



BAHIRDAR INSTITUTE OF TECHNOLOGY
SCHOOL OF COMPUTING

Project on
Web Based Prisoner information Management system for Bahir Dar
city prison Administration

by

1. Hayelom Berhe.....BDU0400831/UR
2. Addisu Wondimu.....BDU0400083/UR
3. Asmera Feyisa.....BDU0400224/UR
4. Abduselam Yesuf.....BDU0400020/UR

January 2015

BAHIR DAR, ETHIOPIA

Web based Prisoner Information Management System for Bahir Dar City Prison Administration

By

1. Hayelom Berhe.....BDU0400831/UR
2. Addisu Wondimu.....BDU0400083/UR
3. Asmera Feyisa.....BDU0400224/UR
4. Abduselam Yesuf.....BDU0400020/UR

A project submitted to Bahir Dar University: Bahir Dar institute of Technology School of Computing In partial fulfillment of the requirements for the degree Of Bachelor of Science in Computer Science

By:-

Hayelom Berhe

Addisu Wondimu

Asmera Feyisa

Abduselam Yesuf

Advisor: - Mr. Sertse Abebe

January 2015

Bahir Dar, Ethiopia

Declaration

We acknowledged all the resources used in this project. The project is our own project we are going to present.

Name	Signature
1. Hayelom Berhe	_____
2. Addisu Wondimu	_____
3. Asmera Feyisa	_____
4. Abduselam Yesuf	_____

School: SCHOOL OF COMPUTING

Program: COMPUTER SCIENCE

Project subject: Web based Prisoner information management system for Bahir Dar city prison administration I certify that this project satisfies all the requirements as a project for the degree of Bachelor of Science.

_____	_____
Name of program coordinator	Signature
This is to certify that I have read this project and that in my opinion it is fully adequate, in scope and quality, as a project for the degree of Bachelor of Science.	

_____	_____
Name of Advisor	Signature

Examining committee members	signature	Date
1. Chairman	_____	_____
2. Examiner1	_____	_____
3. Examiner2	_____	_____

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

Acknowledgement

We would like to express our deepest thanks to our advisor Mr. Sertse Abebe for his constant guidance, help and support in giving us brief information throughout the project that helps us to analyze the existing system. And thanks to the prison registrar staff for their helps us by giving information. In addition, we would like to thanks to those who have directly or indirectly helped us to accomplish our project.

Table of Contents

Declaration.....	iii
Acknowledgement	iv
List of figures.....	vii
List of tables.....	ix
Acronyms.....	xii
Abstract.....	xiii
CHAPTER ONE: INTRODUCTION	1
1.0 Background of the organization.....	1
Mission.....	1
Vision.....	1
1.2 Existing System Study	1
1.3 Proposed System.....	2
1.4 Objectives of the Project.....	2
1.4.1 General objective	2
1.4.2 Specific objective.....	2
1.5 Scope of the project	2
1.6 Scope out.....	3
1.7 Methodology and Tools	3
1.8 Significance of the Project.....	4
1.9 Organization of the project	4
CHAPTER TWO: SYSTEM FEATURES	5
2.1 Existing System Description.....	5
2.2 Proposed system description.....	5
2.3 Functional requirements.....	6
2.3.1 User Requirements.....	6

2.1.2 Requirement description	8
2.3.2 System requirements	18
2.3.3 Use case diagram description	22
2.4 Non-functional requirements	40
2.5 Analysis model.....	42
Activity Diagram Description.....	42
2.6 Sequence Diagram Description.....	61
CHAPTER THREE: SYSTEM DESIGN PHASE	78
3.1 Deployment diagram.....	78
3.2 Architectural Design.....	80
3.2.1 ER Diagram Description	90
3.2.2 Logical Mapping	93
3.4 User Interface	98
3.5 Algorithm Analysis	106
References	119
Appendix	120

List of figures

Fig 1: Use case diagram	21
Fig 2: view prisoner information	43
Fig 3: schedule visiting date and time.....	44
Fig 4: add court decision.....	45
Fig 5: view conditional release request.....	46
Fig 6: transfer request	47
Fig 7: search prisoner information	48
Fig 8: record conditional release request	49
Fig 9: record prisoner information	50
Fig 10: updates prisoner information	51
Fig 11: view transfer request.....	52
Fig 12: generate report	53
Fig 13: login for system admin, registrar, discipline, release officer.....	54
Fig 14: create user account	55
Fig 15: change password for system admin, registrar, discipline, release officer.....	56
Fig 16: record block and room.....	57
Fig 17: update schedule	58
Fig 18: visitor registration.....	59
Fig 19: check appointment.....	60
Fig 20: prisoners' transfer request	61
Fig 21: prisoners' notran request	62
Fig 22: prisoners' registration.....	63
Fig 23: search prisoners' information for discipline, release officer, sys admin	64
Fig 24: create user account	65
Fig 25: view transfer request.....	66
Fig 26: generates report for discipline officer and release officer	67
Fig 27: change account for (sys admin, discipline, registrar, release officer and judge).....	68
Fig 28: View prisoners' information for sys admin, registrar, discipline, release officer and judge	69
Fig 29: view conditional release request.....	70
Fig 30: add prisoners information.....	71
Fig 31: record visitor information.....	72

Fig 32: schedule	73
Fig 33: check court appointment.....	74
Fig 34: update the schedule.....	75
Fig 35: update prisoner information.....	76
Fig 36: add room.....	77
Fig 37: deployment diagram	79
Fig 38: Class diagram	82
Fig 39: ER diagram.....	90
Fig 40: Logical mapping.....	93
Fig 41: Home page.....	98
Fig 42: prisoner registration form	99
Fig 43: Transfer request form	100
Fig 44: conditional release Request Form.....	101
Fig 45:Search prisoner form	102
Fig 46: Update prisoner information.....	102
Fig 47: Schedule form.....	103
Fig 48: Login form.....	103
Fig 49: Visitor registration.....	104
Fig 50: Report form	105

List of tables

Table 1: Req.ID 001 Login	8
Table 2: Req.ID 002 create user account	8
Table 3: Req.ID 003 Register prisoner	9
Table 4: Req.ID 004 Register Visitor Information	9
Table 5: Req.ID 005 Record room.....	10
Table 6: Req.ID 006 Assign room	10
Table 7: Req.ID 007 add court decision	10
Table 8: Req.ID 008 view prisoner information	11
Table 9: Req.ID 009 Record prisoner transfer request	11
Table 10: Req.ID 010 Record prisoner conditional release request.....	12
Table 11: Req.ID 011 Check court appointment	12
Table 12: Req.ID 012 View transfer request	12
Table 13: Req.ID 013 View conditional release request.....	13
Table 14: Req.ID 014 Update prisoner information	13
Table 15: Req.ID 015 Search prisoner information	14
Table 16: Req.ID 016 Update Schedule.....	14
Table 17: Req.ID 017 Generate report.....	15
Table 18: Req.ID 018 Add release evaluation information	15
Table 19: Req.ID 019 Grant privilege to user.....	15
Table 20: Req.ID 020 Revoke privilege from user.....	16
Table 21: Req.ID 021 Change password	16
Table 22: Req.ID 022 Evaluate conditional release.....	17
Table 23: Req.ID 023 Record conditional release evaluation point	17
Table 24: Req.ID 024 View schedule	17
Table 25: UC description login	22
Table 26: UC description create account	23
Table 27: UC description Register prisoner.....	24
Table 28: UC description Register visitor.....	25
Table 29: UC Add court decision	26
Table 30: UC Room record.....	27
Table 31: UC Record prisoner transfer request	28

Table 32: UC Record prisoner notran request	28
Table 33: UC description Update prisoner information.....	29
Table 34: UC description Schedule visiting date and time	30
Table 35: UC description Update the schedule.....	31
Table 36: UC description View prisoner information.....	32
Table 37: UC description View prisoner transfer request.....	32
Table 38: UC Description View prisoner notran request.....	33
Table 39: UC Description Check court appointment.....	34
Table 40: UC Description assign room.....	35
Table 41: UC Description Record Release case evaluation information	35
Table 42: UC Description Record notran evaluation information	36
Table 43: UC Description View schedule.....	36
Table 44: UC Description Grant privilege.....	37
Table 45: UC Description Revoke privilege.....	38
Table 46: UC Description Search prisoner information	39
Table 47: UC Description Generate report	40
Table 48: maintainability	40
Table 49: Usability.....	40
Table 50: Integrity.....	40
Table 51: Availability	41
Table 52: performance	41
Table 53: Security	41
Table 54: Security.....	42
Table 55: Correctness	42
Table 56: CD Description prisoner	83
Table 57: CD Description visitor	83
Table 58: CD Description court decision.....	83
Table 59: CD Description address	84
Table 60: CD Description police officer.....	84
Table 61: CD Description release officer	84
Table 62: CD Description registrar officer	85
Table 63: CD Description discipline officer	85

Table 64: CD Description description for person	86
Table 65: CD description system administrator.....	86
Table 66: CD description for location.....	86
Table 67: CD description for prison	87
Table 68: CD description for room.....	87
Table 69: CD description for block.....	87
Table 70: CD description for judge.....	88
Table 71: ER diagram description for court.....	90
Table 72: ER diagram description for room	90
Table 73: ER diagram description for prison.....	90
Table 74: ER diagram description for court_decision	90
Table 75: ER diagram description System administrator	91
Table 76: Registrar officer	91
Table 77: Discipline officer Table	91
Table 78: Release officer Table	91
Table 79: Police officer Table.....	92
Table 80: Judge Table	92
Table 81: Visitor Table	92
Table 82: Prisoner Table	94
Table 83: Visitor table	94
Table 84: Court table	95
Table 85: Block table.....	95
Table 86: Prison.....	95
Table 87: Court decision table	95
Table 88: Release officer table.....	96
Table 89: Administration Table	96
Table 90: Registrar Table	96
Table 91: Discipline Table	97
Table 92: Police officer Table	97
Table 93: Judge	97

Acronyms

PRIMS- Prisoner information management system

REQ ID- Requirement identification

UC- use case

NFR-non-functional requirement

ER-entity relation

PHP-PHP hypertext pre processor

HTML-hypertext markup language

MS VISIO-Microsoft office Visio

FK-foreign key

PK- primary key

AD-activity diagram

SD-sequence diagram

CD- class diagram

Abstract

PRIMS is a system in which collection information about prisoner can be performed with an organized manner in desktop application method. In this project we intended to change the desktop application to web based that is interactive, easily accessible remotely and easy to use for the organization. During the analysis and design process of the project, the team used Iterative software model for development methodology. We have used observation, interview requirement and document reviews requirement collection method. After the project has accomplished, we expect there will be efficient and effective management of PRIMS for Bahir prison.

CHAPTER ONE: INTRODUCTION

1.0 Background of the organization

Bahir Dar prisoner is the most known prison in Amhara region western part of Gojam in Bahir Dar city in kebele 10. It gives services for both civil and military prisoners of the region. The organization uses desktop application system way of file management. We prefer to change the desktop application system to web based system in order to make easy file manipulation.

Bahir Dar prisoner management system is the title on which we are working on. Our benefit from developing this system we acquire enough knowledge. Our system protects the file from vulnerability of fire danger and from stolen.

Bahir Dar prisoner was established in 1968 E.C with the objective of preventing crime and providing other security issue to the people of the town. The institution has well trained guards and they protect the environment day and night. Most of the crime was prevent with the help of the people of the town by their own contribution to the institution.

Mission

Barhir Dar prison is with participation of the people and developing highly secured information system center in order to prevent crime. Shape the prisoner to have good social interaction with people and to make the prisoner creative and fighting against crime as other good citizen do.

Vision

Barhir Dar prisoner has the vision of creating citizen who are patriotic, fight against crime and reduce crime.

1.2 Existing System Study

The system is desktop application for only record purpose. It is not support remote organization to send and receive prisoner information from prison we are working on to the court and vice versa. This means the prisoner file is transferred manually from prison to court and vice versa as

well as to and from another prison. The existed system does not support to record visitor information.

1.3 Proposed System

The proposed system of PRIMS is change the desktop application system to web based system. This is enabling the court add court decision passed to the prisoner on the system's database remotely. In another way, send remotely the prisoner information to the court. It also enables the visitor to see the visiting schedule online. Our work on this system enables the organization to have visitor information by record the visitor information. Purpose of having visitor information to the organization is if prisoner escape prisoner from prison, some investigator may need to investigate on the visitor record in connection with the prisoner escaped.

1.4 Objectives of the Project

1.4.1 General objective

The general objective we are going to develop is changing desktop application system to web based system for PRIMS.

1.4.2 Specific objective

Our specific objective that we need to achieve the general objective as follows:

- ✓ We have collected appropriate data from the PRIMS staffs.
- ✓ We have tried to review documentations, manuals and forms about the PRIMS.
- ✓ We have identified the basic functionalities and non-functionalities of the PRIMS.
- ✓ We have designed the database and user interface based upon the analyzed data.
- ✓ We will implement the system based on our design to achieve the desired goal.

1.5 Scope of the project

Scope is the boundary of the system that possibly being implements for the future. The scope of our project is to design user-friendly quick and effective web based PRIMS for Bahir Dar city prison administration. The boundary that we try to cover is the following.

- ✓ To register prisoner information

- ✓ To register visitor information
- ✓ To formulate schedule for visitor
- ✓ To record prisoner transfer request
- ✓ To record prisoner conditional release request
- ✓ To generate report
- ✓ To update prisoner information
- ✓ To add available room and block information
- ✓ To assign room for prisoner
- ✓ To View prisoner information
- ✓ To transfer files from one prison to another prison.
- ✓ To add court decision for prisoner to the system
- ✓ To add evaluation information for case of release
- ✓ To update the schedule
- ✓ To check court appointment for prisoner

1.6 Scope out

The following points are scope out that is not cover due to different limitations. These are time limitation, machine limitation, access limitation.

- ✓ Take Attendance (machine limitation)
- ✓ Assign job (time limitation)
- ✓ To put signature (machine limitation)
- ✓ To enable prisoner view personal information (access limitation)
- ✓ prisoner's legal private property (time limitation)

1.7 Methodology and Tools

➤ Data collection methods

We collect requirements through interview the registrar officer staff, brain storming and observing the existing system.

➤ System development method

We use the iterative object-oriented approach to develop our system.

- Developmental tools
 - ✓ PHP programming language
 - ✓ Dream weaver tool to design database
 - ✓ HTML design web program
 - ✓ Ms Visio2003
 - ✓ MySql

1.8 Significance of the Project

Our project has the following contributions to the organization:

- ✓ Ease of grant access of prisoner detail through internet
- ✓ Ease of registering prisoner information to database
- ✓ Enabling the judge to add decision information passed to prisoner on the system's database
- ✓ Enabling file transfer from one prison to another prison in similar system
- ✓ Easy to manages the prisoners' information.
- ✓ Enabling the visitor to see the visiting schedule online (using internet)
- ✓ Easy to search prisoner information

1.9 Organization of the project

In our document we have included the system details through all the chapters. In chapter one we have include introduction, background, general objective, specific objective, scope of the project, the methodology we have used. In chapter two we deals about system features such as; existed system description, proposed system description, functional requirement, non-functional requirement, and analysis models. Chapter three also deals about system design such as; deployment diagram, class diagram, ER diagram, class diagram description, ER diagram, logical mapping, algorithm design, and interface diagram.

CHAPTER TWO: SYSTEM FEATURES

2.1 Existing System Description

The existing system of prisoners' information management system provides the following services:

- ✓ Register prisoner information
- ✓ Search prisoner information
- ✓ Record prisoner request
- ✓ Update prisoner information

2.2 Proposed system description

The proposed system of PRMIS is change the desktop application system to web based system. This is enabling the court add court decision passed to the prisoner on the system's database remotely. In another way, send remotely the prisoner information to the court. It also enables the visitor to see the visiting time schedule online. Our work on this system enables the organization to have visitor information by record the visitor information. Purpose of having visitor information to the organization is if prisoner escape prisoner from prison, some investigator may need to investigate on the visitor record in connection with the prisoner escaped.

- ✓ Register prisoner information
- ✓ Register visitor information
- ✓ Record prisoner transfer request
- ✓ Record prisoner conditional release request
- ✓ Record evaluation points of conditional release to be evaluated by the system
- ✓ Record release case evaluation points to know how the prisoner is released
- ✓ Search prisoner information
- ✓ Record the available room

- ✓ Assign room
- ✓ Record court decision information

2.3 Functional requirements

It is a description of the facility or feature required. Functional requirements deal with what the system should do or provide for users. They include description of the required functions, outlines of associated reports or online queries, and details of data to be held in the system. These include user requirement and system requirement (Ofni, System, 2014).

2.3.1 User Requirements

The User Requirements Specification describes the business needs for what users require from the system. User Requirements Specifications are written early in the validation process, typically before the system is created. The system owner and end-users, with input from Quality Assurance, write them. Requirements outlined in the user requirement specification are usually tested in the Performance Qualification or User Acceptance Testing. User Requirements Specifications are not intended to be a technical document; readers with only a general knowledge of the system should be able to understand the requirements outlined in the user requirement specification (Ofni, user-requirement-specifications, 2014). In general, they are written from a user's perspective and the focus of user requirement describe tasks the user must be able to accomplish in order to fulfill the business requirements and they are captured in the requirement definition document.

The discipline Officer can do the following things on the system

- ✓ View prisoners' information.
- ✓ View prisoner conditional release request
- ✓ Record conditional release evaluation points
- ✓ Generate report
- ✓ Change password
- ✓ View prisoners' transfer request.

The Registrar Officer can do the following things on the system

- ✓ Register prisoners' information.
- ✓ Record the prisoners' transfer request.
- ✓ Record prisoners' conditional release request
- ✓ Update prisoners' information
- ✓ Assign room for prisoner
- ✓ Register available room
- ✓ Check court appointment for the prisoner
- ✓ View prisoner information
- ✓ Change password

The System administrator can do the following things on the system

- ✓ Create user account and password
- ✓ Grant privilege to the user on the system
- ✓ Revoke privilege
- ✓ Generate report
- ✓ Change password

The judge can do the following things on the system

- ✓ Adds court decision passed to prisoner (update the record)
- ✓ View prisoners' information.
- ✓ Generate report
- ✓ Change password

The police officer can do the following things on the system

- ✓ Register visitor information.
- ✓ View prisoner information
- ✓ Change password

The police officer can do the following things on the system

- ✓ Add release evaluation to the system

- ✓ Generate report
- ✓ View prisoner information
- ✓ Change password

Our system has the following actors

- ✓ Registrar officer
- ✓ Discipline officer
- ✓ Release officer
- ✓ System administrator
- ✓ Judge
- ✓ Police officer
- ✓ Visitor

Table 1: 2.1.2 Requirement description

Req.ID 001 Login

Requirement ID	001
Requirement Name	Login
Actor	All staffs and judge
Requirement	The system shall allow the staff login to the system
Description	All The staffs and judge enters user name, password and login to the system.
Priority	High

Table 2: Req.ID 002 create user account

Requirement ID	002
Requirement Name	Create user account
Actor	System administrator

Requirement	The system shall allow administrator staff create user account and password
Description	System administrator enters user name, password to login and create user account.
Priority	High

Table 3: Req.ID 003 Register prisoner

Requirement ID	003
Requirement Name	Register Prisoner Information
Actor	Registrar officer
Requirement	The system shall allow Registrar staff register prisoner information
Description	To register prisoner information, registrar officer needs to enter user name and password to login to the system and perform his/ her task on the system.
Priority	High

Table 4: Req.ID 004 Register Visitor Information

Requirement ID	004
Requirement Name	Register Visitor Information
Actor	Police officer
Requirement	The system shall allow police Officer staff register visitor information
Description	To perform task on the system, police officer must enter user name and password to login to the system.

