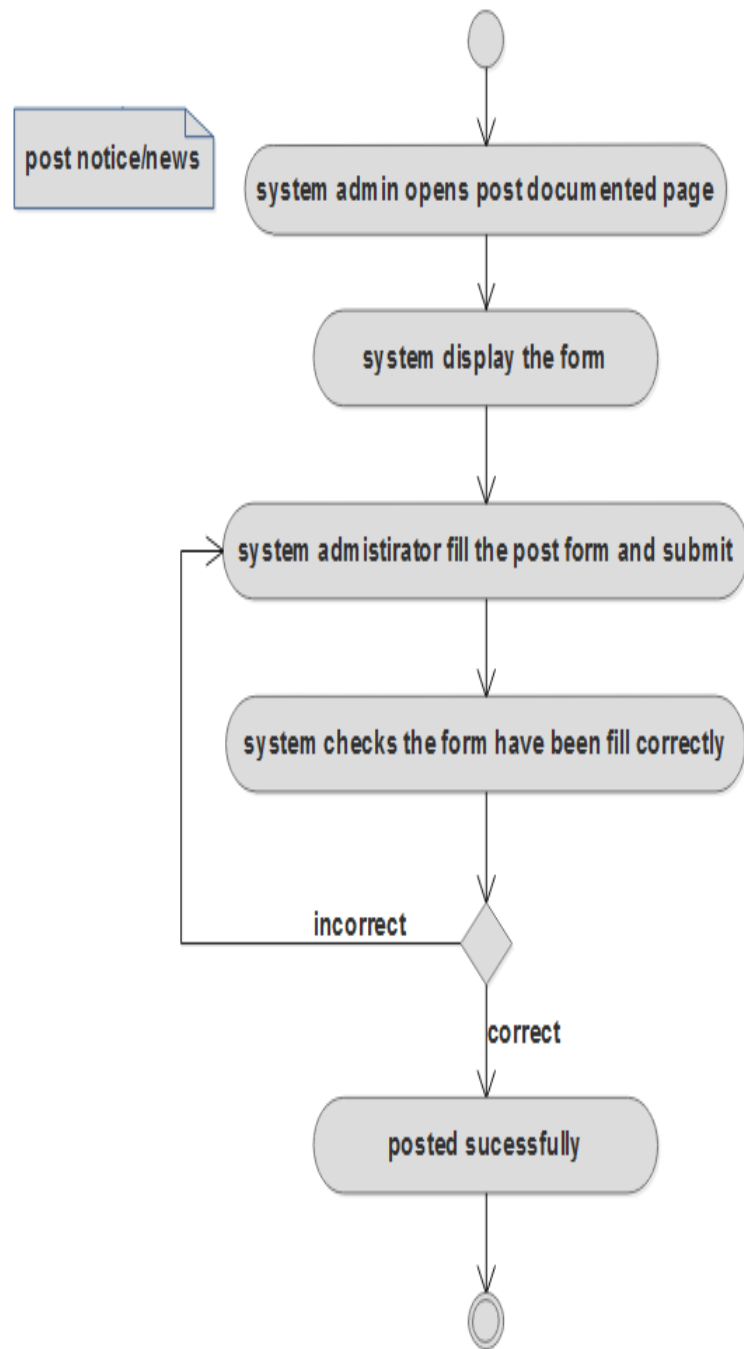
Figure 2.9 activity diagrams for post notice/information
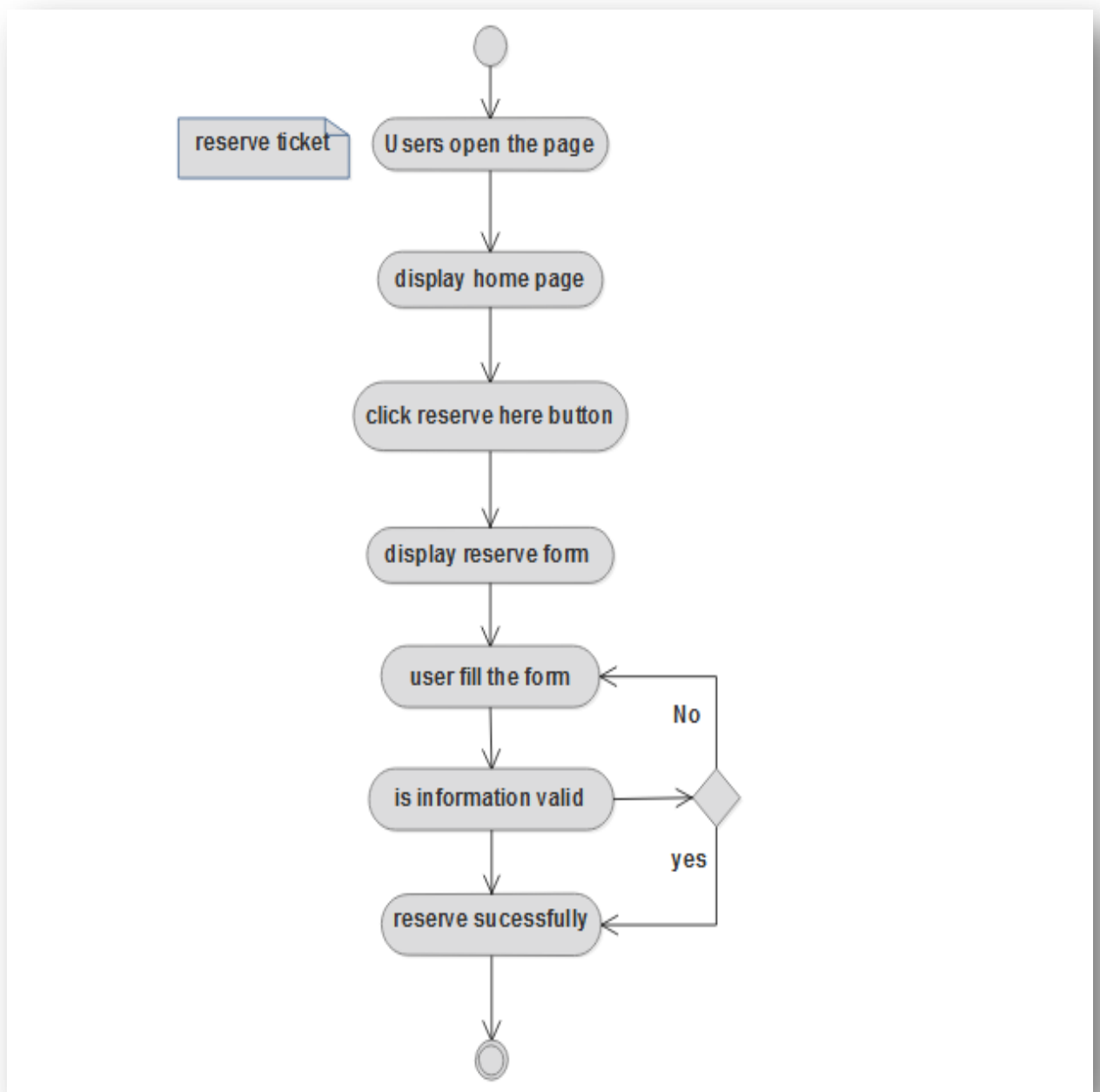
Figure 2.10 activity diagrams for reserve ticket
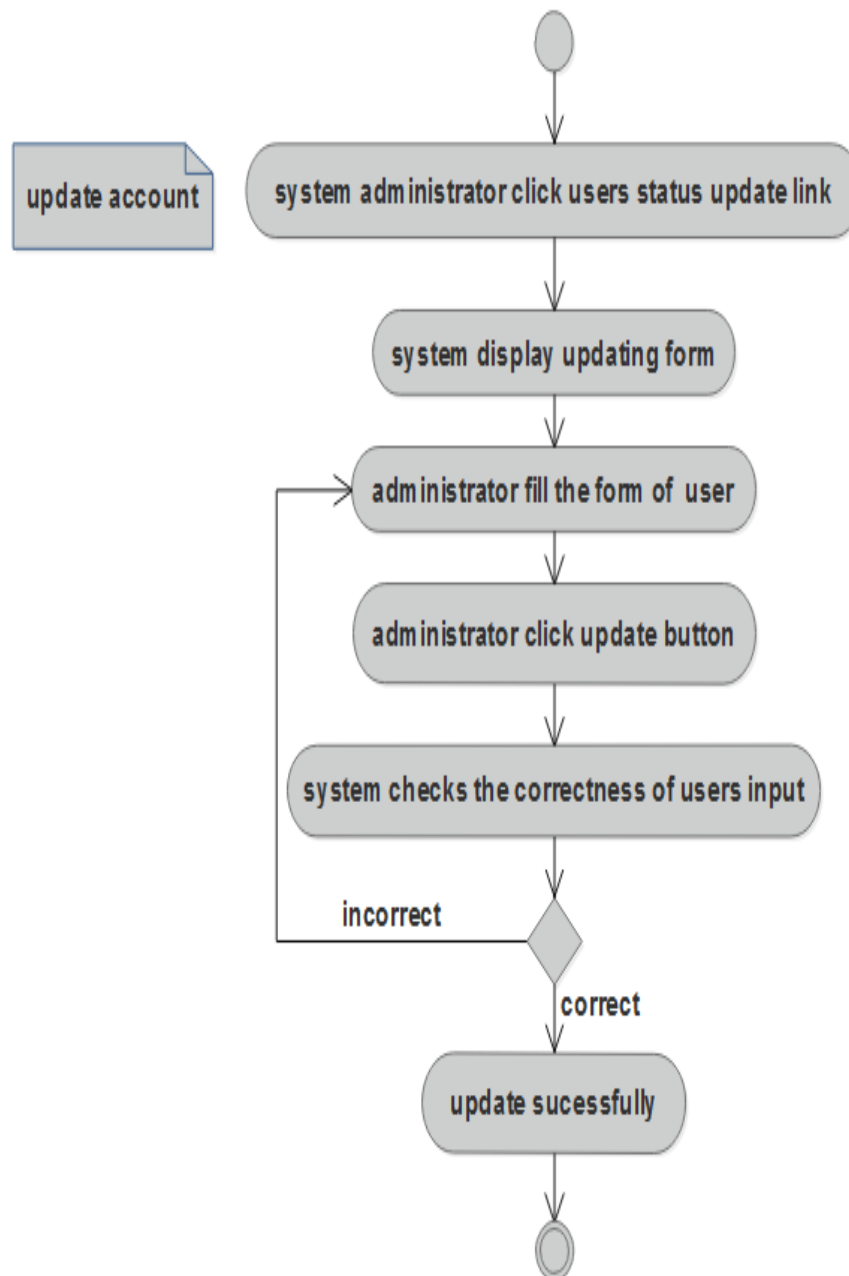