Priority	Medium
----------	--------

Table 5: Req.ID 005 Record room

Requirement ID	005
Requirement Name	Record Room
Actor	Registrar officer
Requirement	The system shall allow Registrar Officer staff record room
Description	Registrar officer must enter user name and password to login and perform the task
Priority	Medium

Table 6: Req.ID 006 Assign room

Requirement ID	006
Requirement Name	Assign room
Actor	Registrar officer
Requirement	The system shall allow registrar officer staff to assign room for the prisoner
Description	Registrar officer login to the system and perform his/her task by inserting user name and password
Priority	High

Table 7: Req.ID 007 add court decision

Requirement ID	007
Requirement Name	Add court decision

Actor	Judge
Requirement	The system shall allow judge add court decision of the prisoner to the system
Description	Judge enters user name and password to login and to add court decision for the prisoner
Priority	High

Table 8: Req.ID 008 view prisoner information

Requirement ID	008
Requirement Name	View prisoner information
Actor	All staffs and judge
Requirement	The system shall allow all staff and judge view prisoner information
Description	All staffs and judge must login to the system providing user name and password to perform tasks of viewing prisoner information
Priority	High

Table 9: Req.ID 009 Record prisoner transfer request

Requirement ID	009
Requirement Name	Record prisoner transfer request
Actor	Registrar officer
Requirement	The system shall allow registrar officer staff to record prisoner transfer request
Description	To record prisoner transfer request, registrar officer must provide user name and password to the system to login.

Priority	High
----------	------

Table 10: Req.ID 010 Record prisoner conditional release request

Requirement ID	010
Requirement Name	Record prisoners' conditional release request
Actor	Registrar officer
Requirement	The system shall allow registrar officer staff to record prisoner conditional release request
Description	Registrar officer enters user name and password to login and record conditional release request.
Priority	High

Table 11: Req.ID 011 Check court appointment

Requirement ID	011
Name	Check court appointment
Actor	Registrar officer
Requirement	The system shall allow registrar officer staff to check court appointment for the prisoner
Description	Registrar officer inserts user name and password to login and check court appointment for the prisoner.
Priority	High

Table 12: Req.ID 012 View transfer request

Requirement ID	012
Requirement Name	View prisoner transfer request
Actor	Discipline officer
Requirement	The system shall allow discipline officer staff to view prisoner transfer request
Description	Discipline officer must provide user name and password to the system to login and view prisoners transfer request.
Priority	High

Table 13: Req.ID 013 View conditional release request

Requirement ID	013
Requirement Name	View conditional release request
Actor	Discipline officer
Requirement	The system shall allow discipline officer staff to view prisoner conditional release request
Description	To view prisoner conditional release request, discipline officer must enter user name and password to login to the system.
Priority	High

Table 14: Req.ID 014 Update prisoner information

Requirement ID	014
Requirement Name	Update prisoner information
Actor	Registrar officer

Requirement	The system shall allow registrar officer staff to update prisoner information
Description	Registrar officer must insert user name and password to login to the system and perform update prisoner information.
Priority	High

Table 15: Req.ID 015 Search prisoner information

Requirement ID	015
Requirement Name	Search prisoner information
Actor	Registrar officer
Requirement	The system shall allow registrar officer staff to schedule visiting date and time
Description	Registrar officer must enter user name, and password and login to the system and perform search prisoner information.
Priority	High

Table 16: Req.ID 016 Update Schedule

Requirement ID	016
Requirement Name	Update schedule
Actor	Registrar officer
Requirement	The system shall allow registrar officer staff to update the schedule of visiting date and time
Description	To update prisoner information, registrar officer must provide user name, and password

	to the system and login.
Priority	Medium

Table 17: Req.ID 017 Generate report

Requirement ID	017
Requirement Name	Generate Report
Actor	Release officer, discipline officer, system administrator, and judge
Requirement	The system shall allow release officer staff, discipline officer staff, and system administrator staff to generate report
Description	All the above staff must enter user name and password to login to the system and generate report.
Priority	High

Table 18: Req.ID 018 Add release evaluation information

Requirement ID	018
Requirement Name	Add release case evaluate information
Actor	Release officer
Requirement	The system shall allow release officer staff to add release evaluation information to the system
Description	Release officer must provide user name and password to login and add release case evaluation points.
Priority	High

Table 19: Req.ID 019 Grant privilege to user

Requirement ID	019
-----------------------	------------

Requirement Name	Grant privilege
Actor	System administrator
Requirement	The system shall allow system administrator staff to grant privilege to the user on the system
Description	System administrator enters user name and password to login and grant privilege to users of the system.
Priority	High

Table 20: Req.ID 020 Revoke privilege from user

Requirement ID	020
Requirement Name	revoke privilege
Actor	System administrator
Requirement	The system shall allow system administrator staff to grant privilege to the user on the system
Description	System administrator must enter user name and password to login and revoke privilege from users of the system.
Priority	Medium

Table 21: Req.ID 021 Change password

Requirement ID	021
Requirement Name	Change password
Actor	System administrator, registrar officer, discipline officer, release officer, police officer and judge
Requirement	The system shall allow system administrator staff, judge and

	all staff to change password
Description	All staffs, system administrator, and judge must insert user name and password to login and change password.
Priority	High

Table 22: Req.ID 022 Evaluate conditional release

Requirement ID	022
Requirement Name	Evaluate conditional release
Actor	Discipline officer
Requirement	The system shall allow the system to evaluate conditional release
Description	The discipline officer enters user name and password to login and view evaluated conditional release.
Priority	High

Table 23: Req.ID 023 Record conditional release evaluation point

Requirement ID	023
Requirement Name	Record conditional release evaluation point
Actor	Discipline officer
Requirement	The system shall allow discipline officer to record conditional release evaluation points
Description	Discipline officer access the system through inserting user name and password and record conditional release evaluation points.
Priority	High

Table 24: Req.ID 024 View schedule

Requirement ID	024
Requirement Name	View schedule
Actor	Visitor
Requirement	The system shall allow visitor to view schedule
Description	The visitor does not have user name and password but they simply browse the system and view the schedule.
Priority	High

2.3.2 System Requirements

Requirements constitute a specification for the new system. They serve as a “contract” between customers and developers. "...Requirements definition is a careful assessment of the needs that a system is to fulfill...must say *why* a system is needed, based on current and foreseen conditions, which may be internal operations or an external market...must say *what* system features will serve and satisfy this context...must also say *how* the system is to be constructed...". (Mylopoulos, 2004)

The system enables the registrar officer staff to:

- ✓ To register prisoner information
- ✓ To record room
- ✓ To record prisoner transfer request
- ✓ To record prisoner conditional release request
- ✓ To view prisoner information
- ✓ To check court appointment for the prisoner
- ✓ To schedule visiting date and time
- ✓ To update prisoner information
- ✓ To Assign room
- ✓ To change password

The system enables the System administrator staff:

- ✓ To create user account
- ✓ To view prisoner information
- ✓ To grant privilege to the user on the system
- ✓ To revoke privilege from prisoner
- ✓ To Generate report
- ✓ To change password

The system enables the discipline officer staff:

- ✓ To view prisoner transfer request
- ✓ To view prisoner conditional release request
- ✓ To view prisoner information
- ✓ To generate report
- ✓ To record conditional release evaluation points/ information
- ✓ To change password

The system enables the release officer staff:

- ✓ To Record release evaluation information
- ✓ To generate report
- ✓ To view prisoner information
- ✓ To change password

The system enables the judge:

- ✓ To add court decision for the prisoner
- ✓ To view prisoner information
- ✓ To generate report
- ✓ To change password

The police officer staff:

- ✓ Register visitor information
- ✓ View prisoner information

✓ Change password

The system shall allow itself to evaluate conditional release for the prisoner.

The system shall allow visitor view schedule.

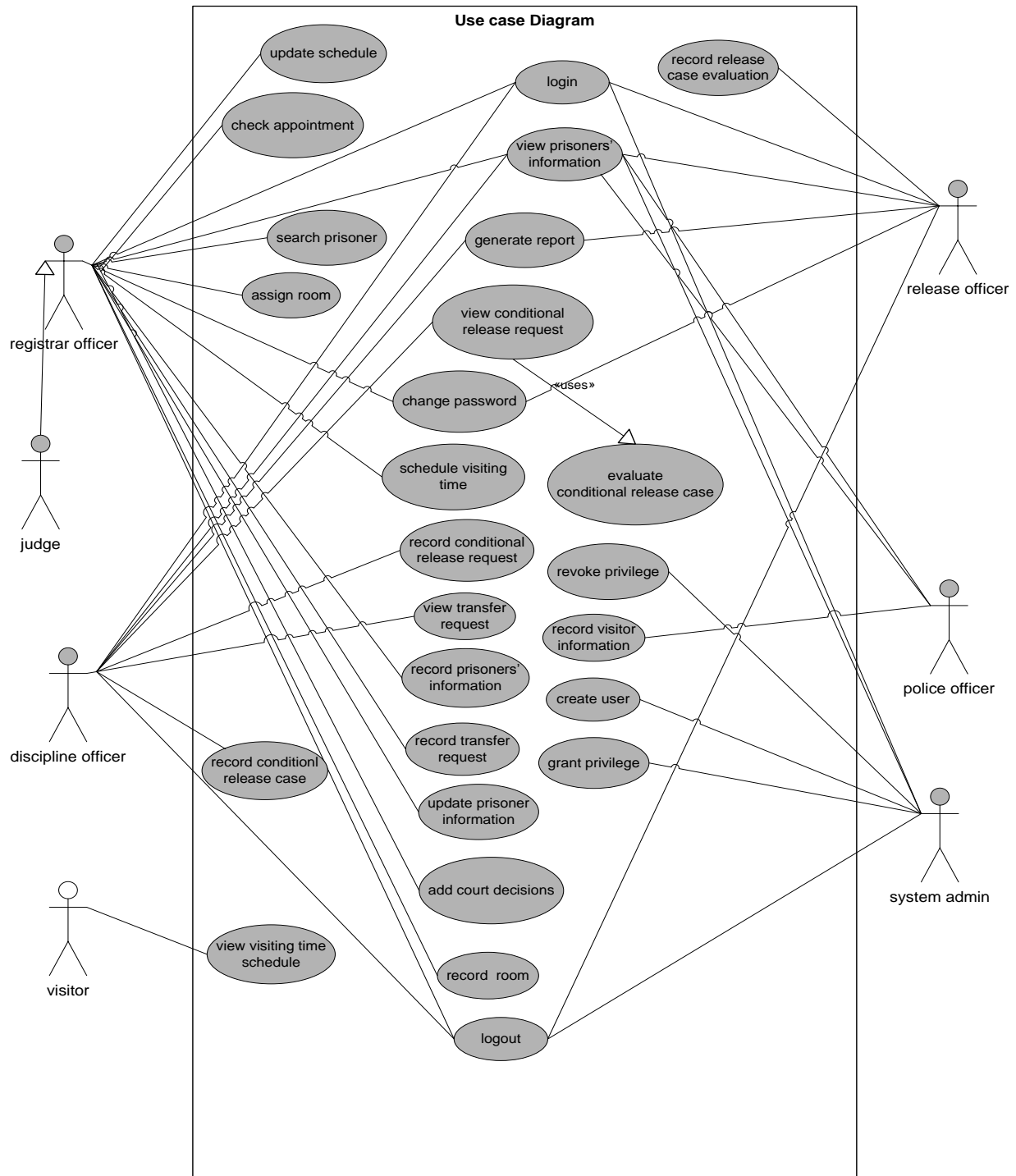


Fig 1: Use case diagram

2.3.3 Use case diagram description

A use case diagram is a summary of who use your application and what they can do with it.

It describes the relationship among the requirements, users and the major components of the system. Use case diagram shows the relationships between users (actors) and use cases with in a system or application. They provide an overall view of how the systems is used and the various roles and actions that take place within the system.

Use case number	UC 1
Use case Name	Login
Description	Authorized access to the system's appropriate access level
Pre-condition	The user must sign up and be authenticated
Basic course of action	<ol style="list-style-type: none">1. User enters user name and password2. User clicks on login button3. The system checks the input user name and password4. The system opens main home page
Alternative course of action	<ol style="list-style-type: none">5. The system display error message and points the user back to step1 if inputs are invalid
Post-condition	<ol style="list-style-type: none">6. User has logged in and access the system

Table 25: UC description login

Use case number	UC 2
Use case Name	Create account
Description	System administrator staff create account

Pre-condition	System administrator staff must login
Basic course of action	<ol style="list-style-type: none"> 1. System administrator staff enters user name and password 2. clicks on login button 3. The system checks if the input user name and password is correct 4. Clicks on create account link 5. The system display create account form 6. System administrator staff fill the form 7. Clicks on create button
Alternative course of action	<ol style="list-style-type: none"> 8. The system points back to step 1 if user name and password are incorrect and points back to step 5 if the account form is not filled correctly and display error message
Post-condition	9. users are created successfully

Table 26: UC description create account

Use case number	UC 3
Use case Name	Register prisoner
Description	Registrar officer staff register prisoner information
Pre-condition	The registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 10. Registrar officer staff enters user name and password

	11. clicks on login button 12. The system checks the input user name and password 13. Clicks on register prisoner menu 14. The system display registration form 15. Fills the form 16. Clicks on register button
Alternative course of action	17. The system display error message and points the user back to step5 if user make an error input or if fields are not filled
Post-condition	18. System store the information and display successful message

Table 27: UC description Register prisoner

Use case number	UC 4
Use case Name	Register visitor
Description	Registrar officer staff register prisoner information
Pre-condition	The registrar officer staff must login to the system
Basic course of action	1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on register prisoner menu

	5. The system display registration form 6. Fills the form 7. Clicks on register button
Alternative course of action	8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled
Post-condition	9. System store the information and display successful message

Table 28: UC description Register visitor

Use case number	UC 5
Use case Name	Add court decision
Description	Judge adds court decision passed to prisoner on the system
Pre-condition	The judge must login to the system
Basic course of action	1. judge enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on registration menu 5. The system display registration form 6. Judge fills the decision on the form 7. Clicks on add button
Alternative course of action	8. The system display error message

	and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	9. System store the information and display successful message

Table 29: UC Add court decision

Use case number	UC 6
Use case Name	Record room
Description	The registrar officer staff record the available room
Pre-condition	Registrar officer must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Main home page is opened 5. Clicks on room record menu 6. The system display room record form 7. Registrar officer staff fills the form 8. Clicks on add button
Alternative course of action	<ol style="list-style-type: none"> 9. The system display error message and points the user back to step 6 if user make an error input or if fields are not filled and to step 1 if user

	name and password is not correct
Post-condition	10. System store room record information and display successful message

Table 30: UC Room record

Use case number	UC 7
Use case Name	Record prisoner transfer request
Description	Registrar officer staff records prisoner transfer request
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on registration menu 5. The system display transfer request form 6. Registrar officer staff fills the request form 7. Clicks on submit button
Alternative course of action	8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	9. System store the request

	information and display successful message
--	--------------------------------------------

Table 31: UC Record prisoner transfer request

Use case number	UC 9
Use case Name	Record prisoner conditional release request
Description	Registrar officer staff records prisoner conditional release request
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on registration menu 5. The system display conditional release request form 6. Registrar officer staff fills the conditional release request form 7. Clicks on submit button
Alternative course of action	<ol style="list-style-type: none"> 8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	<ol style="list-style-type: none"> 9. System store the request information and display successful message

Table 32: UC Record prisoner conditional release request

Use case number	UC 10
Use case Name	Update prisoner information
Description	Registrar officer staff updates prisoner information
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on update menu 5. The system display prisoner information 6. Registrar officer staff fills the changes on the given information 7. Clicks on update button
Alternative course of action	<ol style="list-style-type: none"> 8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	<ol style="list-style-type: none"> 9. The system stores the updated information

Table 33: UC description Update prisoner information

Use case number	UC 11
Use case Name	Schedule visiting

Description	Registrar officer staff schedule visiting date and time
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on schedule visiting menu 5. The system display schedule form 6. Registrar officer staff fills the schedule 7. Clicks on schedule button
Alternative course of action	<ol style="list-style-type: none"> 8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	<ol style="list-style-type: none"> 9. The system store the schedule

Table 34: UC description Schedule visiting date and time

Use case number	UC 12
Use case Name	Update schedule
Description	Registrar officer staff update the schedule
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button

	<ol style="list-style-type: none"> 3. The system checks the input user name and password 4. Clicks on update schedule menu 5. The system display schedule form 6. Registrar officer staff make changes on the schedule 7. Clicks on update button
Alternative course of action	<ol style="list-style-type: none"> 8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	<ol style="list-style-type: none"> 9. The updated schedule will be stored on the database

Table 35: UC description Update the schedule

Use case number	UC 13
Use case Name	View prisoner information
Description	all staff and judge view prisoner information
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. staffs enter user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on prisoner information 5. Staffs click on view button 6. The system display prisoner information

Post-condition	7. The system store the schedule
----------------	----------------------------------

Table 36: UC description View prisoner information

Use case number	UC 14
Use case Name	View transfer request
Description	Discipline officer staff view prisoner transfer request
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Discipline officer staff enter user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on view transfer request menu 5. Discipline officer staff click on view button 6. The system displays prisoner transfer request information
Post-condition	7. The staff view the information

Table 37: UC description View prisoner transfer request

Use case number	UC 15
Use case Name	View conditional release request
Description	Discipline officer staff view prisoner conditional release request
Pre-condition	Registrar officer staff must login to the system

Basic course of action	<ol style="list-style-type: none"> 1. Discipline officer staff enter user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on view conditional release request menu 5. Discipline officer staff click on view button 6. The system displays prisoner conditional release request information
Post-condition	<ol style="list-style-type: none"> 7. The staff view the conditional release request information

Table 38: UC Description View prisoner conditional release request

Use case number	UC 16
Use case Name	Check court appointment
Description	Registrar officer staff update the schedule
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on appointment menu 5. Clicks on check button

	6. The system display the appointment information
Post-condition	7. User view the appointment

Table 39: UC Description Check court appointment

Use case number	UC 17
Use case Name	Assign room
Description	Registrar officer staff assign room for the prisoner
Pre-condition	Registrar officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Registrar officer staff enters user name and password 2. clicks on login button 3. The system checks the input user name and password 4. Clicks on assign room menu 5. The system display the record of the room 6. Registrar officer staff selects the unreserved room 7. Clicks on assign button
Alternative course of action	8. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct
Post-condition	9. The room will be assigned

Table 40: UC Description assign room

Use case number	UC 18
Use case name	Record release case evaluation
Description	Release officer staff records release case evaluation information
Pre- condition	Discipline officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Release officer staff enters user name and password. 2. Clicks on login button 3. The system checks validity of user name and password. 4. Clicks on release case menu 5. The system display release case form 6. Release officer fills the form 7. Clicks on add button 8. End use case
Alternative course of action	<ol style="list-style-type: none"> 9. The system display error message and points the release officer staff back to step1 and step6.
Post condition	10. The system stores the information

Table 41: UC Description Record Release case evaluation information

Use case number	UC 19
Use case name	Record notran evaluation information
Description	Discipline officer staff record prisoners' notran evaluation information/points to the system.
Pre- condition	Discipline officer staff must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. Discipline officer staff enters user name and password.