Figure 2.11 activity diagrams for update account
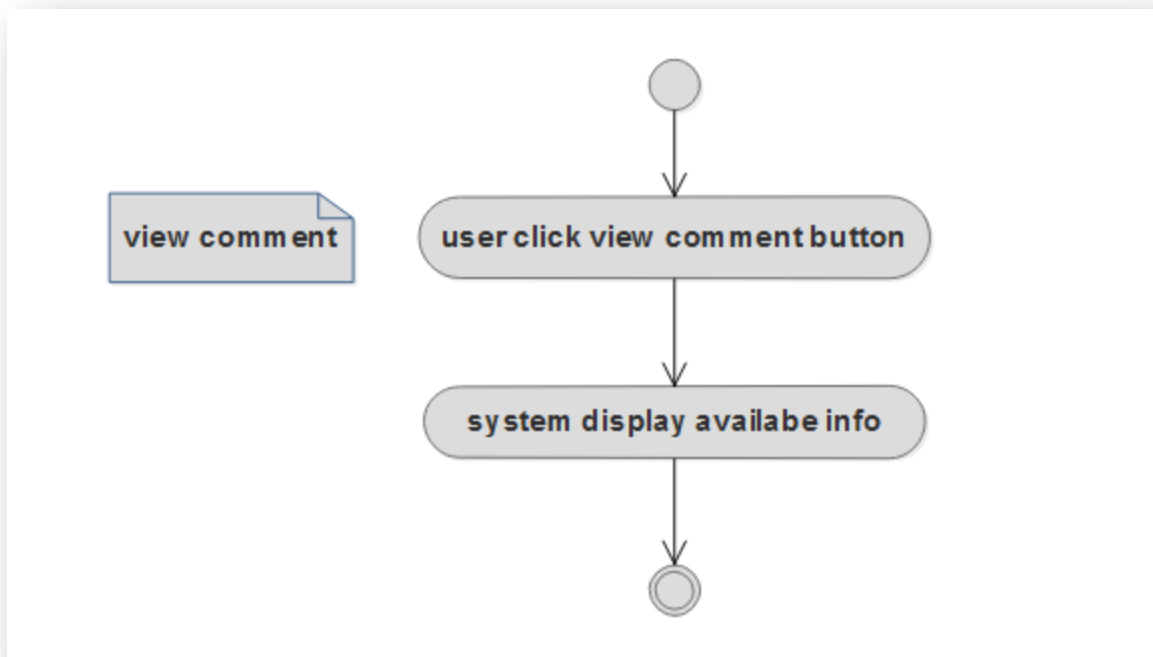
Figure 2.12 activity diagrams for view comment
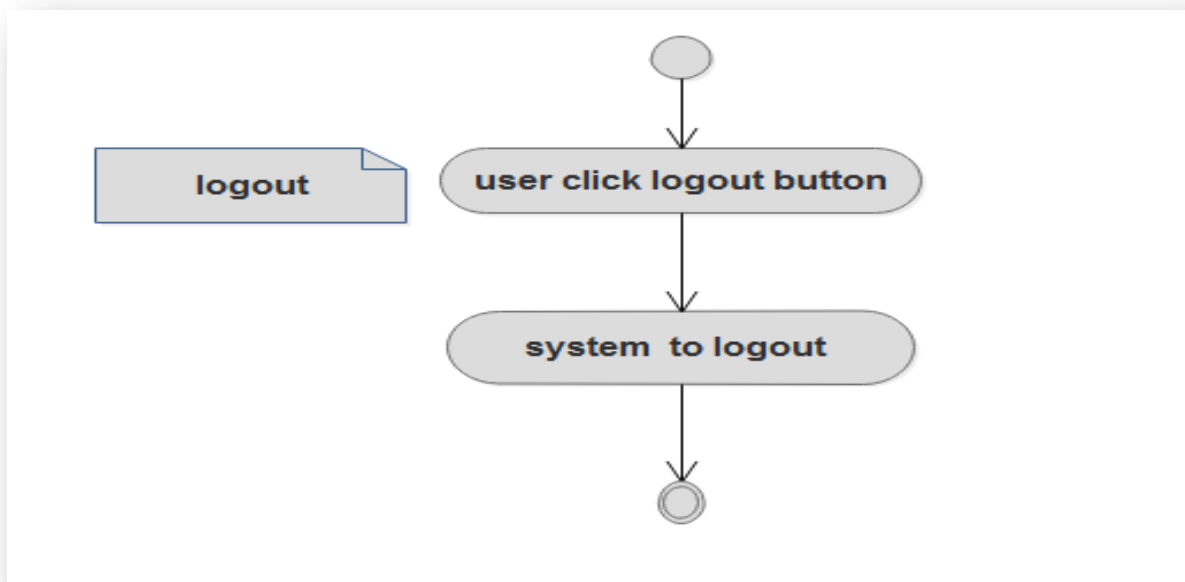
Figure 2.13 activity diagrams for logout