	<ol style="list-style-type: none"> 2. Clicks on login button 3. The system checks validity of user name and password. 4. Clicks on notran case menu 5. The system display notran case form 6. Discipline officer staff fills the form 7. Clicks on add button 8. End use case
Alternative course of action	<ol style="list-style-type: none"> 9. The system display error message and points the release officer staff back to step1 and step6.
Post condition	<ol style="list-style-type: none"> 10. The system stores the information

Table 42: UC Description Record notran evaluation information

Use case number	UC 20
Use case name	View schedule
Description	Visitor can view the schedule to see when the visiting date and time is.
Pre- condition	No precondition
Basic course of action	<ol style="list-style-type: none"> 1. Visitor opens the link. 2. Select on view menu 3. Visitor clicks on view schedule 4. Visitor clicks on view buton 5. The system displays the schedule and visitor will see it.
Post condition	<ol style="list-style-type: none"> 6. End use case

Table 43: UC Description View schedule

Use case number	UC 21
Use case name	Grant privilege
Description	The system administrator staff grant privilege for the user on the system
Pre- condition	System administrator must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. System administrator staff enters user name and password 2. Clicks on login button 3. The system checks validity of user name and password. 4. Clicks on notran case menu 5. The system display the appropriate page 6. System administrator Fill the form 7. Clicks on grant privilege button 8. Click on logout button 9. End use case
Alternative course of action	<ol style="list-style-type: none"> 10. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct.
Post condition	<ol style="list-style-type: none"> 11. System admin grant privilege for eligible user

Table 44: UC Description Grant privilege

Use case number	UC 22
Use case name	Revoke privilege
Description	The system administrator staff grant privilege for the user on the system
Pre- condition	System administrator must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. System administrator staff enters user

	name and password 2. Clicks on login button 3. The system checks the input user name and password is correctly spelled. 4. Clicks on revoke privilege link 5. The appropriate page will be displayed 6. The system admin gives search parameter to remove account 7. If appropriate account to be remove found 8. Clicks on revoke privilege button 9. End use case
Alternative course of action	10. The system display error message and points the user back to step5 if user make an error input or if fields are not filled and to step 1 if user name and password is not correct.
Post condition	11. System admin revoke privilege from eligible user

Table 45: UC Description Revoke privilege

Use case number	UC 23
Use case name	Search prisoner information
Description	The system administrator, registrar officer, discipline officer, release officer, police officer and judge can search prisoner information from the system.
Pre- condition	All the staff and judge must login to the system
Basic course of action	1. staffs enters user name and password 2. clicks on login button 3. The system checks the input user name and password is correct.

	<ol style="list-style-type: none"> 4. Select search criteria 5. Click on search button 6. The system display search result 7. End use case
Alternative course of action	<ol style="list-style-type: none"> 8. The system generate message "incorrect username or password"
Post condition	<ol style="list-style-type: none"> 9. Access search functionality if they are eligible.

Table 46: UC Description Search prisoner information

Use case number	UC 24
Use case name	Generate report
Description	The system administrator, discipline officer, release officer and judge can generate report.
Pre- condition	System admin, discipline officer, release officer and judge must login to the system
Basic course of action	<ol style="list-style-type: none"> 1. System admin, discipline officer, release officer and judge enters user name and password 2. clicks on login button 3. The system checks the input user name and password is correct. 4. Clicks on generate report link 5. The appropriate page will be displayed 6. System admin, discipline officer, release officer and judge fill the criteria to generate report. 7. Clicks on generate report button 8. View report 9. End use case
Alternative course of action	<ol style="list-style-type: none"> 10. The system generate message "incorrect username or password"

Post condition	11. View report if they are eligible.
----------------	---------------------------------------

Table 47: UC Description Generate report

2.4 Non-functional requirements

Requirement id	NFr1
Requirement	The system must recoverable if system failure is occurs.
Description	If system failure is occurs the system must be easy for maintenance.
Category	Maintainability
Priority	high

Table 48: maintainability

Requirement id	NFr2
Requirement	The system should have a help tabular menu to support the user.
Description	When the users need a support or help, the system should have a help tabular menu to support the user. And the system must have a manual.
Category	Usability
Priority	high

Table 49: Usability

Requirement id	NFr3
Requirement	All system interfaces shall have a link to communicate the user and the system.
Description	The system interface must integrate and compatible to each other.
Category	integrity
Priority	high

Table 50: Integrity

Requirement id	NFr4
Requirement	The system should be available for 24 hours without failure.
Description	The system should be available to give a reliable service to its user by well perform its task every day.
Category	Availability
Priority	high

Table 51: Availability

Requirement id	NFr5
Requirement	The system must respond to 95% of the user request within 3 seconds.
Description	When the user requests some operation, the system must operate or compute more than 95% of its task and the system must give a respond for the user within 3 seconds.
Category	Performance
Priority	high

Table 52: performance

Requirement id	NFr6
Requirement	The system must control unknown access.
Description	If there is unauthorized access, the system must control and prevent the user from unauthorized access to the system.
Category	Security
Priority	high

Table 53: Security

Requirement id	NFr7
Requirement	The system shall Only Administered by the administrator. Administrator will able to enter the system to make maintenance.
Description	When the system crash or doesn't work only the Administrator can fix it.
Category	Security
Priority	high

Table 54: Security

Requirement id	NFr8
Requirement	The system shall display the correct answer for similar inputs.
Description	When the user enters the same input the system must give the same output for each input.
Category	Correctness
Priority	high

Table 55: Correctness

2.5 Analysis model

Activity Diagram Description

An activity diagram describes the behavior of a system in terms of activities. Activities are modeling elements that represent the execution of a set of operations. The execution of an activity can be triggered by the completion of other activities, by the availability of objects, or by external events. Activity diagrams are similar to flowchart diagrams in that they can be used to represent control flow (i.e., the order in which operations occur) and data flow (i.e., the objects

that are exchanged among operations).