2.4.7 Sequence diagram

Sequence diagram is one kind of interaction diagrams, which shows an interaction among a set of objects and their relationships. The purpose of the Sequence diagram is to document the sequence of messages among objects in a time based view. The scope of a typical sequence diagram includes all the message interactions for a single use case.
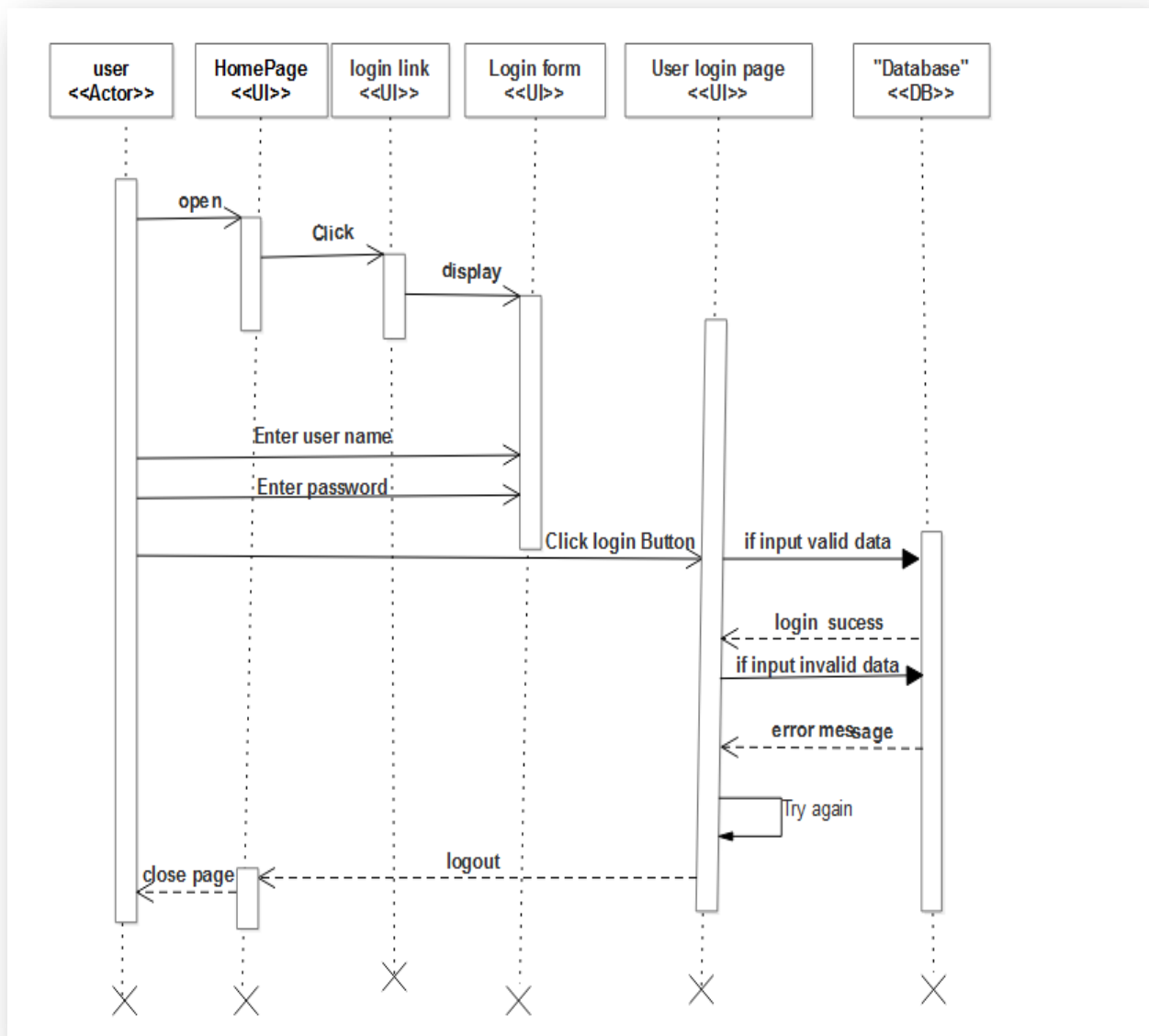
Figure 2.14 sequence diagram for login
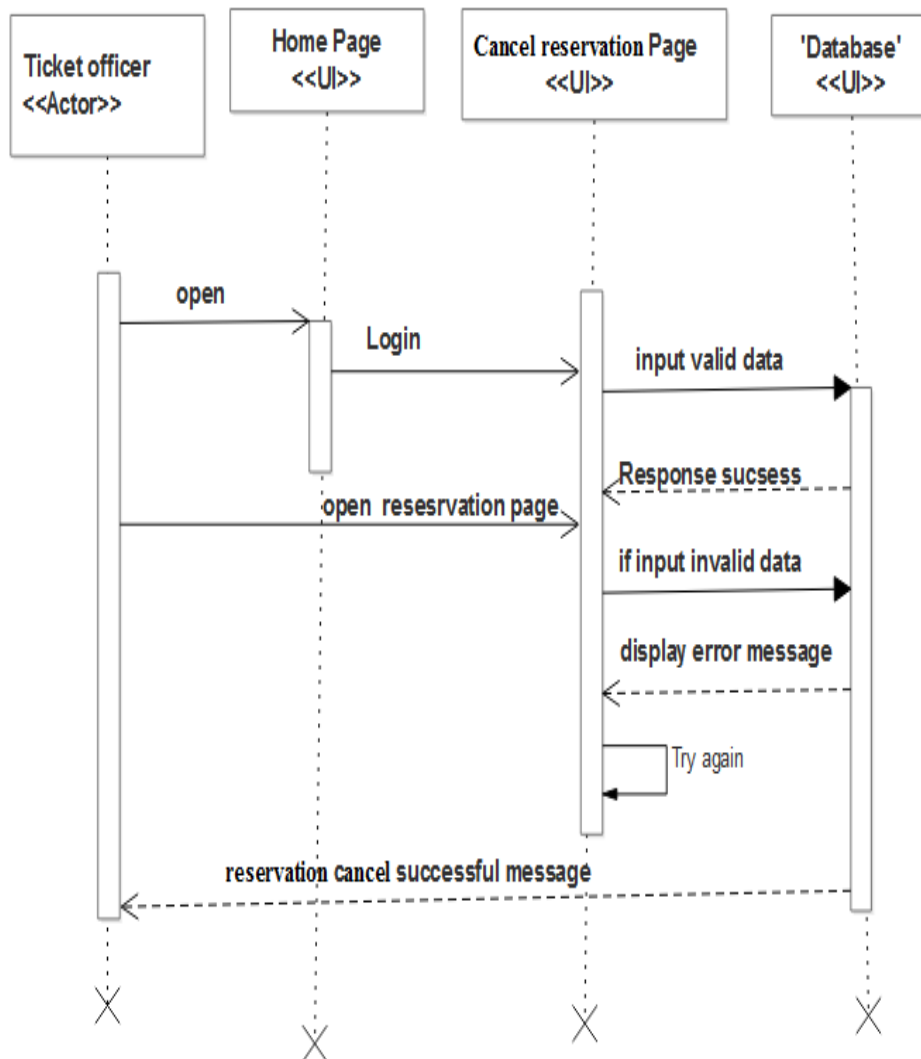
Figure 2.15 sequence diagram for cancel reservation
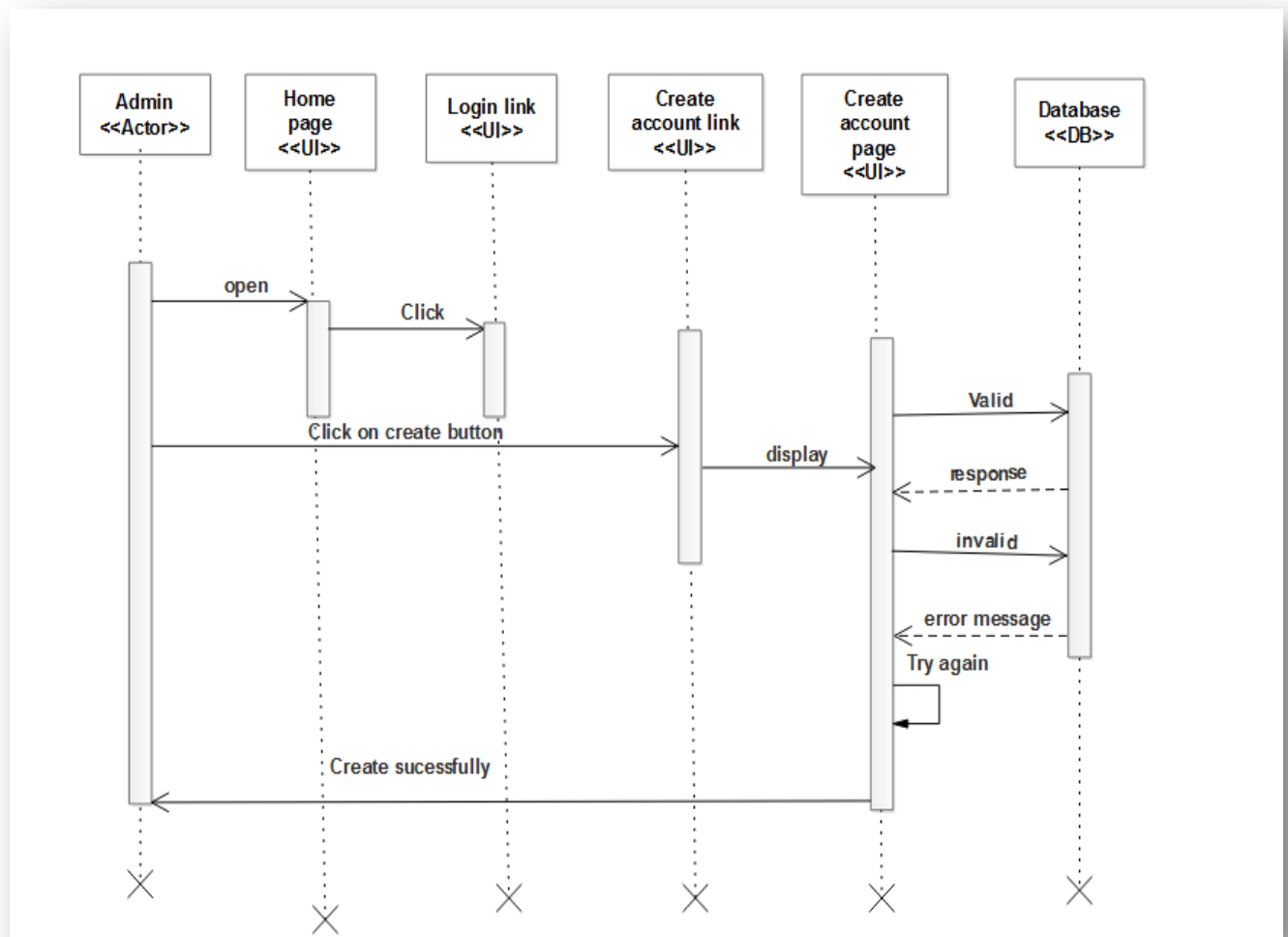
Figure 2.16 sequence diagram for Create account
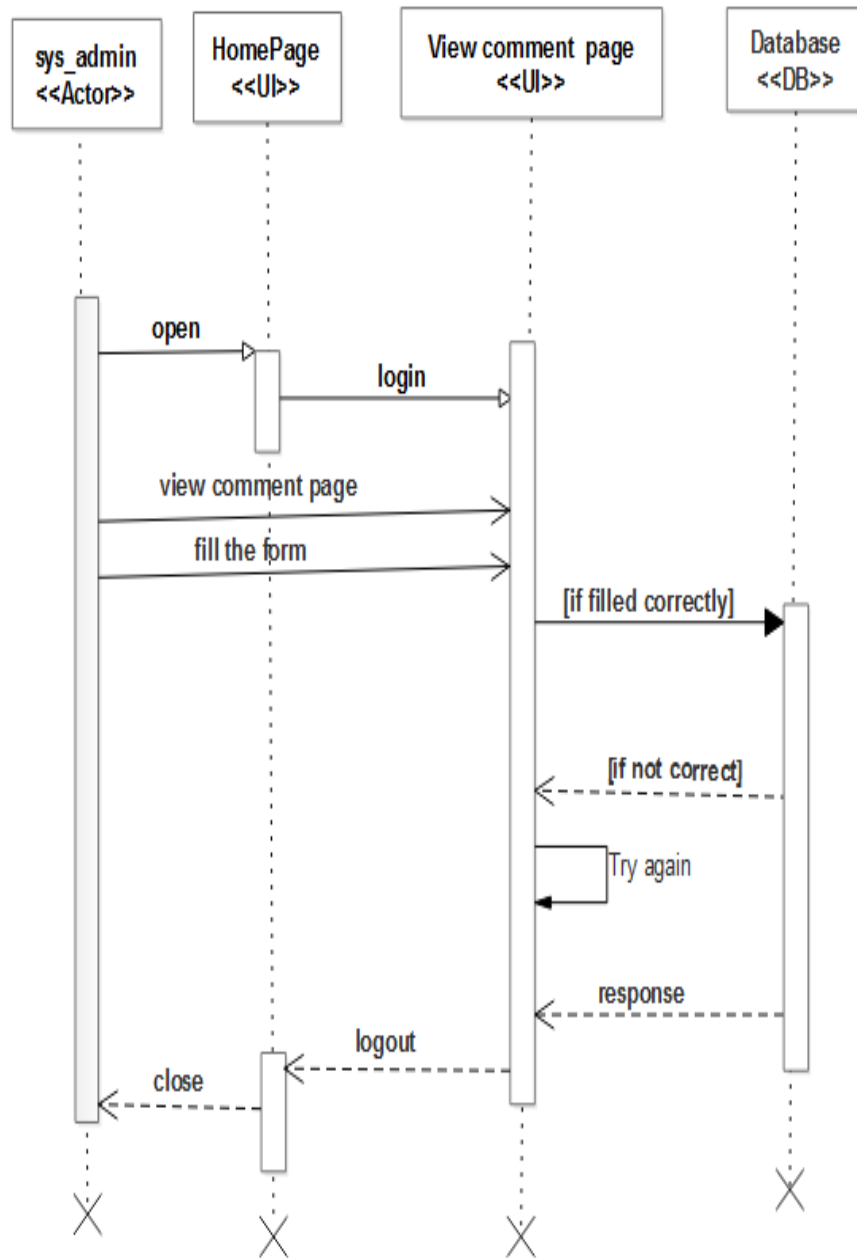
Figure 2.17 sequence diagram for view comment
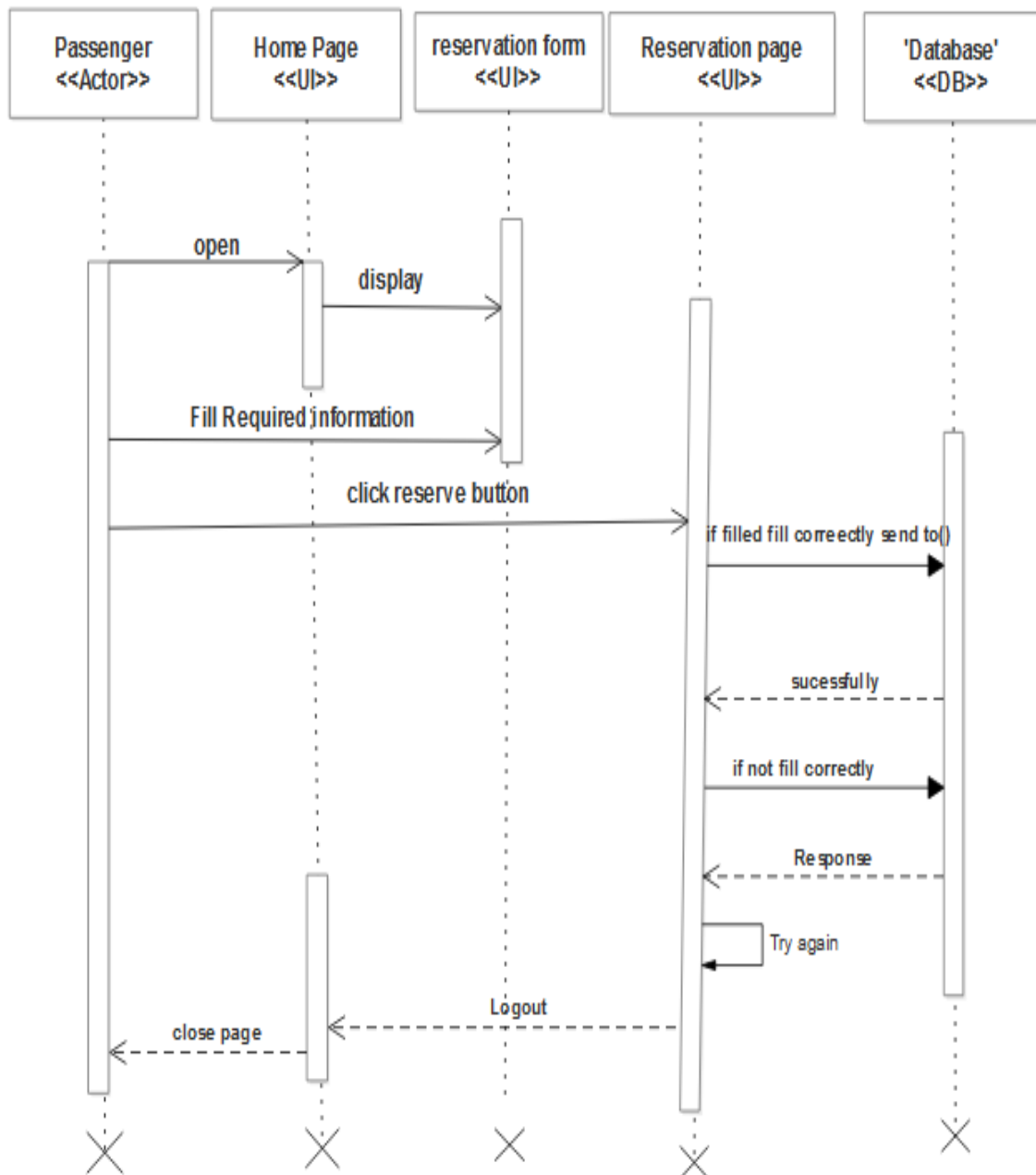
Figure 2.18 sequence diagram for Reservation
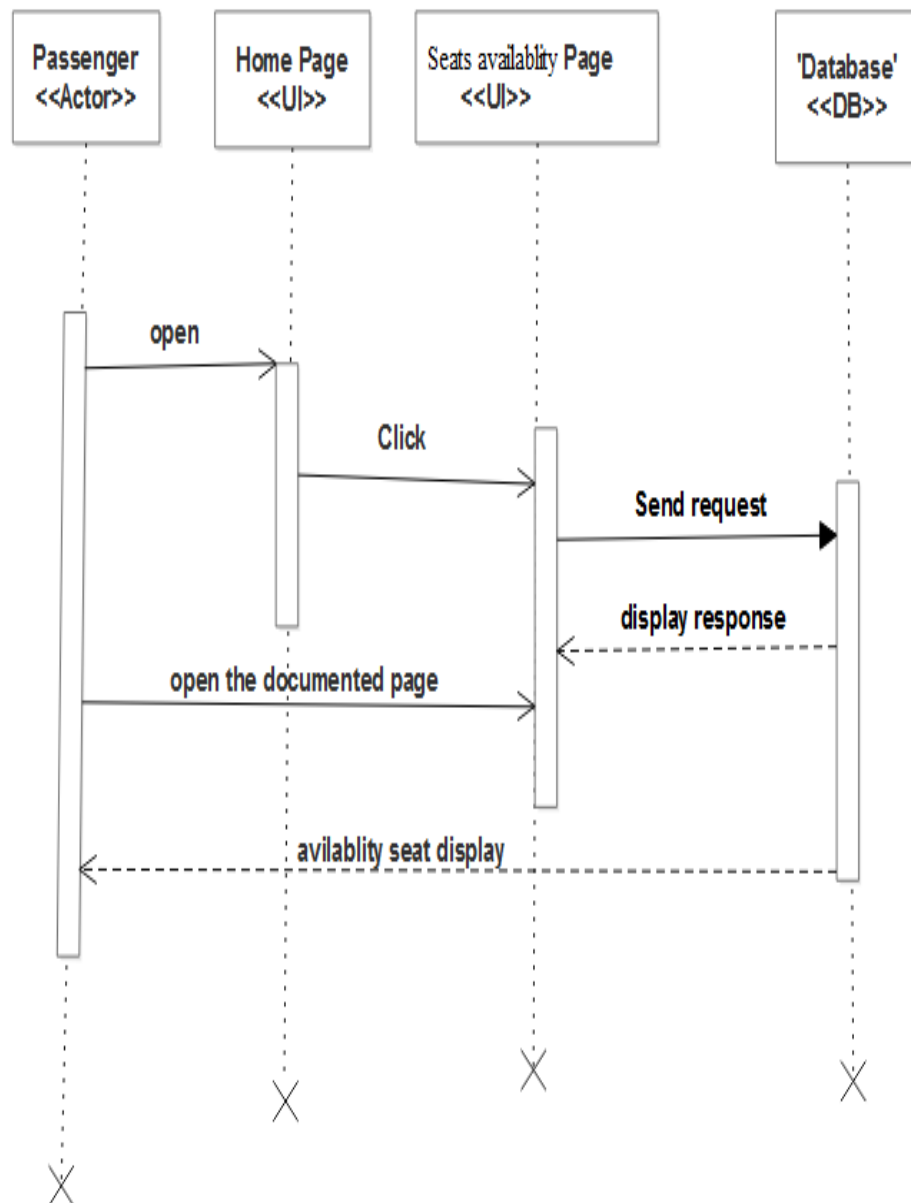
Figure 2.19 sequence diagram for seat Availability
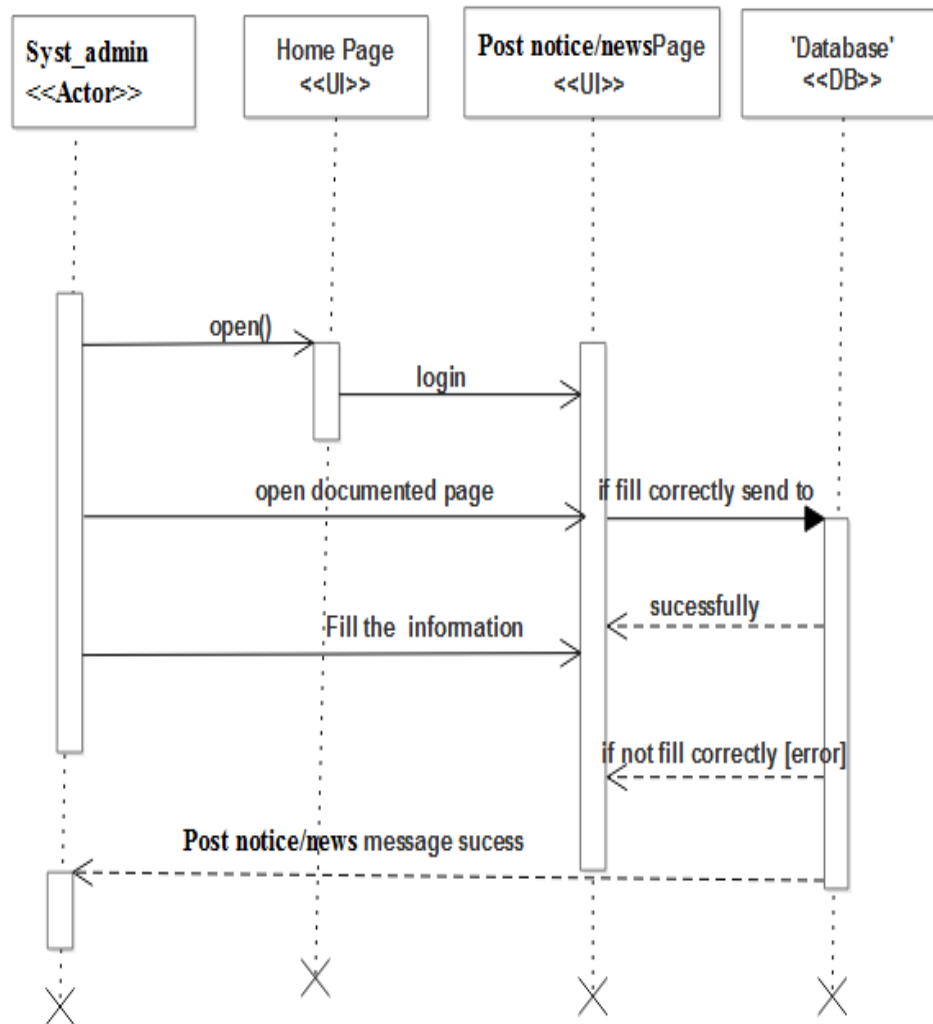
Figure 2.20 sequence diagram for Post notes/news