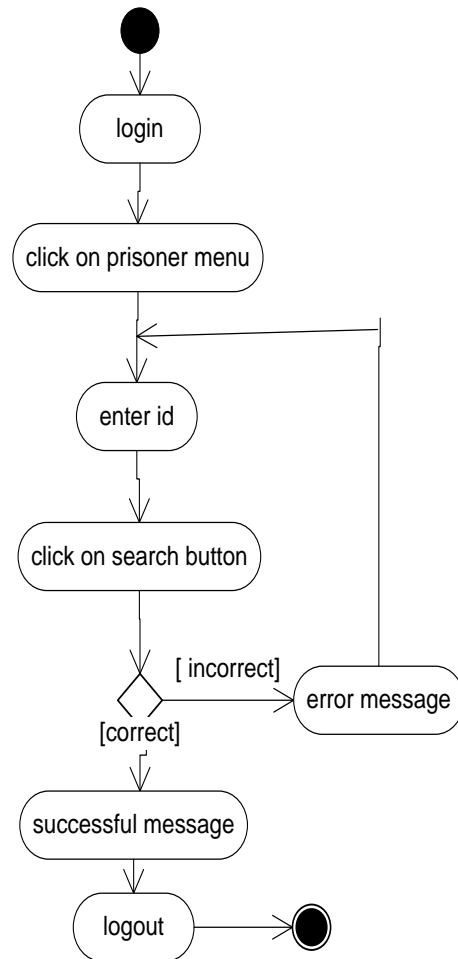


Fig 2: view prisoner information

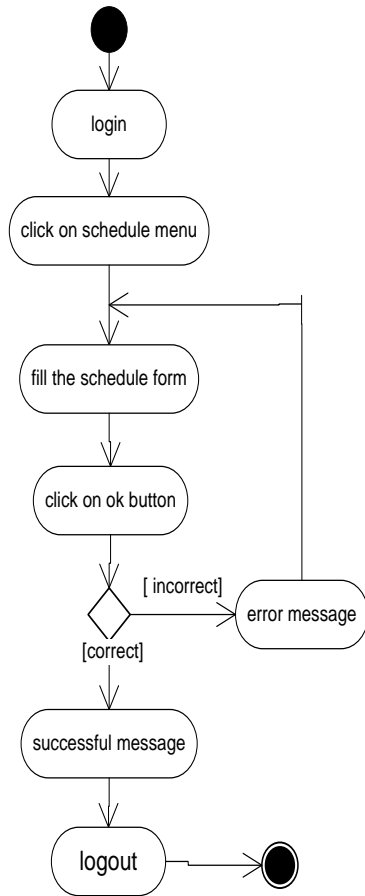


Fig 3: schedule visiting date and time

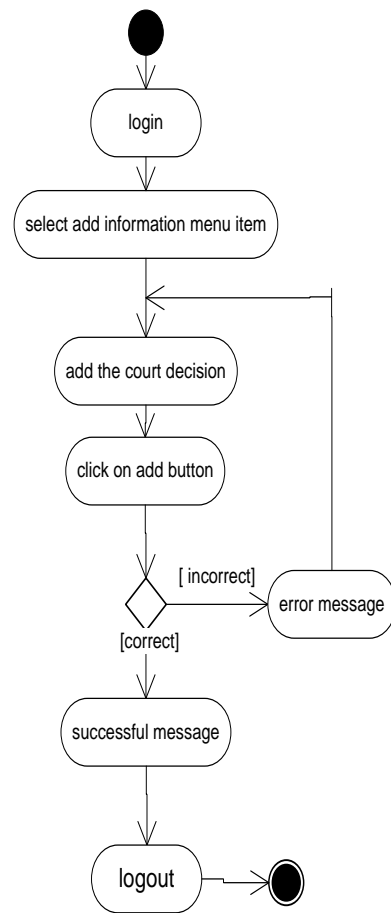


Fig 4: add court decision

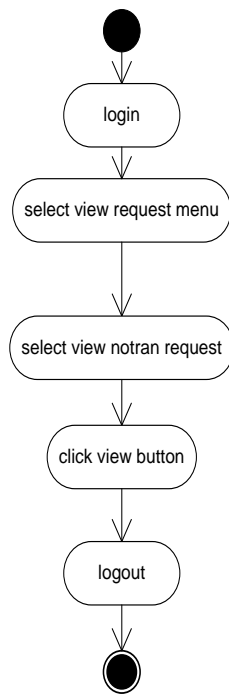


Fig 5: view conditional release request

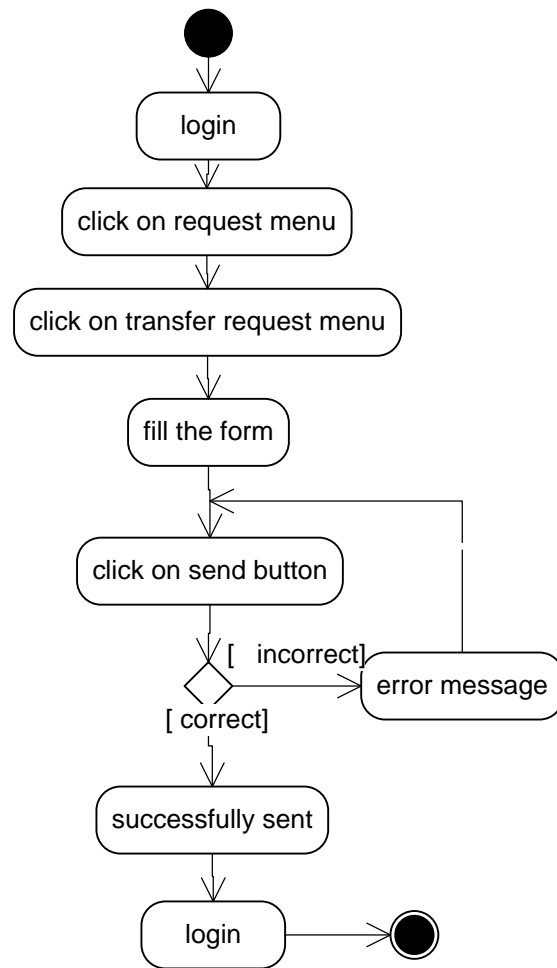


Fig 6: transfer request

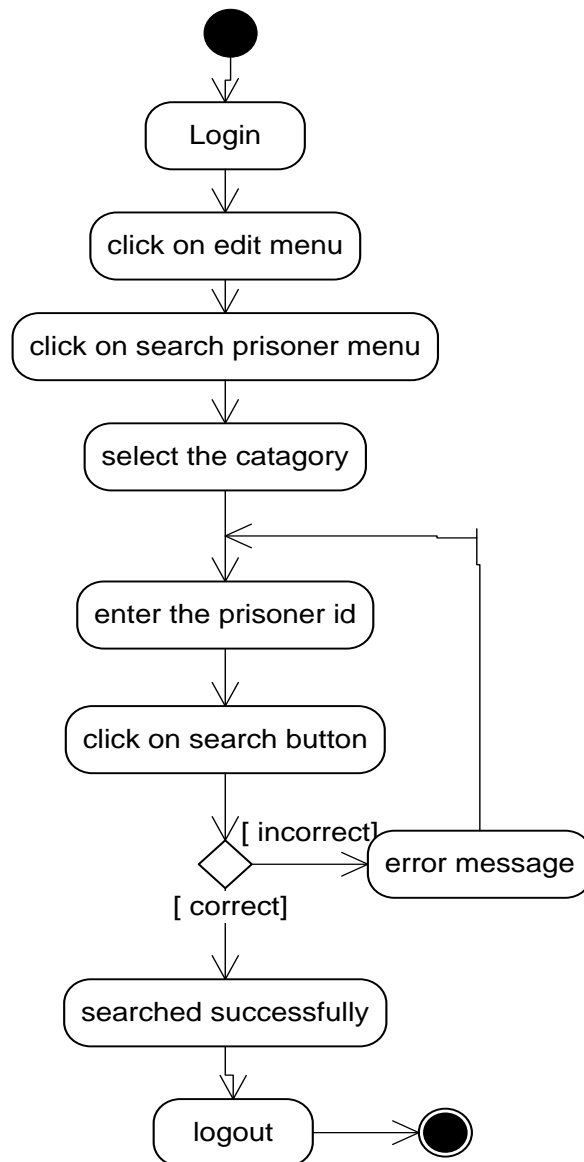


Fig 7: search prisoner information

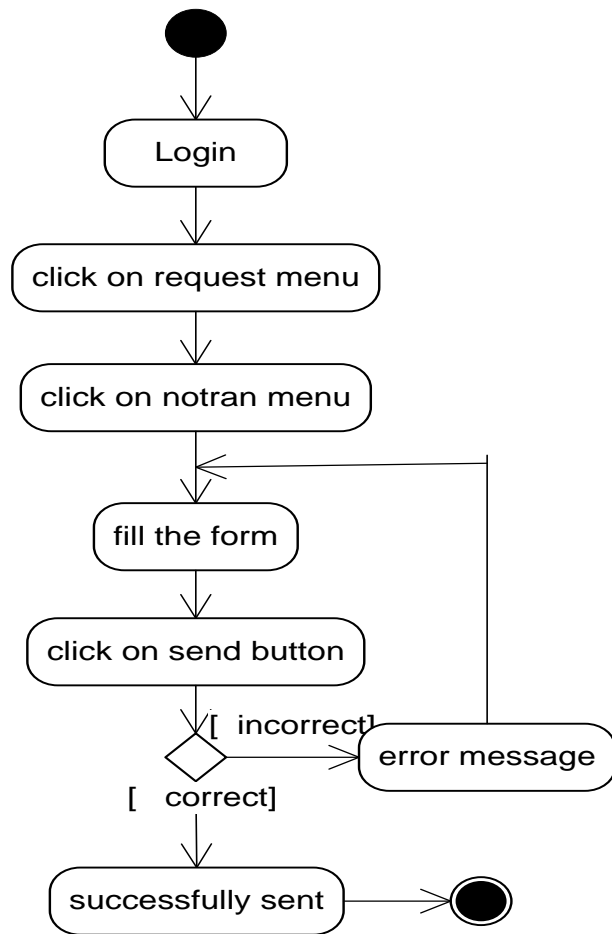


Fig 8: record conditional release request

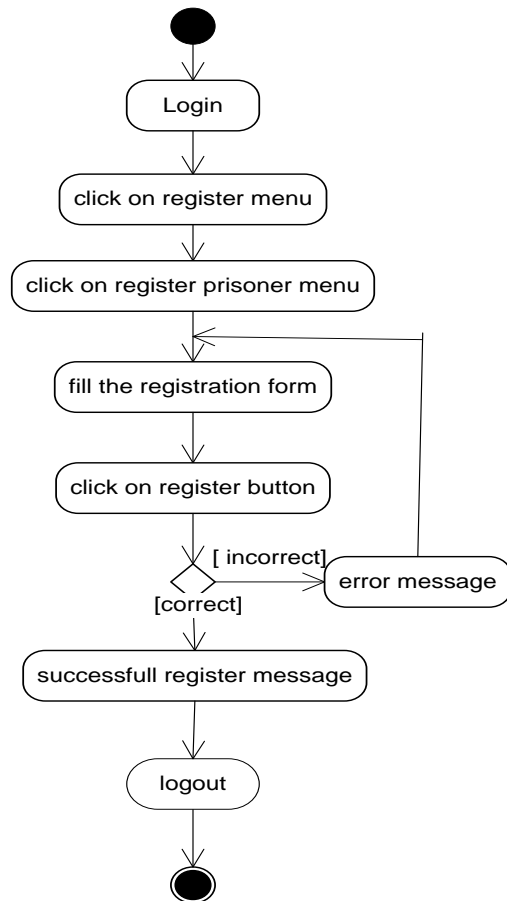


Fig 9: record prisoner information

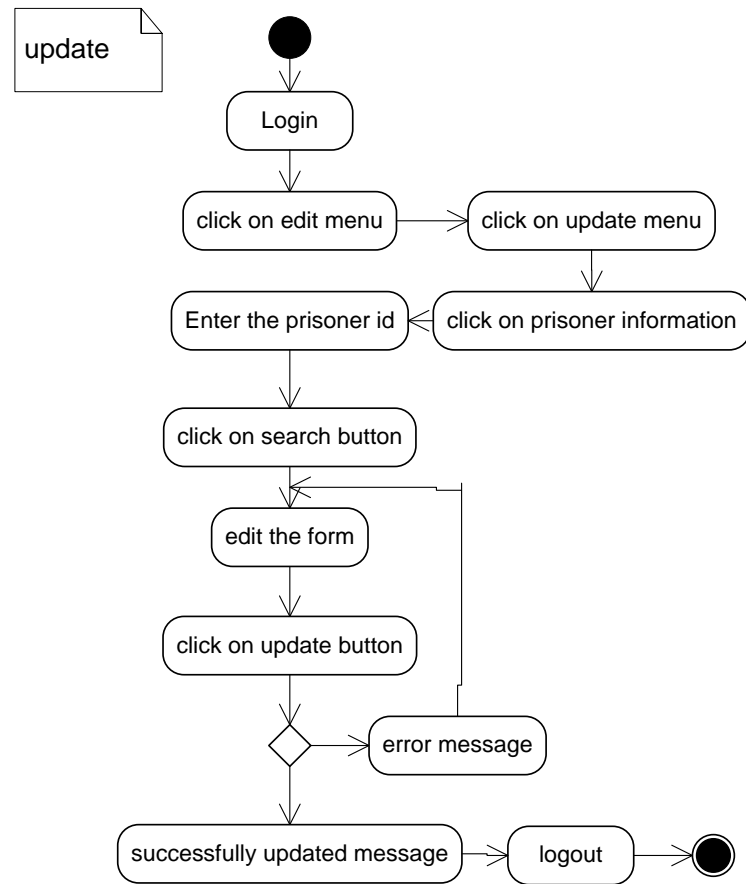


Fig 10: updates prisoner information

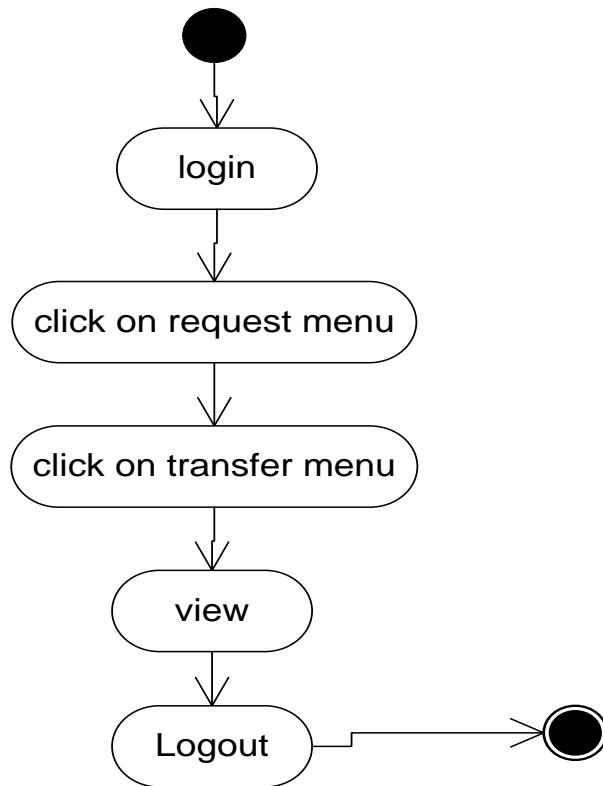


Fig 11: view transfer request

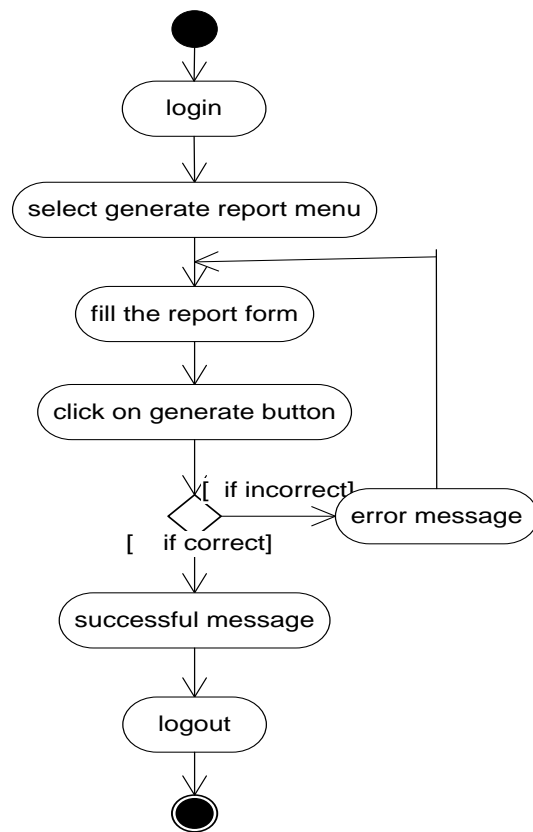


Fig 12: generate report

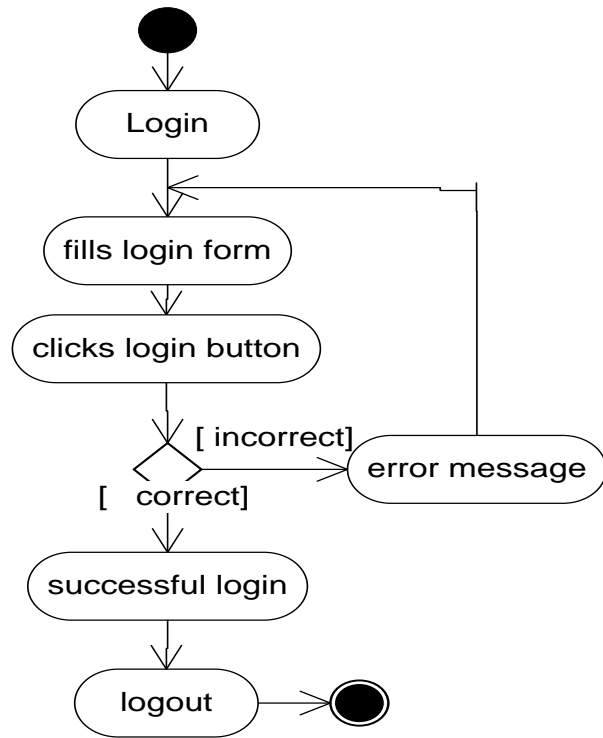


Fig 13: login for system admin, registrar, discipline, release officer

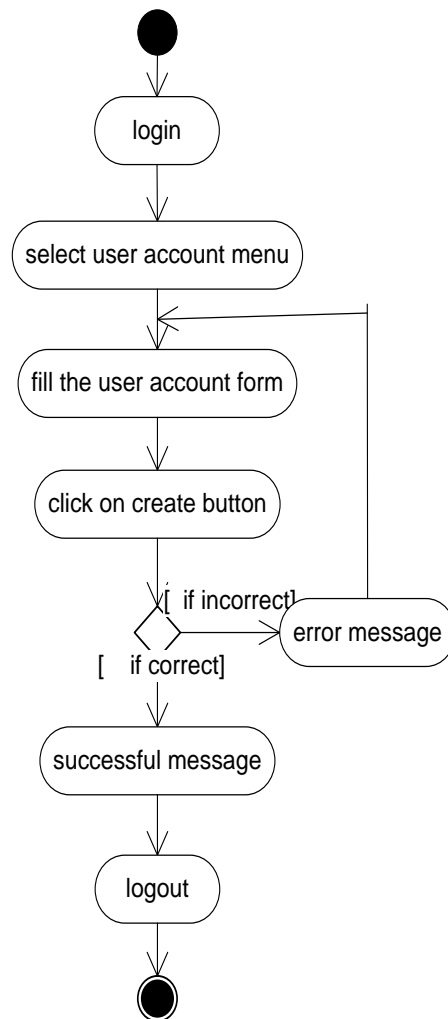


Fig 14: create user account

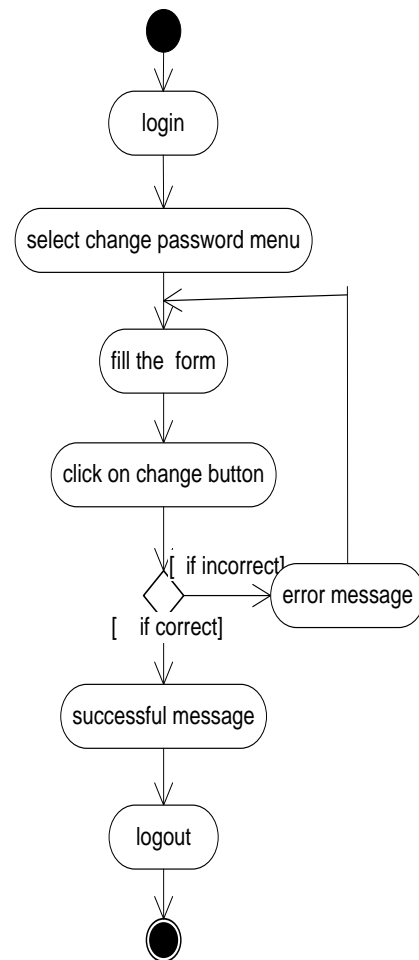


Fig 15: change password for system admin, registrar, discipline, release officer

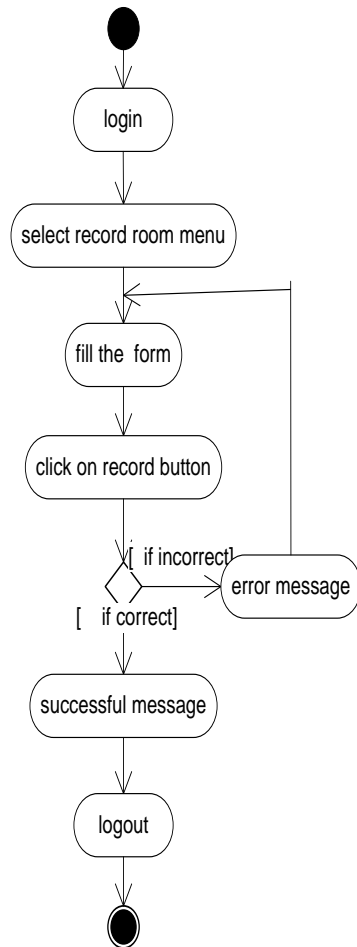


Fig 16: record block and room

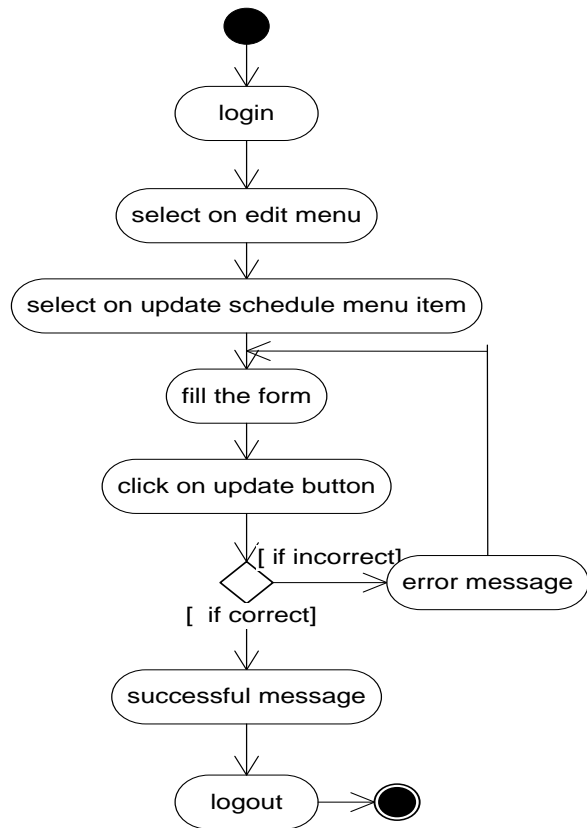


Fig 17: update schedule

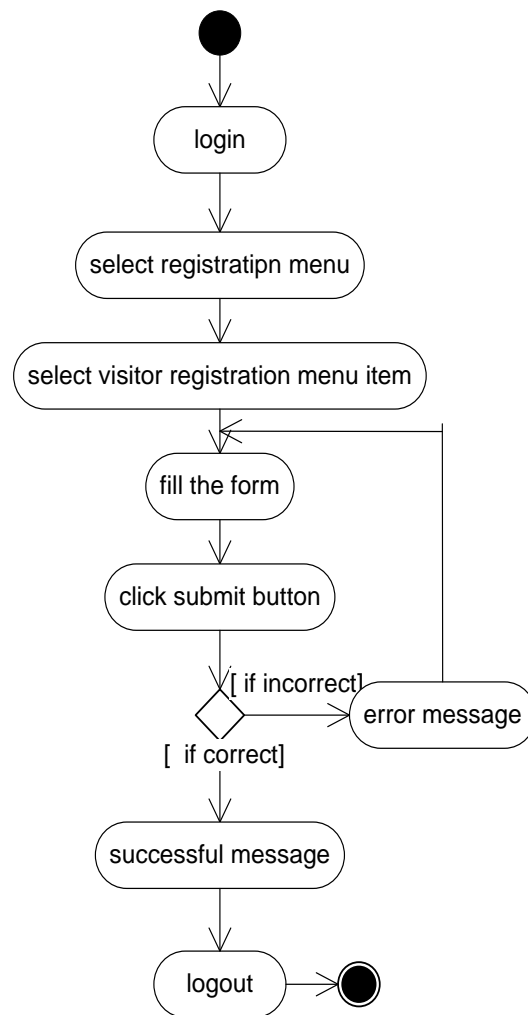


Fig 18: visitor registration

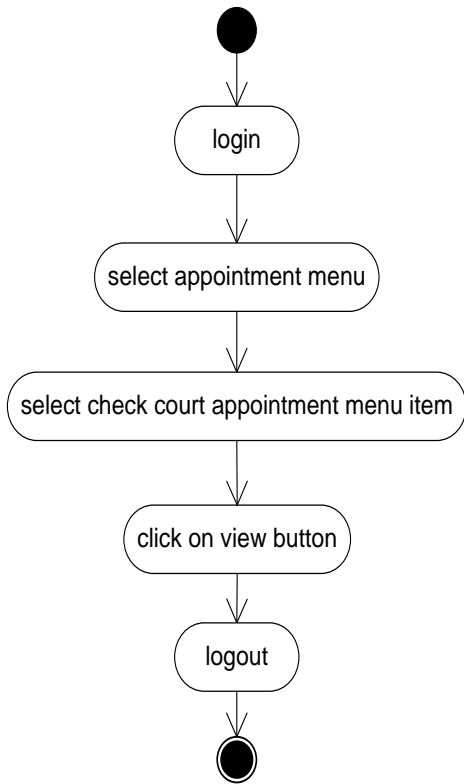


Fig 19: check appointment

2.6 Sequence Diagram Description

A **sequence diagram** is an interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called **event diagrams**, **event scenarios** (wikipedia, 2014)..

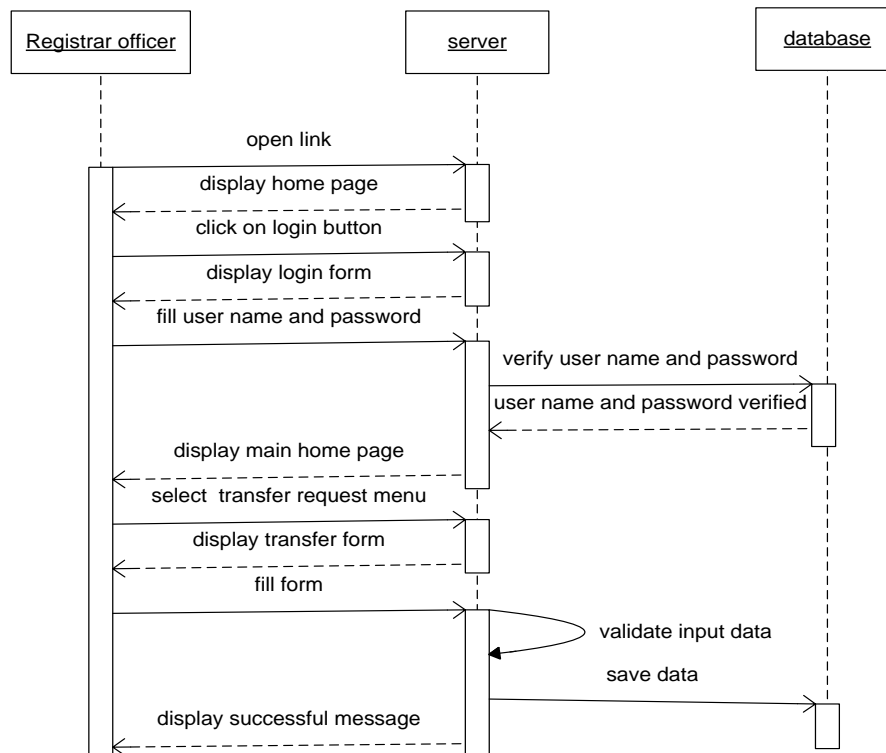


Fig 20: prisoners' transfer request

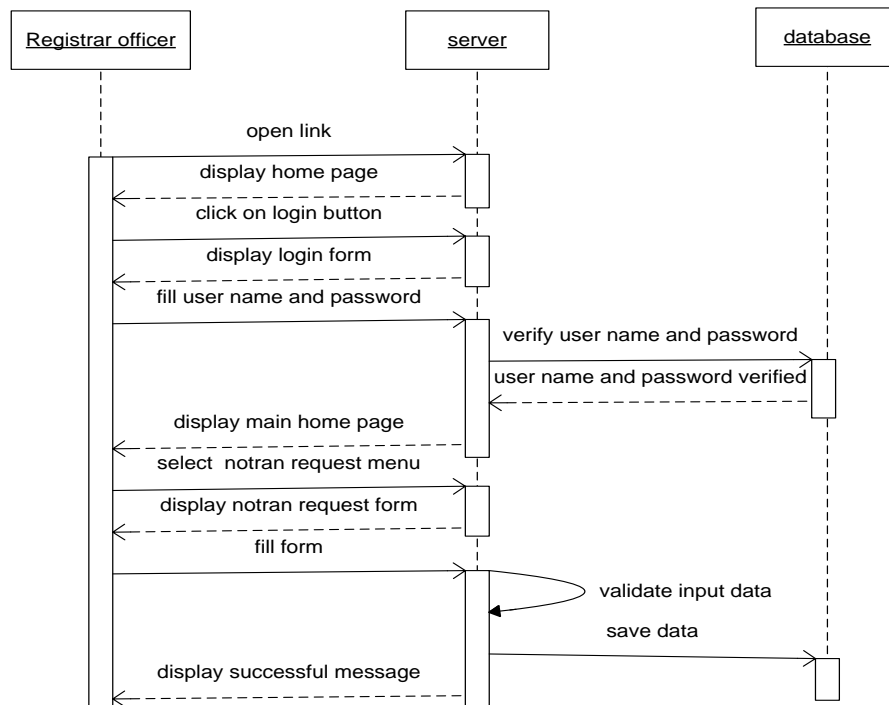


Fig 21: prisoners' notran request

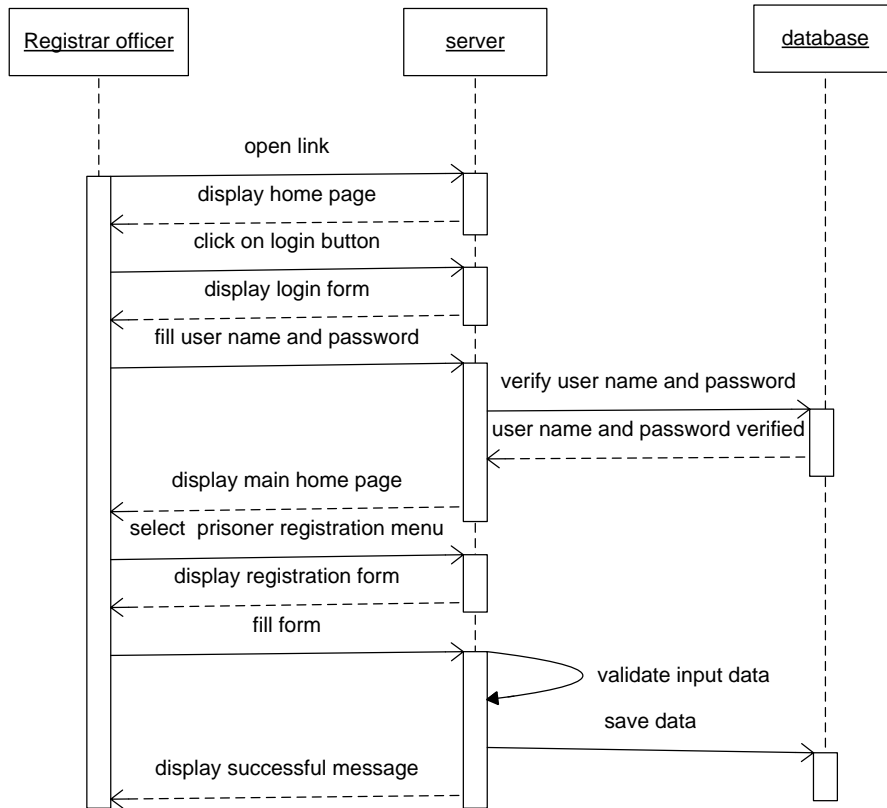


Fig 22: prisoners' registration

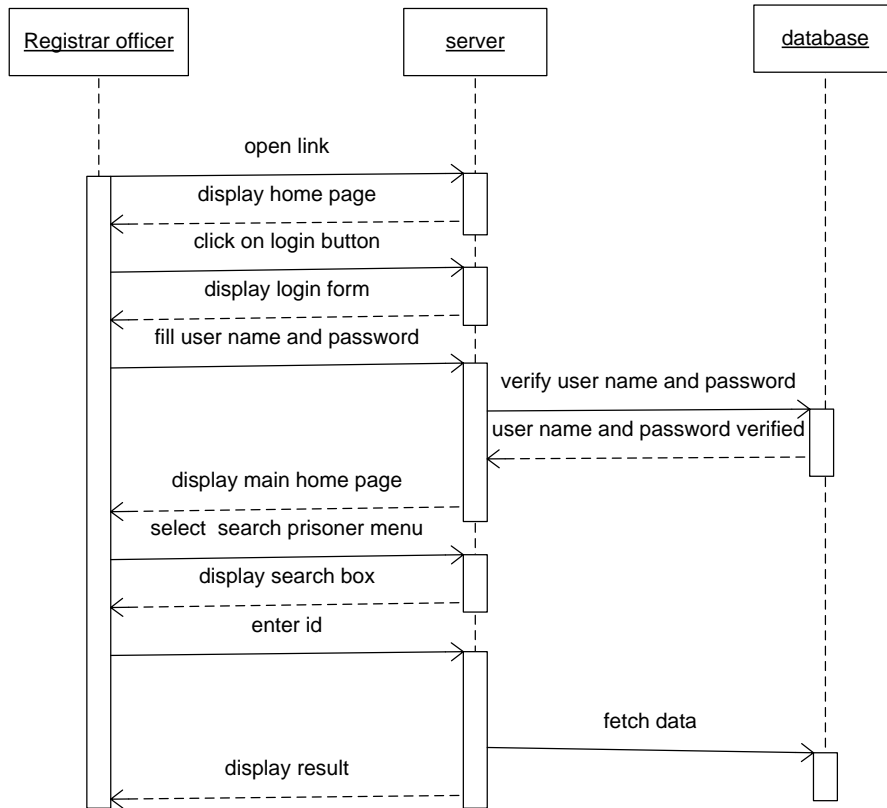


Fig 23: search prisoners' information for discipline, release officer, sys admin

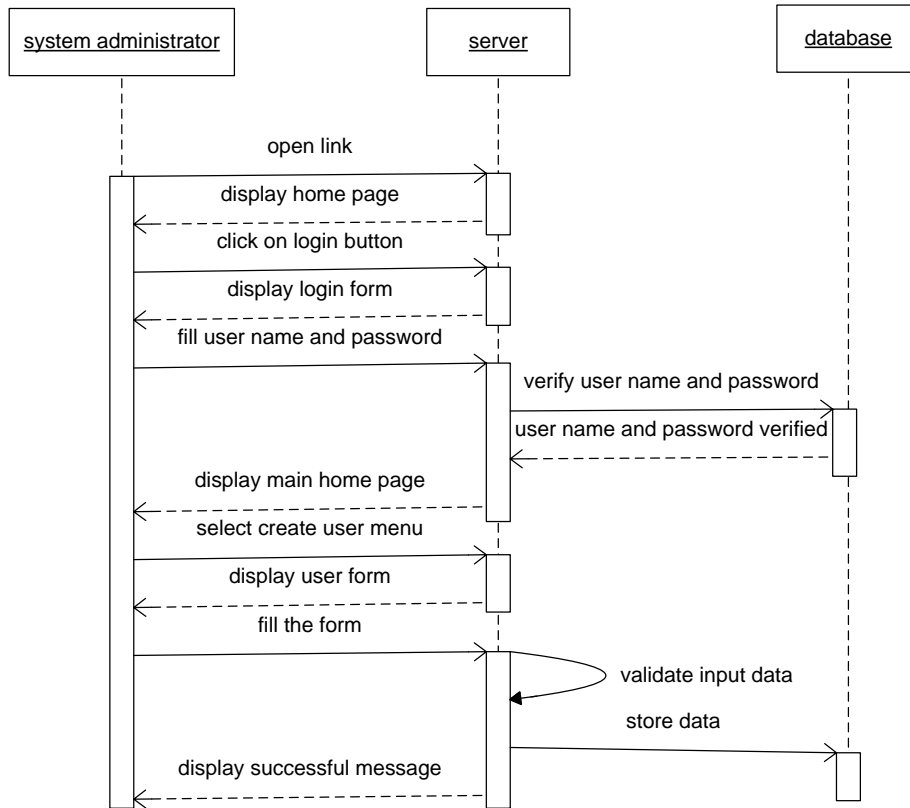


Fig 24: create user account

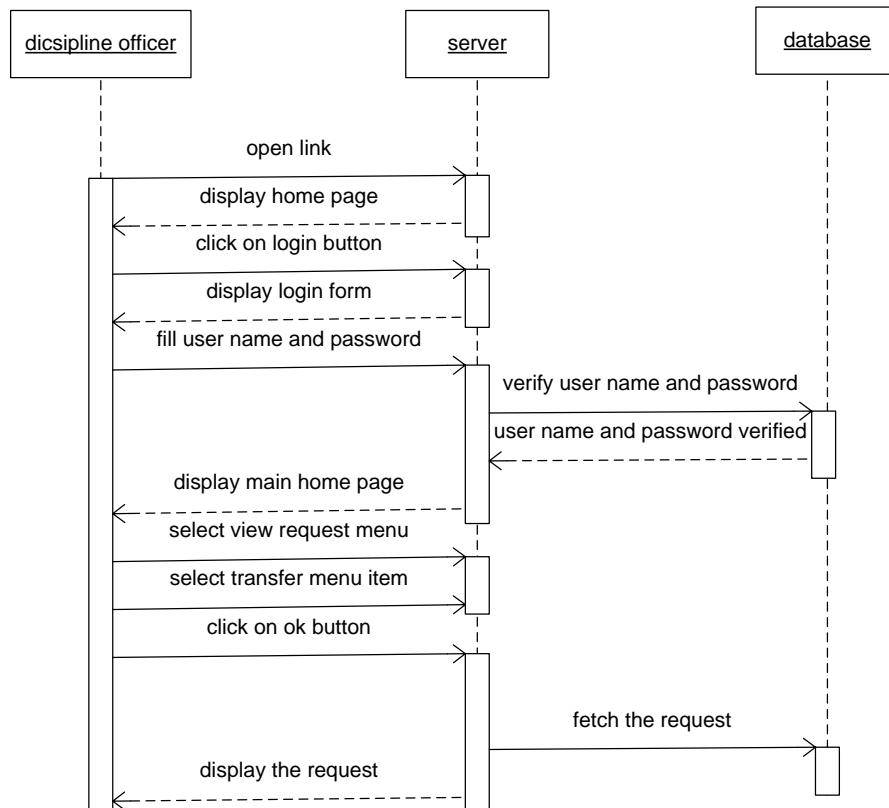


Fig 25: view transfer request

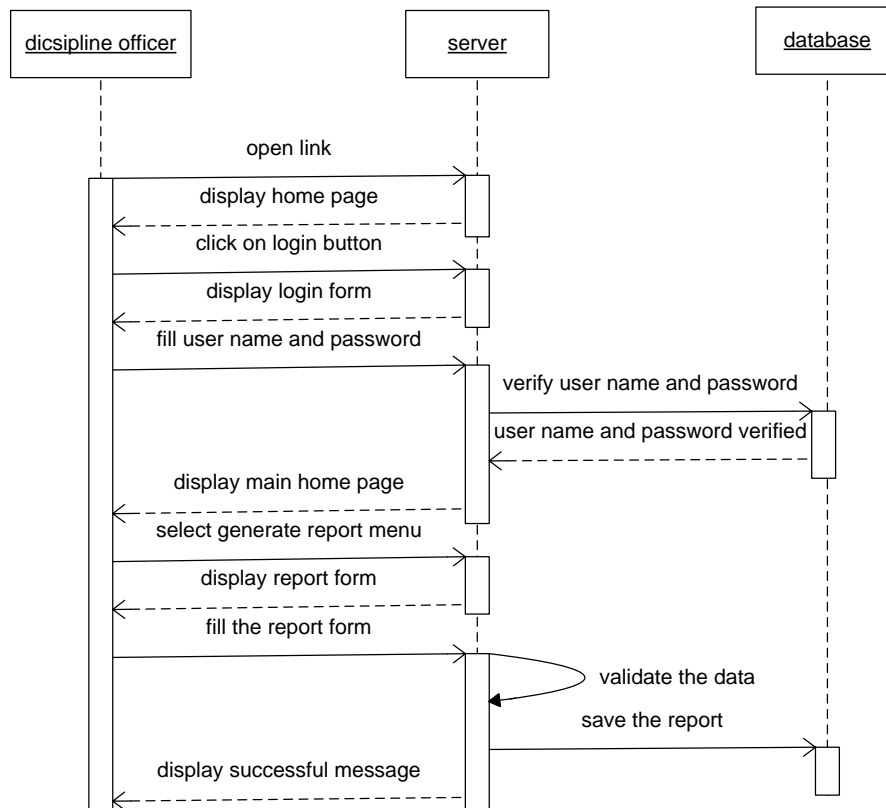


Fig 26: generates report for discipline officer and release officer

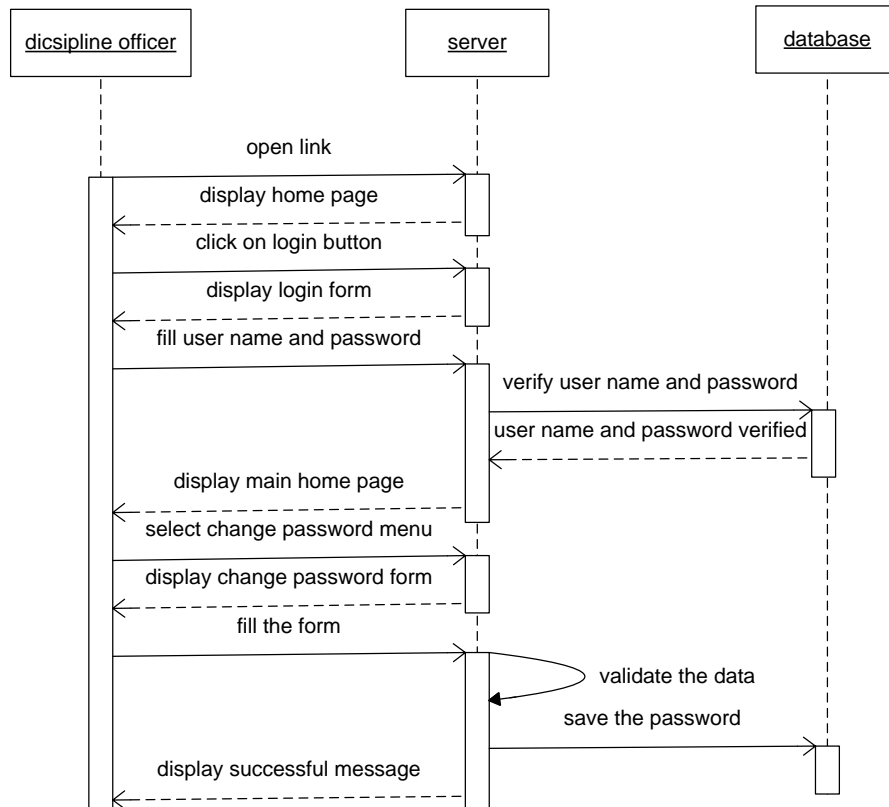


Fig 27: change account for (sys admin, discipline, registrar, release officer and judge)

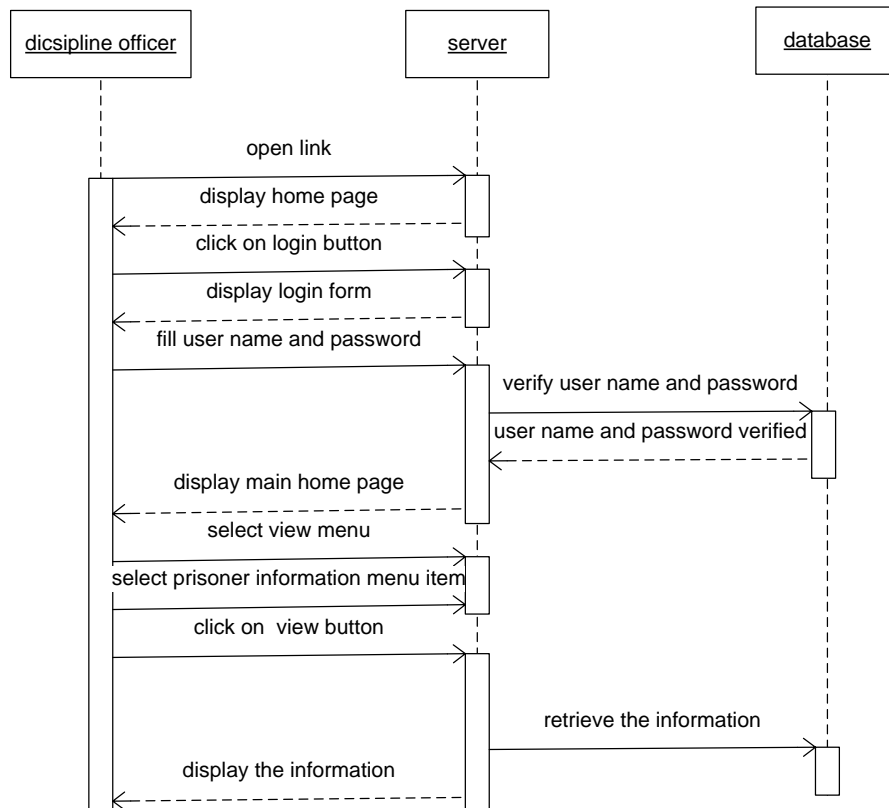


Fig 28: View prisoners' information for sys admin, registrar, discipline, release officer and judge