2.4.8 Algorithm design

One common problem-solving technique includes analyzing a problem, outlining the problem requirements and designing steps called an algorithm. Algorithms used to solve the problem. We also write algorithm for some basic method using human language (pseudo code) in the following way.

Login in to the system

Login ()

Display Login Form

Accept data from the passenger

If "Login" button is clicked

{

Open database

Open account table

Check if user type and password is matched

If the if user type and password matched

{

Display user's home page

}

Else If

{

Display error message

}

Close the table

Close the database

}

Else if "clear" button is clicked

{

Clear all the inputs and refresh the form and display login form

End function

}

Reserve New Passenger

Reserve New Passenger ()

Display Reserve Passenger Form

Accept input from the Passenger

If "reserve" button is clicked

{

Check for validity of data entered

If invalid data is entered prompt the user to correct the error by displaying error message

}

If valid

{

Open database

Open passenger table

Check the uniqueness of the passenger data entered

Else if the data is not unique

{

Prompt the passenger to enter another data

}

Else

{

Reserve the information filled out on the form into the table

}

Save change made to the table

Close the table

Close the database

Display message "Passenger reserve successfully"

}

Else if "clear" button is clicked

{

Clear all the data and refresh the form and display the form

End function

}

Logout from the system

Input: user name and password

Output: logout from the system

Begin

Connect to database

If users and password matches database content

    Begin if

        If login status is on

Begin if

    Set login status false

End if

    Return true

End if

Else

    Begin else

        Display error message

Return false

End else

    End

2.5 System Requirement tools used

The following materials must be fulfilled to defiantly run SBTRS.

2.5.1 Hardware tools

To implement the project users used the following hardware devices.

- ➢ Personal computer
- ➢ Server
- ➢ Printer
- ➢ Router
- ➢ Modem

2.5.2 Software tools used

Different Software used to develop our project

- ➢ *UML: -*To draw unified modeling diagram. Such as sequence diagram, activity diagram, use case diagram, ER-Diagram, User interface prototype and class diagram.

- ➢ Paint: - To Draw User Interface Design

- ➢ *Microsoft word:* -to write our system documentation.
- ➢ *Notepad++:-*to write the code.
- ➢ *Web browsers: -* Mozilla, Firefox, Google chrome, safari; to run our implementation
- ➢ *Wamp Server: -* to simulate the server side activities.
- ➢ *Microsoft PowerPoint:* -for presentation.
- ➢ *Client side scripting language:* -HTML, CSS and JAVASCRIPT
- ➢ *Server side scripting language:* -we have selected php for server side scripting.

Chapter three

3. System Design
3.1 Architectural Design

The proposed system architecture is replaced the manual ticket reservation for selambus. The architecture of reservation system is a three tier architecture these are client tier, middle tier and data tier.

- ✓ **In the client tier**: the user can be browsing the system to retrieve, add and also such activity performs directly interact with the system through web browser.

- ✓ **In the middle tier**: the system contains web server. The web server handles all the HTTP requests coming from the client machines. It also manages the responses that are returned to the client machines.

- ✓ **In the data tier**: manages the actual data that is being stored in the database. It is implemented using MY SQL database. The database accepts the SQL statement and executes it by DBMS component and then returns the required output to the application. It manages and accesses the persistence data.

3.1.1 Component Diagram

Component diagrams show the software components that make up a larger piece of software, their interface, and their inter-relationships. Software components including run-time components, executable components and also the source code components, Describes organization of physical software components, UI, Database which help know structural relationship between the components of the system. It does not describe the functionality of the system but it describes the components used to make the functionalities.
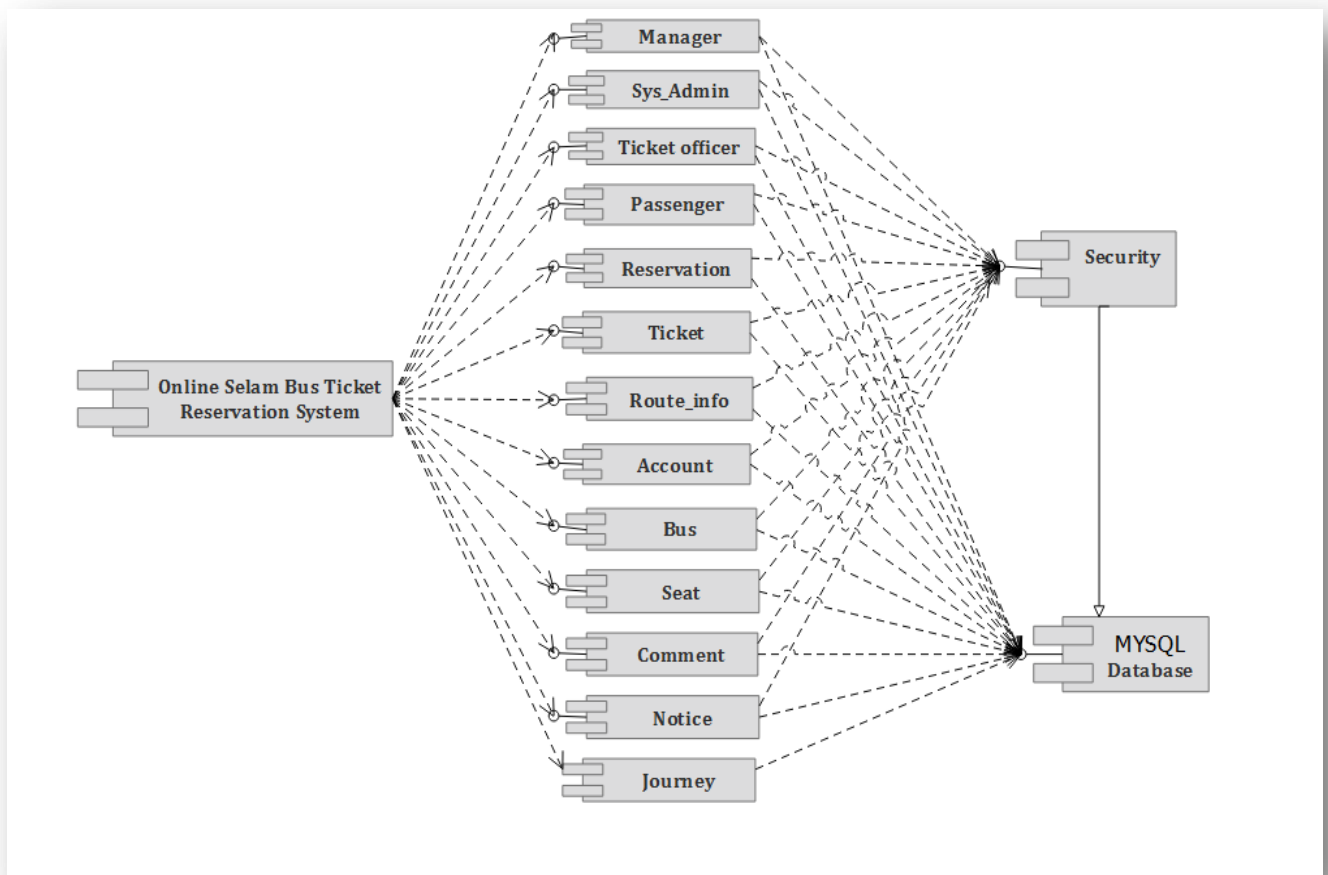
Figure 3. 1 component diagram