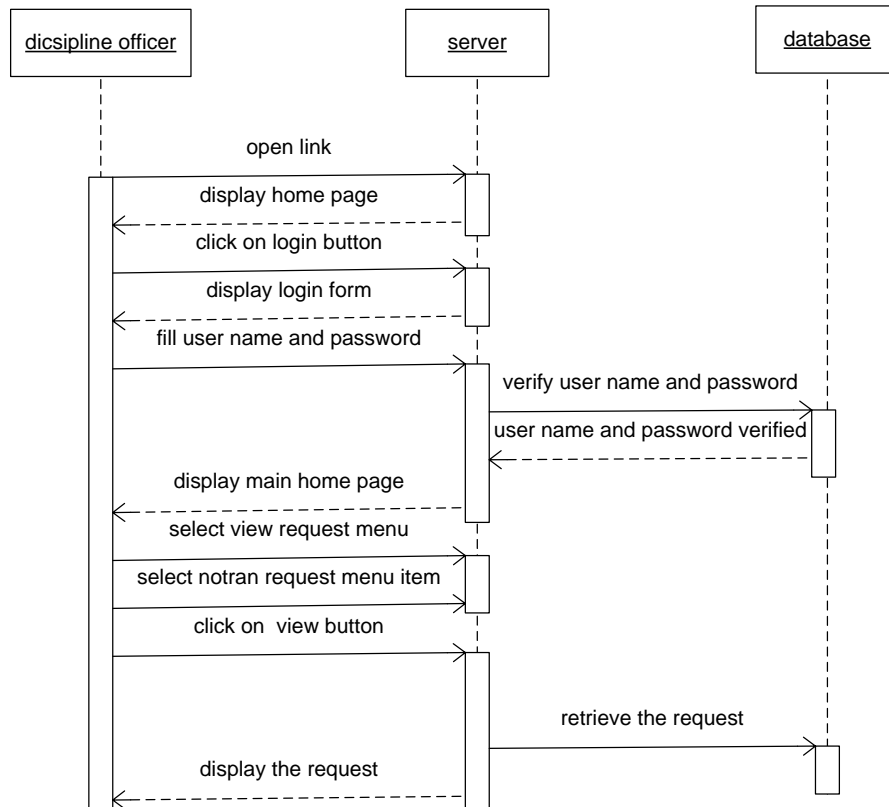


Fig 29: view conditional release request

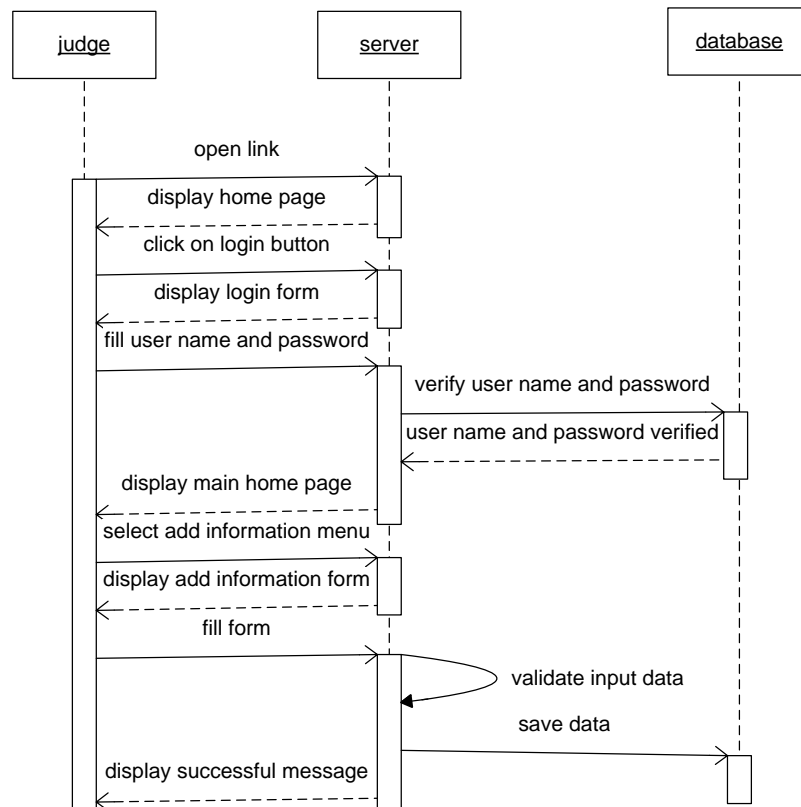


Fig 30: add prisoners information

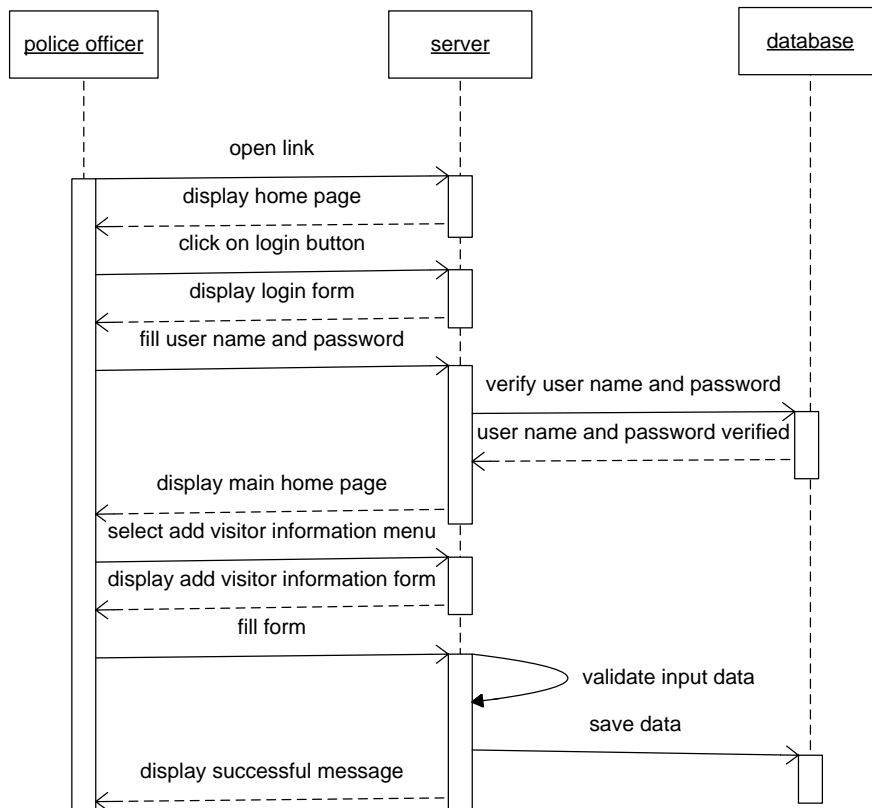


Fig 31: record visitor information

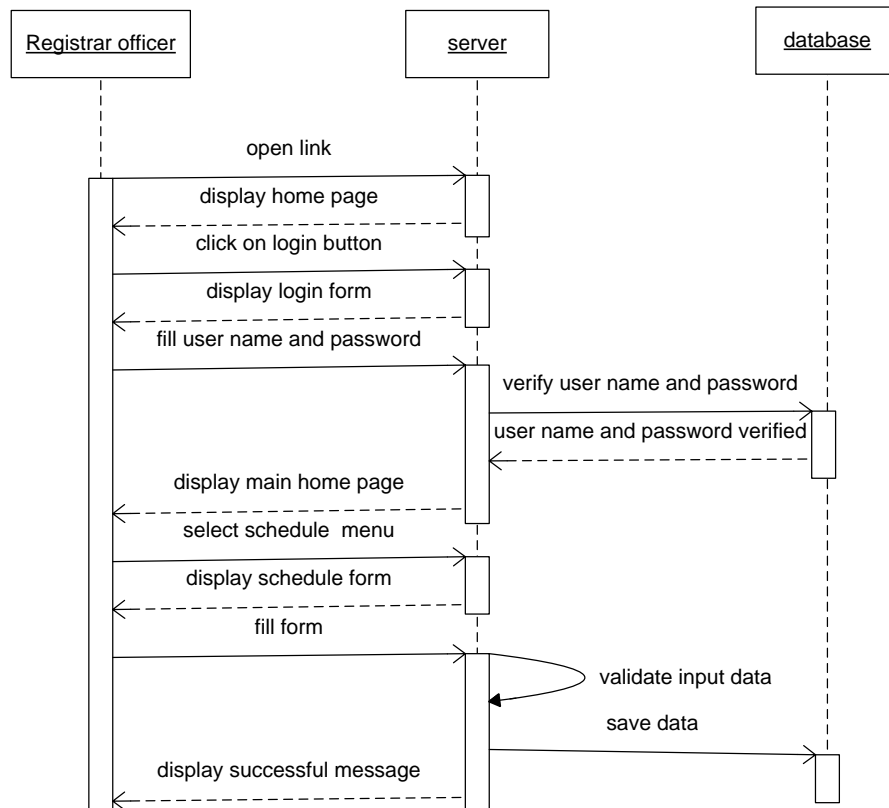


Fig 32: schedule

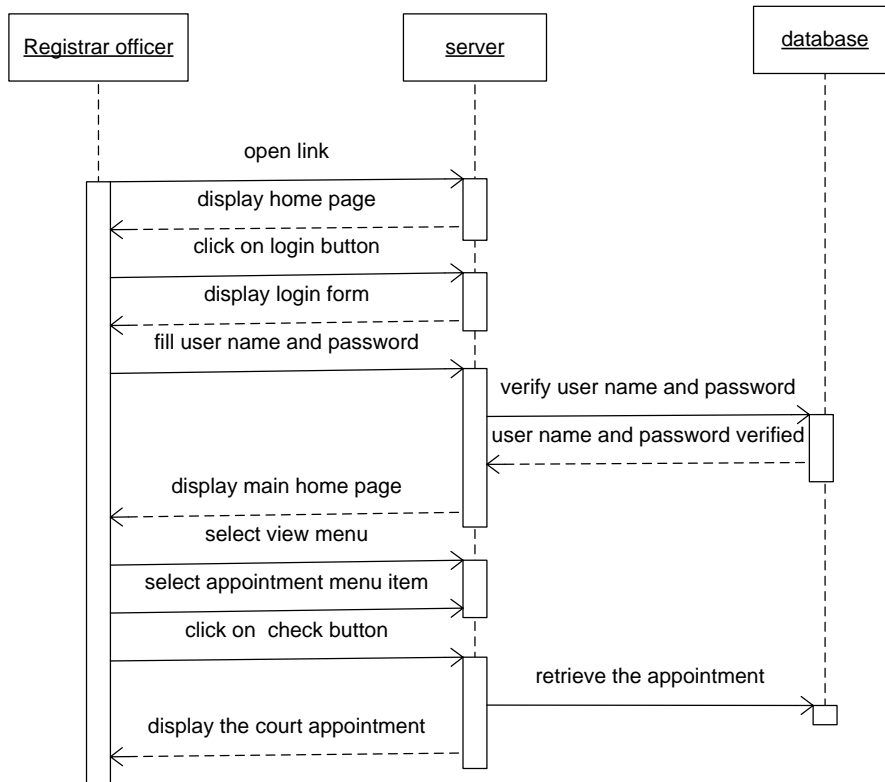


Fig 33: check court appointment

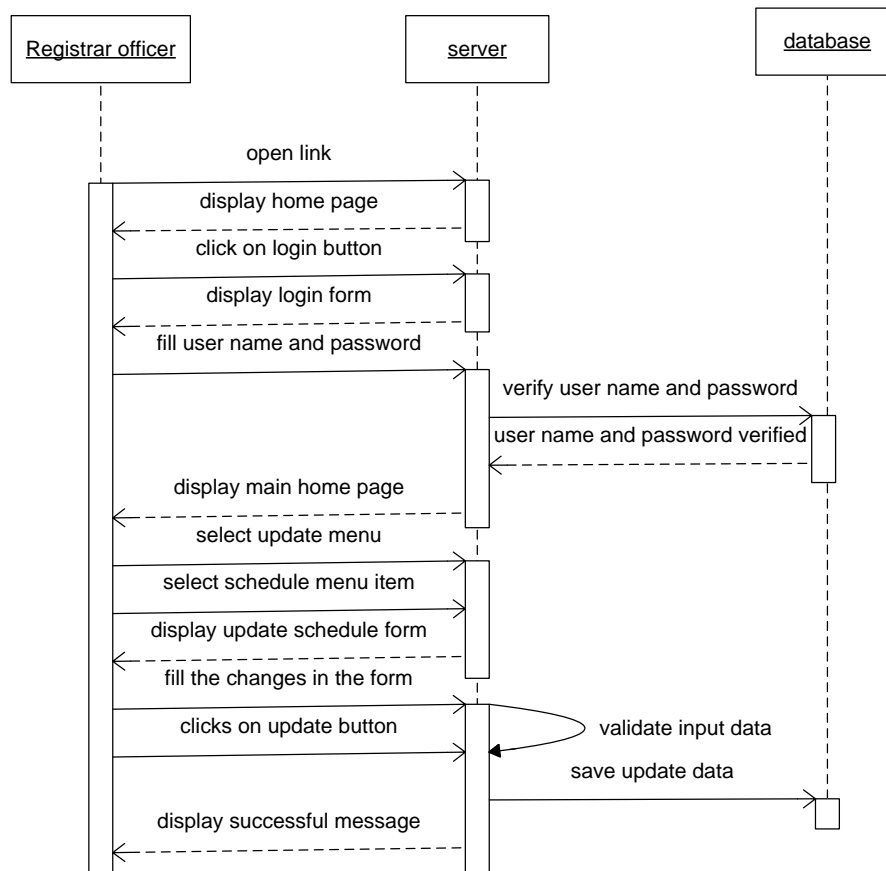


Fig 34: update the schedule

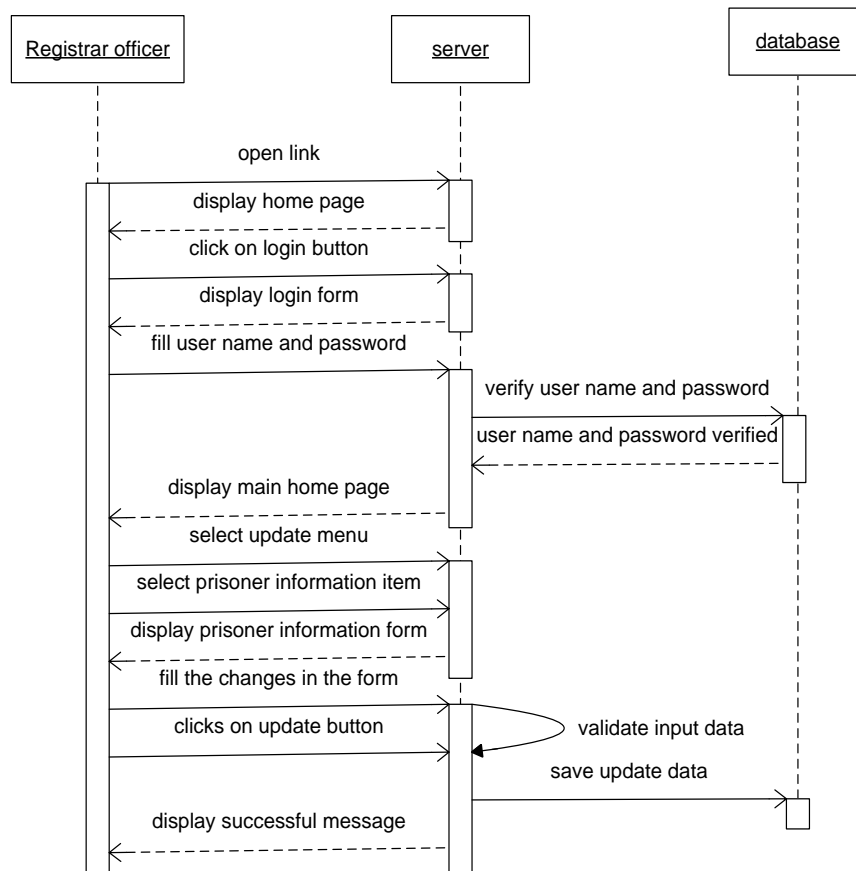


Fig 35: update prisoner information

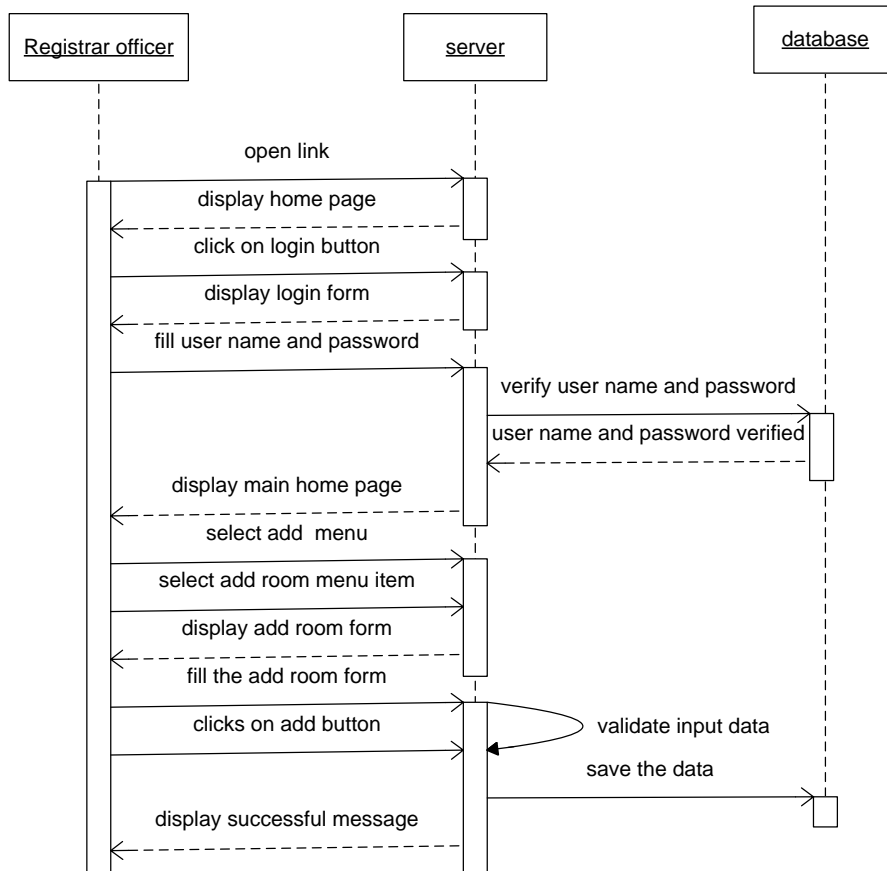


Fig 36: add room

CHAPTER THREE: SYSTEM DESIGN PHASE

System design is the process of defining the architecture, component, modules, interfaces, and data for a system to satisfy the system requirements. System design also shows the system theory to product development.

3.1 Deployment diagram

The following diagram shows the three tier of the system. The system has components like, web browser on user computer, web server on application server, and sql files on database. In general it shows how the system works on hardware, software and application software. The user interacts with the system through application software.

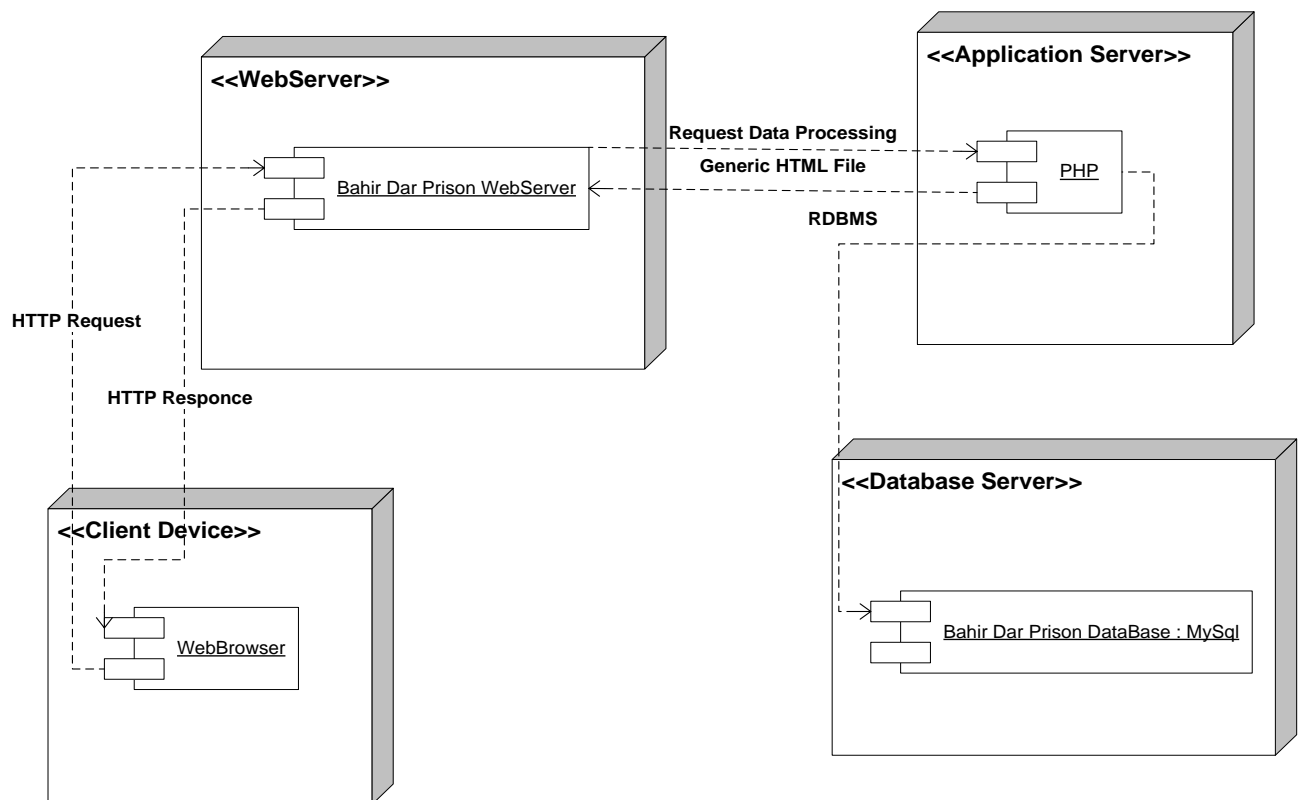


Fig 37: deployment diagram

3.2 Architectural Design

It is a blueprint of software system that encompasses a set of functionalities that are represented in the form of communicating entities that collaborate to perform a task. The Architectural Design is a top level design which shows these entities, their relationships and the relationships. According to object oriented approach the best fit to express these features in the form of interacting objects that encapsulates behaviors and state of the object. Therefore the team has agreed upon to show this feature using class diagram. Class diagrams are widely used to describe the types of objects in a system and their relationships. Class diagrams model class structure and contents using design elements such as classes, packages and objects. The purpose of a class diagram is to depict the classes within a model. In our object oriented application, around thirty one classes have attributes (member variables), operations (member functions) and relationships with other classes. The UML class diagram can depict all these things quite easily (Ramez & Shamkant, 2004).

The following diagram shows the blue print representation of the real world. This means each class has its own attributes that describe the characteristics of the class. It also shows the relationships like, composition, inheritance, association, and generalization of each class on the entire system.

Prisoner, police officer, system administrator, discipline officer, release officer, judge, visitor, and registrar officer are inheriting all method and attributes from the person class.

- Prisoner and court Decision has many –to-many association
- Many Prisoner associate with one prison
- One block can have size of many prisoner and room
- One judge can report one or many reports
- One release officer can report one or many reports
- One discipline officer can report one or many reports
- One room contains maximum of 7 beds
- One prison camp can be located in on location

- One judge can pass one or many decisions
- One registrar officer register more than one prisoner information
- One police officer can register more than one visitor information

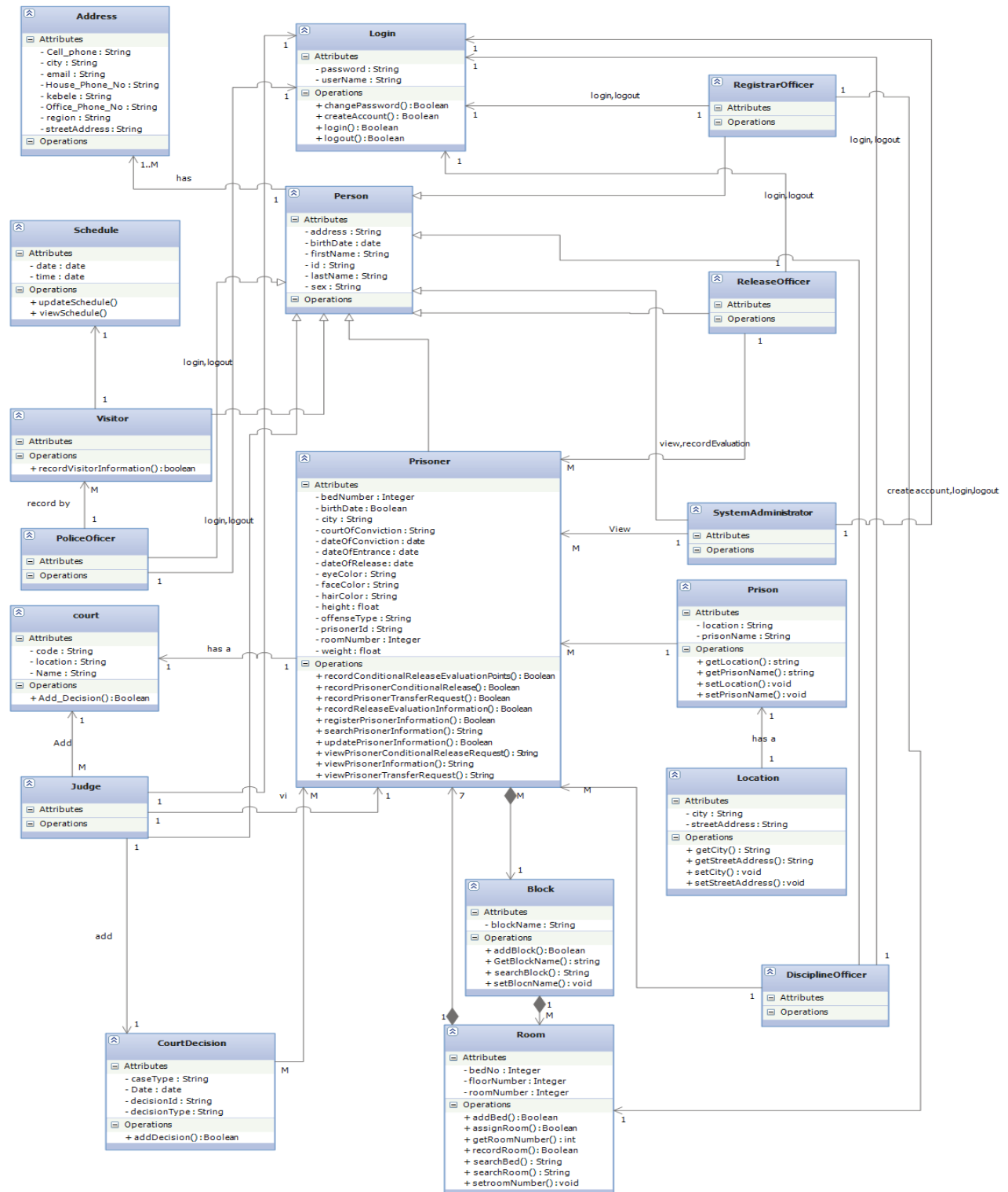


Fig 38: Class diagram

Class		
Prisoner	Public: yes	
	Relationships	Associations: registrar officer, court decision, prison,block, bed
		Composition: None
		Generalization: Person
	Variables:- height: float, weight: float, faceColor: string, hairColor: string, prisoner_id: string, birth date: date, dateOfEntrance: string, dateOfRelease: string, timeofJudgement: string, dateOfConviction: string, courtOfConviction: string, crimeCode: string, offenseType: string, city: string, roomNo: int, bedNo: int	
	Functions: NULL	
	Function parameters: NULL	

Table 56: CD Description prisoner

Class		
Visitor	Public: yes	
	Relationships	Associations: police officer, prisoner
		Composition: None
		Generalization: Person
	Variables:- date: date, time: date	
	Functions: viewSchedule()	
	Function parameters: date and time	

Table 57: CD Description visitor

Class		
Court_decision	Public: yes	
	Relationships	Associations: prisoner, judge
		Composition: NULL
		Generalization: NULL
	Variables:- date: date, caseType: string, decisionType: string	
	Functions: addCourtDecision()	
	Function parameters: date, caseType, decisionType	

Table 58: CD Description court decision

Class		
Address	Public: yes	
	Relationships	Associations: person
		Composition: NULL
		Generalization: NULL
	Variables:- email: string, phoneNo: string, region: string, city: string, kebele: string	
	Functions: NULL	
	Function parameters: NULL	

Table 59: CD Description address

Class		
Police officer	Public: yes	
	Relationships	Associations: visitor
		Composition: NULL
		Generalization: person
	Variables:- username: string, password: string, officerId: string	
	Functions: login(), changePassword(), viewPrisonerInformation(), registerVisitorInformation()	
	Function parameters: userName, password, prisonerInformation	

Table 60: CD Description police officer

Class		
Release Officer	Public: yes	
	Relationships	Associations: prisoner
		Composition: NULL
		Generalization: person
	Variables:- username: string, password: string, officerId: string	
	Functions: login(),viewPrisonerInformation(), changePassword(),login() recordReleaseEvaluationInformation()	
	Function parameters: userName, password, releaseCaseEvaluation	

Table 61: CD Description release officer

Class		
Registrar Officer	Public: yes	
	Relationships	Associations: prisoner, room
		Composition: NULL
		Generalization: person
	Variables:- username: string, password: string, officerId: string	
	Functions: assignRoom(), schedule(), updatePrisonerInformation(), updateScgedule(), registerPrisonerInformation(), recordPrisonerTransferRequest(), recordPrisonerNotranRequest(), searchPrisonerInformation(), checkCourtAppointment(), recordRoom(), viewPrisonerInformation()	
	Function parameters userName, password, prisoner Information, room information, date	

Table 62: CD Description registrar officer

Class		
Discipline Officer	Public: yes	
	Relationships	Associations: prisoner
		Composition: NULL
		Generalization: person
	Variables:- username: string, password: string, firstName: string, lastName: string officerId: string	
	Functions: viewTransferrequest(), viewNotranRequest(), viewPrisonerInformation(), login(), changePassword(), recordNotranEvaluationInformation()	
	Function parameters:- userName, password, notran Evaluation points	

Table 63: CD Description discipline officer

Class		
Person	Public: yes	
	Relationships	Associations: address
		Composition: NULL
		Generalization: NULL
	Variables:- firstName: string, lastName: string, address: string, birthDate: date	
	Functions: NULL	
	Function parameters:- NULL	

Table 64: CD Description description for person

Class		
System Administrator	Public: yes	
	Relationships	Associations: registrar officer, discipline office, release officer, police officer, judge
		Composition: NULL
		Generalization: person
	Variables:- username: string, password: string, id: string	
	Functions: viewPrisonerInformation(), createAccount(), login(), changePassword()	
	Function parameters:- userName, password	

Table 65: CD description system administrator

Class		
Location	Public: yes	
	Relationships	Associations: prison
		Composition: NULL
		Generalization: NULL
	Variables:- city: string, streetAddress: string	
	Functions: NULL	
	Function parameters:- NULL	

Table 66: CD description for location

Class		
Prison	Public: yes	
	relationships	Associations: prison
		Composition: NULL
		Generalization: NULL
	Variables:- prisoner, location	
	Functions:- NULL	
	Function parameters:- NULL	

Table 67: CD description for prison

Class		
Room	Public: yes	
	relationships	Associations: NULL
		Composition: prisoner
		Generalization: NULL
	Variables:- roomNo: int	
	Functions:- Null	
	Function parameters:- Null	

Table 68: CD description for room

Class		
Block	Public: yes	
	relationships	Associations: NULL
		Composition: prisoner, room
		Generalization: NULL
	Variables:- blockNo: int	
	Functions:- NULL	
	Function parameters:- Null	

Table 69: CD description for block

Class		
Judge	Public: yes	
	relationships	Associations: report, prisoner
		Composition: NULL
		Generalization: prisoner
	Variables:- username: string, password: string	
	Functions:- viewPrisonerInformation(), addCourtDecisionInformation(), login(), changePassword()	
	Function parameters:- userName, password, court decision information	

Table 70: CD description for judge

Fig 39: ER diagram

3.2.1 ER Diagram Description

Entity	Attribute	Data type	PK	definition
Court	courtName	string	Yes	Name of the court
	Location	string	No	The location of the court
	courtCode	string	No	The code of the court either highcourt, first instance court, Supreme court

Table 71: ER diagram description for court

Entity	Attribute	Data type	PK	definition
Room	roomNo	Int	Yes	Room number
	floorNo	Int	No	Floor number

Table 72: ER diagram description for room

Entity	Attribute	Data type	PK	definition
Prison	prisonName	string	Yes	Name of the prison
	Location	string	No	The location of the prison

Table 73: ER diagram description for prison

Entity	Attribute	Data type	PK	definition
Court decision	Date	Date	No	The date in which the decision passed
	Decision_Id	string	Yes	Decision unification number
	Time	Date	No	The time in which the decision passed
	Case_Type	string	No	The case type that has been review
	Decision_Type	string	No	The decision type which is passed to the prisoner as punishment

Table 74: ER diagram description for court_decision

Entity	Attribute	Data type	PK	definition
System Administrator	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	User name	string	No	User name
	Password	string	No	password

Table 75: ER diagram description System administrator

Entity	Attribute	Data type	PK	definition
Registrar officer	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	User name	string	No	User name
	Password	string	No	password

Table 76: Registrar officer

Entity	Attribute	Data type	PK	definition
Discipline officer	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	User name	string	No	User name
	Password	string	No	password

Table 77: Discipline officer Table

Entity	Attribute	Data type	PK	definition
release officer	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	User name	string	No	User name
	Password	string	No	password

Table 78: Release officer Table

Entity	Attribute	Data type	PK	definition
police officer	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	User name	string	No	User name
	Password	string	No	password

Table 79: Police officer Table

Entity	Attribute	Data type	PK	definition
Judge	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	User name	string	No	User name
	Password	string	No	password

Table 80: Judge Table

Entity	Attribute	Data type	PK	definition
Visitor	firstName	string	No	First name
	lastName	string	No	Last name
	Id	string	Yes	Identification number
	phoneNo	string	No	Phone number or officer phone number
	Region	string	No	The region address of the visitor
	City	string	no	City address of the visitor
	Kebele	string	no	Kebele address of the visitor
	cellPhoneNo	string	no	The cell phone of the visitor

Table 81: Visitor Table

Fig 40: Logical mapping



3.4.3 Physical Database Design

Attribute	Data type	Length	Allow NULL	Default
Sex	nvarchar	(10)	No	
Birth_date	Nvarchar	(20)	No	
First_Name	nvarchar	(20)	No	
Last_Name	nvarchar	(20)	No	
Religion	nvarchar	(20)	No	
Id	Nvarchar	(20)	No	
Prisoner_Id	nvarchar	(20)	No	
Region	nvarchar	(20)	No	
City	nvarchar	(20)	No	
Kebele	nvarchar	(20)	No	

Table 82: **Prisoner Table**

Attribute	Data type	Length	Allow NULL	Default
Sex	Nvarchar	(10)	Not	
Cell_phone	Nvarchar	(20)	Null	
First_Name	Nvarchar	(20)	Not	
Last_Name	Nvarchar	(20)	Not	
Id	nvarchar	(20)	Not	
Phone_number	Nvarchar	(20)	Null	
Region	Nvarchar	(20)	Not	
City	Nvarchar	(20)	Not	
Kebele	Nvarchar	(20)	Not	

Table 83: **Visitor table**

Attribute	Data type	Length	Allow NULL	Default
Court Name	Nvarchar	(20)	Not	
Court Code	Nvarchar	(30)	Not	
Location	Nvarchar	(50)	Not	

Table 84: Court table

Attribute	Data type	Length	Allow NULL	Default
Room No	Int		Not	
Floor No	Int		Not	

Table 85: Block table

Attribute	Data type	Length	Allow NULL	Default
Prison Name	Nvarchar	(50)	Not	
Location	Nvarchar	(30)	Not	

Table 86: Prison

Attribute	Data type	Length	Allow NULL	Default
Date	Date	(20)	Not	
Decision Id	Nvarchar	(20)	Not	
Time	Date	(20)	Not	
Case Type	Nvarchar	(20)	Not	
Decision type	Nvarchar	(20)	Not	

Table 87: Court decision table

Attribute	Data type	Length	Allow NULL	Default
First Name	Nvarchar	(20)	Not	
Last Name	Nvarchar	(20)	Not	
ID	Nvarchar	(20)	Not	
User Name	Nvarchar	(20)	Not	
Password	Nvarchar	(20)	Not	

Table 88: Release officer table

Attribute	Data type	Length	Allow NULL	Default
First Name	Nvarchar	(20)	Not	
Last Name	Nvarchar	(20)	Not	
ID	Nvarchar	(20)	Not	
User Name	Nvarchar	(20)	Not	
Password	Nvarchar	(20)	Not	

Table 89: Administration Table

Attribute	Data type	Length	Allow NULL	Default
First Name	Nvarchar	(20)	Not	
Last Name	Nvarchar	(20)	Not	
ID	Nvarchar	(20)	Not	
User Name	Nvarchar	(20)	Not	
Password	Nvarchar	(20)	Not	

Table 90: Registrar Table

Attribute	Data type	Length	Allow NULL	Default
First Name	Nvarchar	(20)	Not	
Last Name	Nvarchar	(20)	Not	
ID	Nvarchar	(20)	Not	
User Name	Nvarchar	(20)	Not	
Password	Nvarchar	(20)	Not	

Table 91: Discipline Table

Attribute	Data type	Length	Allow NULL	Default
First Name	Nvarchar	(20)	Not	
Last Name	Nvarchar	(20)	Not	
ID	Nvarchar	(20)	Not	
User Name	Nvarchar	(20)	Not	
Password	Nvarchar	(20)	Not	

Table 92: Police officer Table

Attribute	Data type	Length	Allow NULL	Default
First Name	Nvarchar	(20)	Not	
Last Name	Nvarchar	(20)	Not	
ID	Nvarchar	(20)	Not	
User Name	Nvarchar	(20)	Not	
Password	Nvarchar	(20)	Not	