3.1.2 Deployment Diagram

Deployment diagram is used to show the hard ware of the system, the software that is installed in the hard ware and also the middleware that used to connect the machines to one and another. It also shows how the software and the hard ware component work together.
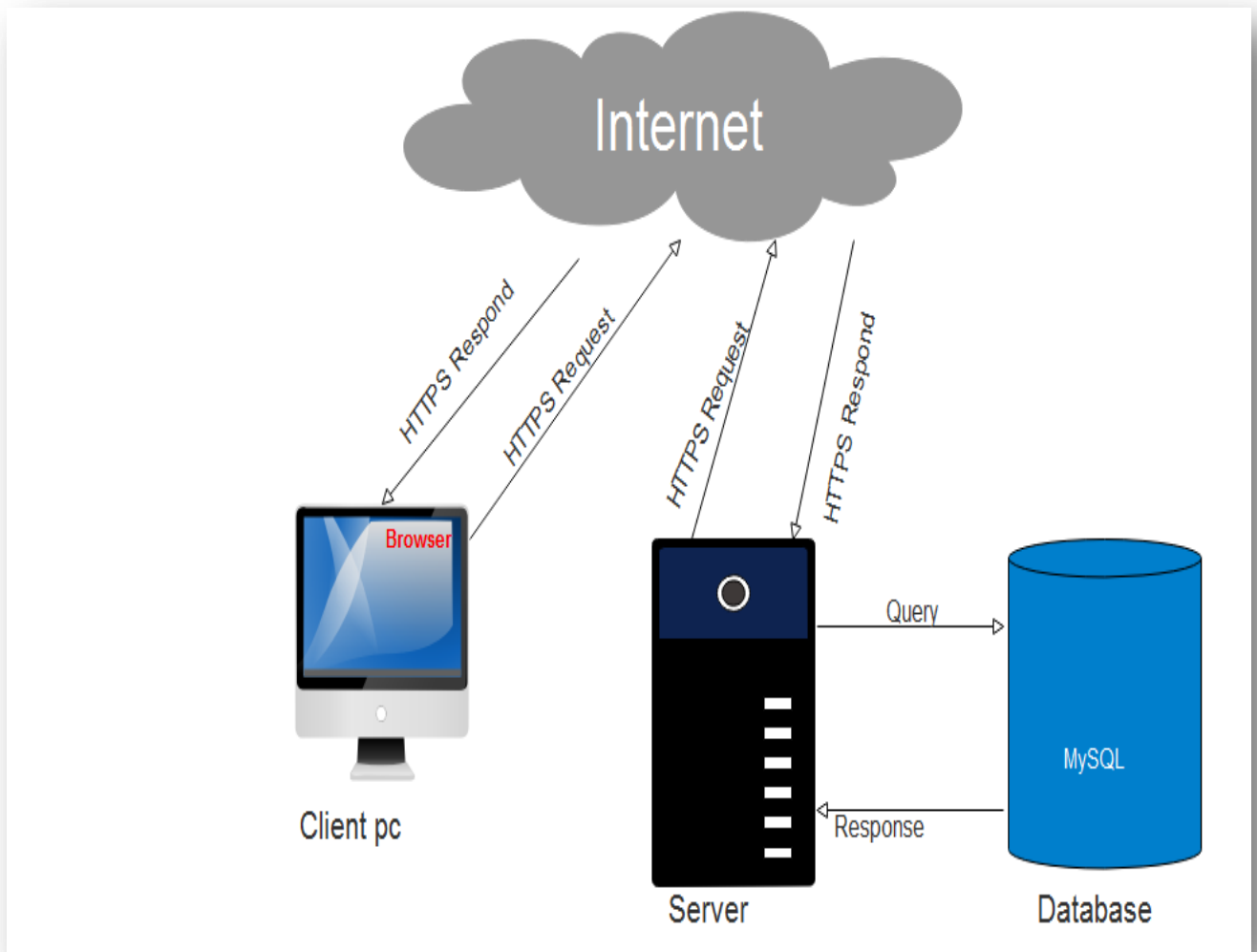
Figure 3. 2 deployment diagram

3.2 Detail Design

3.2.1 Design Class Model

UML Class Diagrams capture the logical structure of a system as a series of classes, their features and the relationships between them or in other way class diagram shows the existence of classes and their relationships in the logical view of a system. Class itself represented as a box with name, attributes, and methods.

A class is a set of objects that share a common structure and a common behaviour (the same attributes, operations, relationships and semantics).

- ➢ A class is an abstraction of real world items.
- ➢ Classes are represented by rectangles with three sections.
- ➢ The top section is the name of the class.
- ➢ The middle section contains the attributes which store information about an item.
- ➢ The bottom section contains the methods that show what are done on object or class.
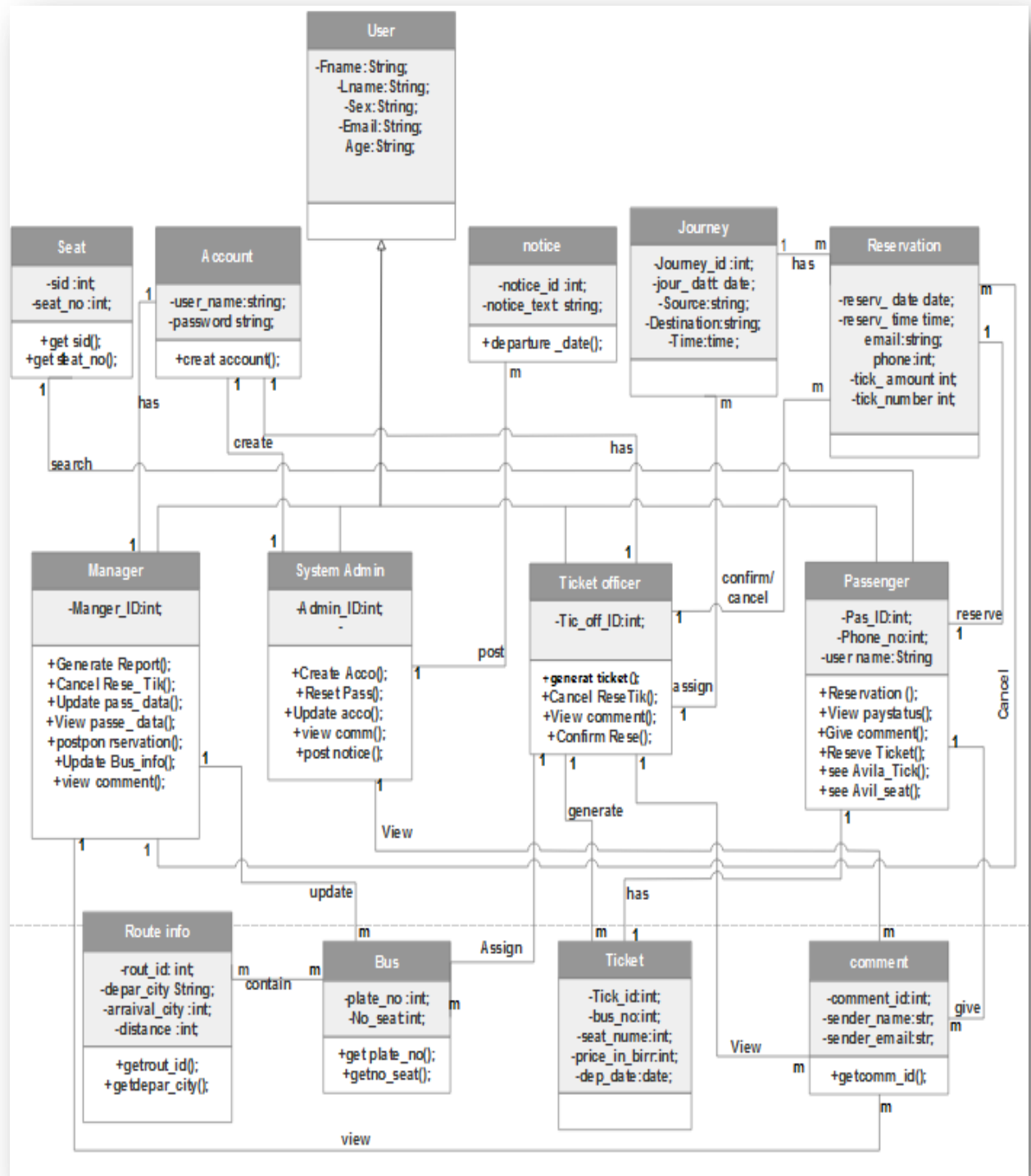
Figure 3. 3 Class Model

3.2.2 Persistence Diagram

Persistence models are used to design the schema of your database. You typically need to draw a Persistence model whenever you are using a relational database to store your objects in. The strength of Persistence models is that data entities are conceptually the same as the tables of a relational database and that attributes are the same as table columns.
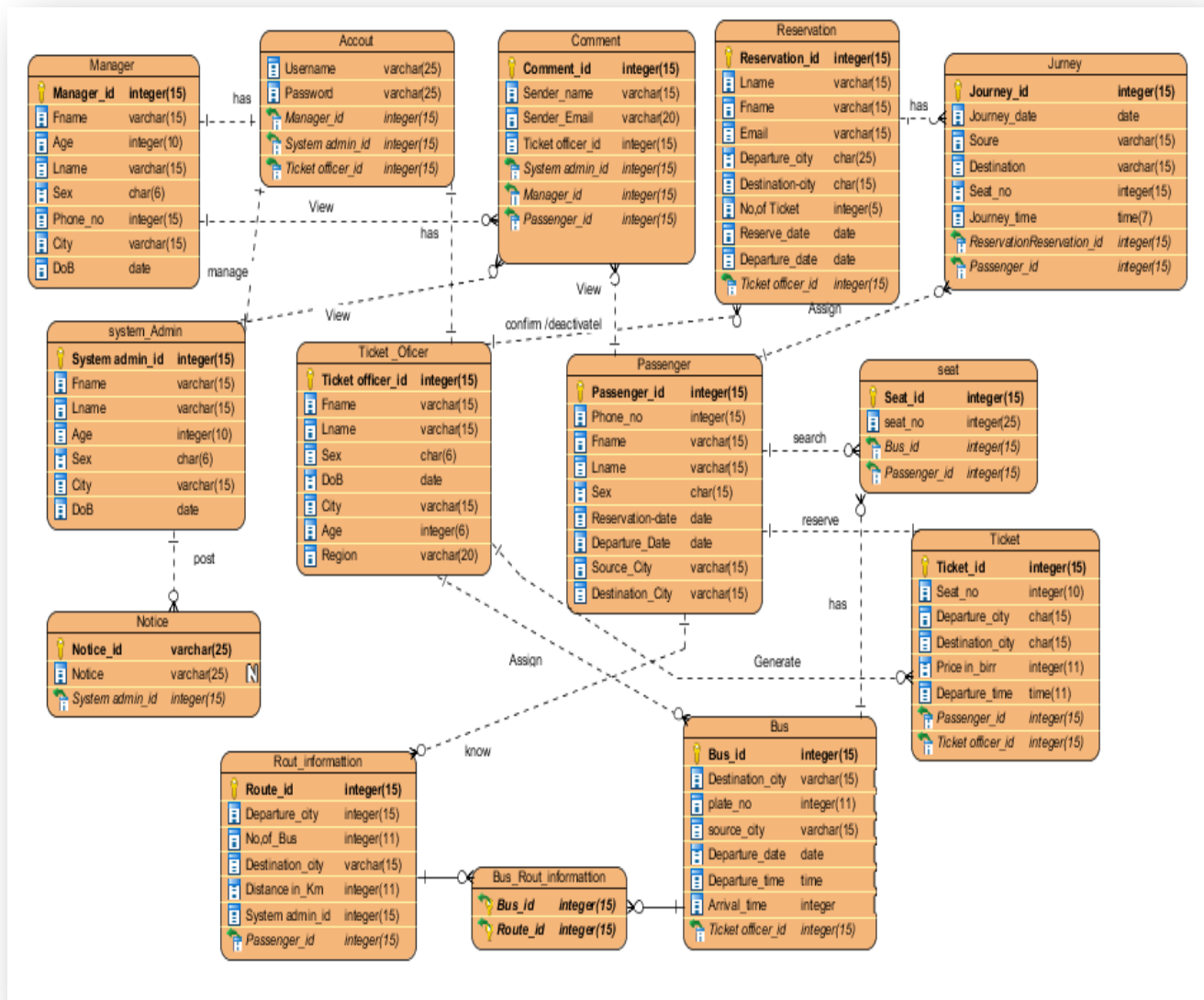

Figure 3. 4 Persistence Diagram

3.3 User interface design (UID)

The proposed system user interface design is the process that focuses on how information is provided to and accepts from users. Thus the user interface design is a technique which is designed in our new system for defined the manner in which users and system exchange information easily. Interface provides a user to perform the activity the system easily and effectively .in these system users will communicate with the system through the following interface.

Home page: All users firstly can get the home page. This page consists of Home, Reservation, About Us, Login, Bus Schedule, News/Events and Contact Us page .The user can see this page and select their needs and continues to next session.

Figure 3.5 Home page user interfaces

Login form: In this user interface user should expected to enter valid user name and password to log into the system, then the system checks the user type by itself and display the appropriate page.

Figure 3.6 Login user interface

Reservation: this reservation page help users to reserve the ticket by fill the necessary or relevant information's in the given form.

Figure 3. 7 Reservation user interface

4. Reference

- ✓ www.tutorialspoint.com/uml/uml_activity_diagram.htm
- ✓ www.smartdraw.com/sequence-diagram/what is Sequence Diagram
- ✓ www.lucidchart.com/pages/uml/deployment-Diagram
- ✓ Faculty of computing 2009 industrial project template
- ✓ Document of the organization

5. Appendix

Samples of questions are asked to Selam Bus Organization workers and the responses are also recorded as follows