Table 93: Judge

3.4 User Interface

4.1 home page

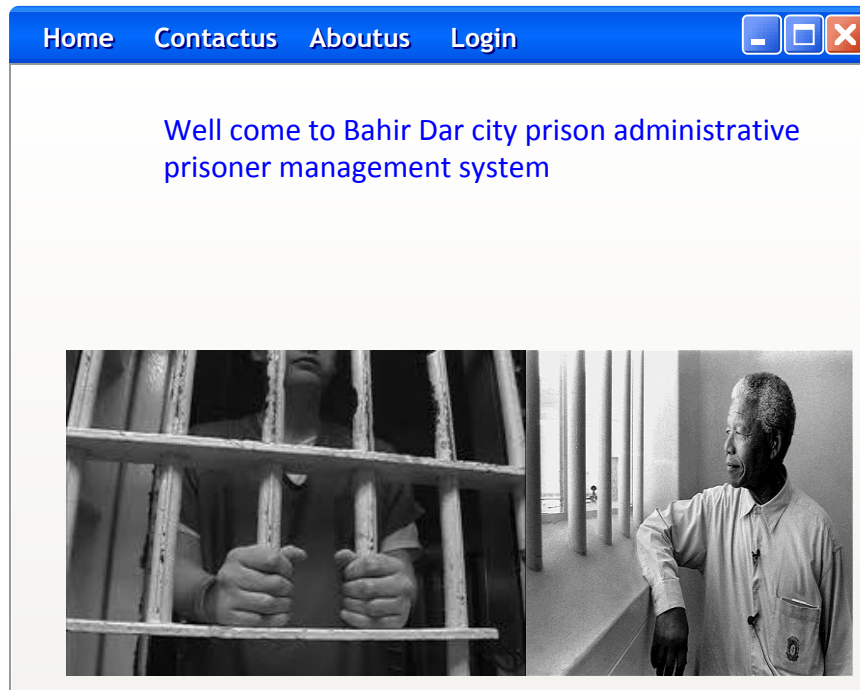



Fig 41: Home page

4.2 prisoner Registration Form

New Prisoner Registration Form



firstName

lastName

age

prisonerId

sex

region

wereda

kebele

city

roomNo

offenseType

height

weight

prisonName

dateOfRelease

timeOfJudgement

crimeCode

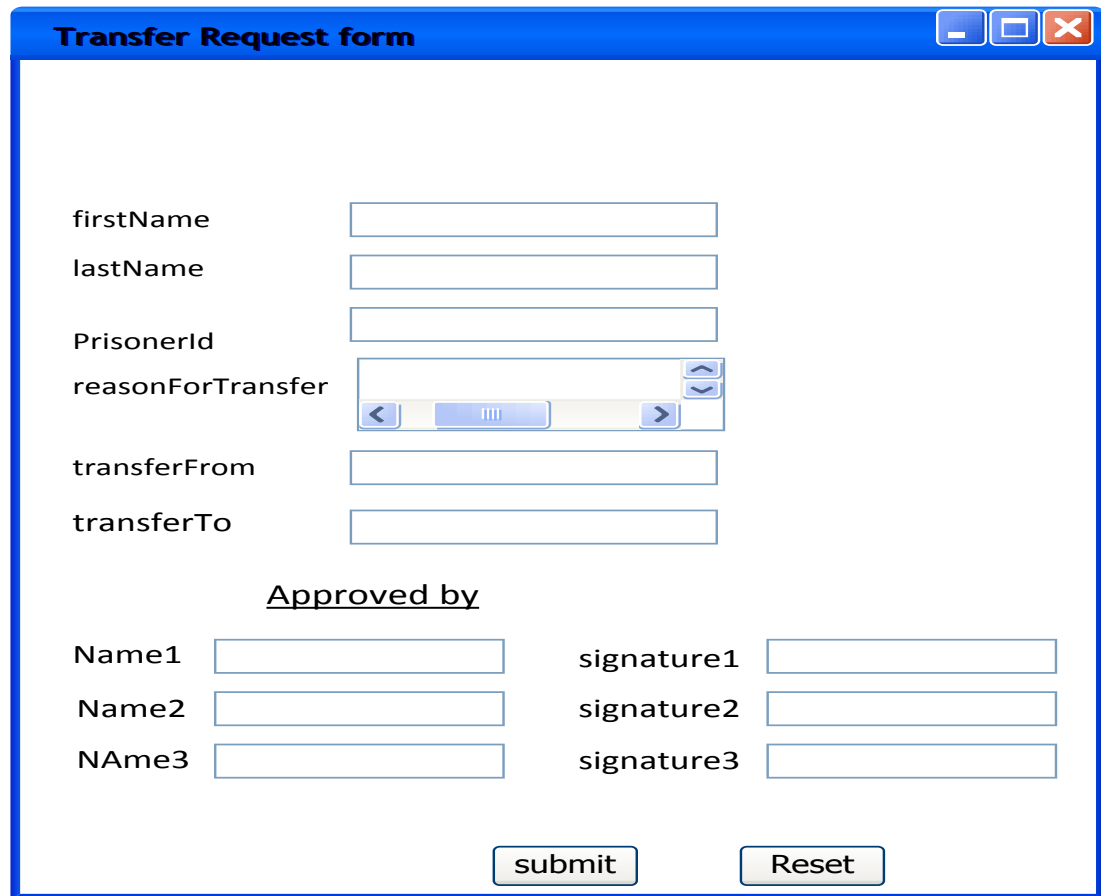
dateOfConviction

submit

Reset

Fig 42: prisoner registration form

4.3 Transfer Request Form



The image shows a software window titled "Transfer Request form" with standard Windows window controls (minimize, maximize, close) in the top right corner. The form contains several input fields and buttons. The fields are arranged in a vertical sequence: "firstName", "lastName", "PrisonerId", "reasonForTransfer", "transferFrom", and "transferTo". The "reasonForTransfer" field is a text area with a list box and navigation buttons. Below these fields is a section titled "Approved by" which contains three rows of input fields for "Name1", "signature1", "Name2", "signature2", "NAme3", and "signature3". At the bottom of the form are two buttons: "submit" and "Reset".

Transfer Request form

firstName

lastName

PrisonerId

reasonForTransfer

transferFrom

transferTo

Approved by

Name1 signature1

Name2 signature2

NAme3 signature3

Fig 43: Transfer request form

4.3 conditional release form

Conditional release request

firstName

lastName

prisonerId

sex

application

Approved by

Name1	<input type="text"/>	signature1	<input type="text"/>
Name2	<input type="text"/>	signature2	<input type="text"/>
Name3	<input type="text"/>	signature3	<input type="text"/>

Fig 44: conditional release Request Form

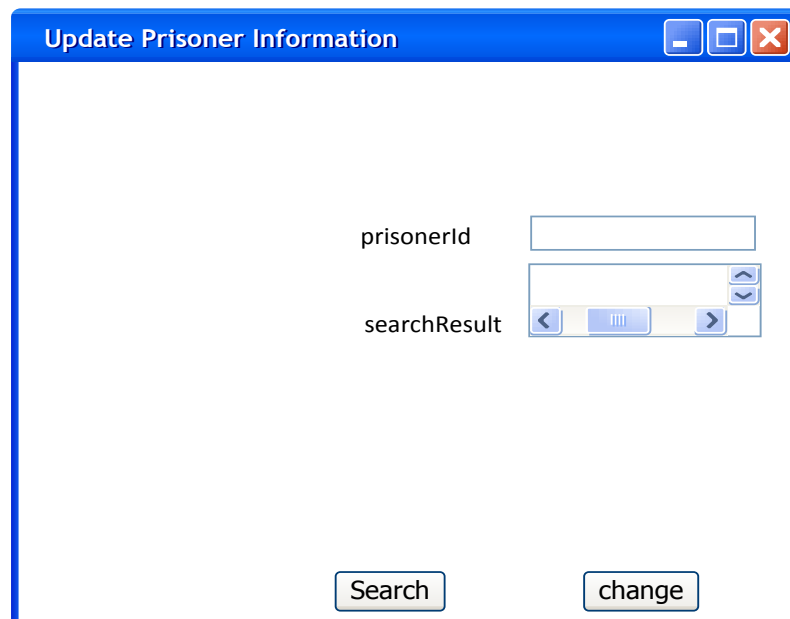
4.4 Search Form



The screenshot shows a window titled "Search Form" with a blue title bar and standard Windows window controls (minimize, maximize, close). Inside the window, there is a black and white photograph of a man in a light-colored shirt standing in front of a window with vertical bars. Below the photograph, there are two text input fields. The first field is labeled "prisonerId" and the second is labeled "prisonerName". At the bottom of the window, there are two buttons: "Search" and "Reset".

Fig 45: Search prisoner form

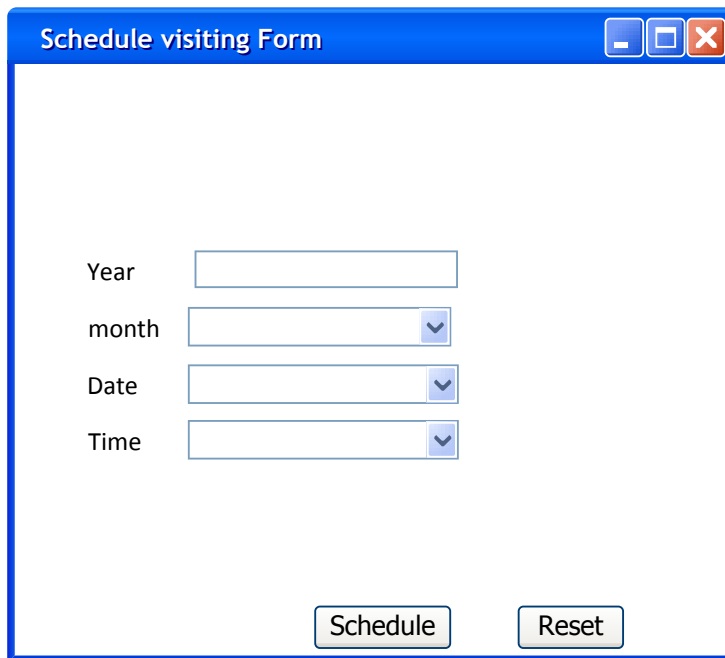
1.5 Update Prisoner Information



The screenshot shows a window titled "Update Prisoner Information" with a blue title bar and standard Windows window controls (minimize, maximize, close). Inside the window, there are two text input fields. The first field is labeled "prisonerId" and the second is labeled "searchResult". The "searchResult" field has a dropdown arrow on its right side. Below the input fields, there are two buttons: "Search" and "change".

Fig 46: Update prisoner information

1.6 Schedule Visiting Form



Schedule visiting Form

Year

month

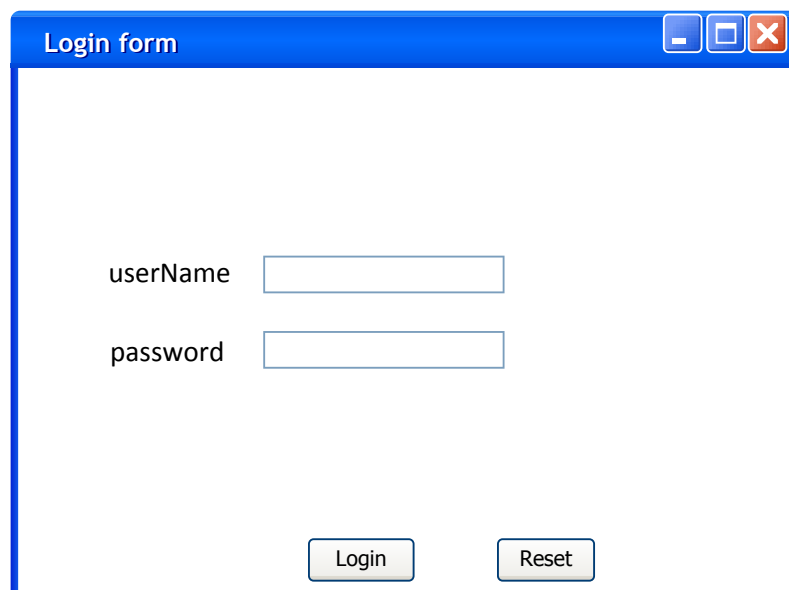
Date

Time

Schedule Reset

Fig 47: Schedule form

4.7 Login Form



Login form

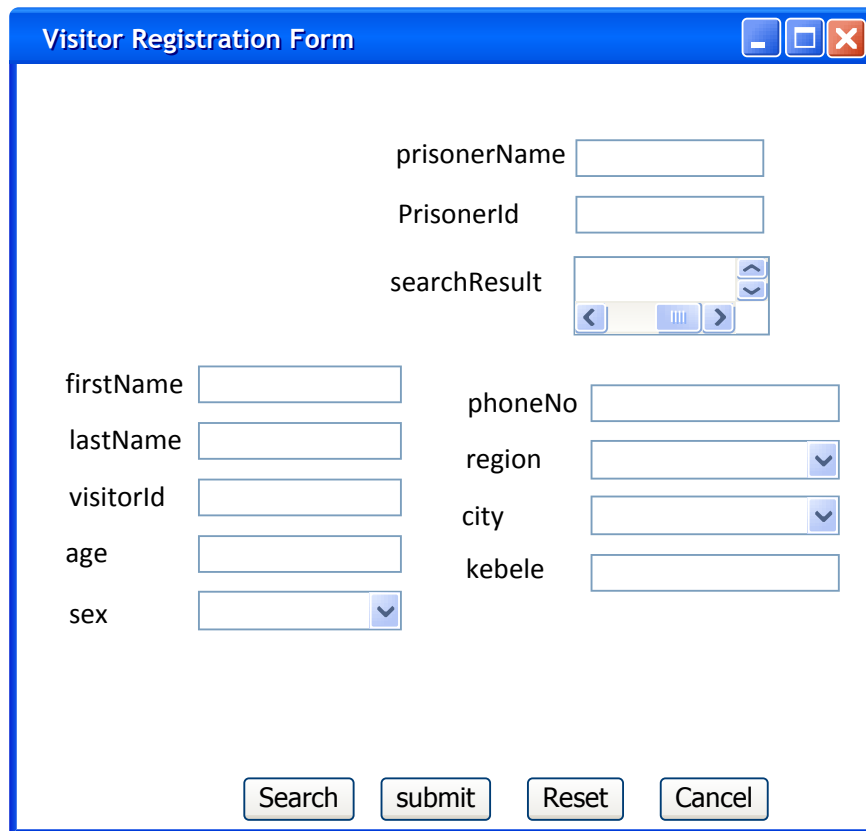
userName

password

Login Reset

Fig 48: Login form

1.7 Visitor Registration Form



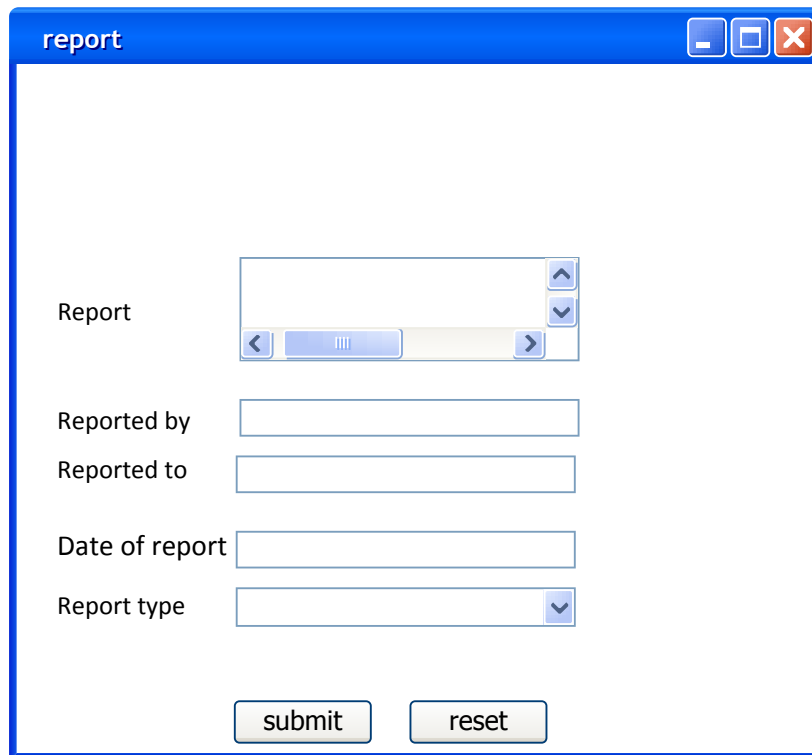
The image shows a software window titled "Visitor Registration Form". It contains several input fields for registration data, arranged in two columns. The fields are: prisonerName, PrisonerId, searchResult (with a list box icon), firstName, lastName, visitorId, age, sex (with a dropdown arrow), phoneNo, region (with a dropdown arrow), city (with a dropdown arrow), and kebele. At the bottom of the window are four buttons: Search, submit, Reset, and Cancel.

prisonerName	<input type="text"/>
PrisonerId	<input type="text"/>
searchResult	<input type="text"/>
firstName	<input type="text"/>
lastName	<input type="text"/>
visitorId	<input type="text"/>
age	<input type="text"/>
sex	<input type="text"/>
phoneNo	<input type="text"/>
region	<input type="text"/>
city	<input type="text"/>
kebele	<input type="text"/>

Search submit Reset Cancel

Fig 49: Visitor registration

5.0 Report form



The image shows a web browser window with a blue title bar containing the text "report" and standard window control buttons (minimize, maximize, close). The main content area is white and contains a form with the following elements:

- A label "Report" followed by a text input field with a vertical scrollbar on the right and horizontal scrollbars at the top and bottom.
- A label "Reported by" followed by a text input field.
- A label "Reported to" followed by a text input field.
- A label "Date of report" followed by a text input field.
- A label "Report type" followed by a dropdown menu with a downward arrow.
- Two buttons at the bottom: "submit" and "reset".

Fig 50: Report form

3.5 Algorithm Analysis

3.5.1 Register Prisoner Information

Method Name: register Prisoner Information ();

Begin

Variable Names: first Name, last Name, prisoner Id, region, wereda, city, kebele, offense Type, height, weight, date Of Release, time Of Judgment, crime Code, year Of Punishment, date Of Conviction, date Of Entrance, hair Color, face Color;

User fills all the variables on the form and clicks on submit button;

If (user fills correctly)

{

Successful message will be displayed;

}

If (user makes incorrect input)

{

Error message will be displayed and back to the form;

}

End

3.5.2 Register Visitor Information

Method Name: Register Visitor Information ();

Begin

Variable Names: First Name, last Name, visitor Id, age, sex, phone No, region, city, kebele;

First of officer made a search either by name or id No;

If (the search result successful)

{

Officer fills the visitor information on the available form and clicks on submit button;

If (correctly filled the input)

{

Successful message will be displayed from the system;

}

Else {

Error message is will be displayed and points back to the form to search again;

}

}

Else if (incorrect input has been made) {

Incorrect message will be displayed and it points back to the form;

}

End

3.5.3 View prisoner Information

Method Name: view Prisoner Information ();

Begin

This will be made by using search.

Inputs: name, id, and year of punishment;

User enters Prisoner Id;

If (input is correct) {

The system will display prisoner information with successful message.}

Else {

Error message will be displayed and points the user to the search box.}

End

3.5.4 Register Transfer Request

Method Name: Transfer Request ();

Begin

Variable Names: first Name, Last Name, prisoner Id, age, sex, reason For Transfer, transfer from, transfer to;

Based on the hard copy information prisoner filled, the registrar officer adds to the system.

If (input data filled correctly) {

The system will display successful message ;}

Else {

Error message will be displayed and points the user back to the transfer request form;

}

End

3.5.5 Record conditional release Request

Method Name= record conditional release Request ();

Begin

Variable Name: first Name, Last Name, prisoner Id, age, sex, conditional release Application;

Prisoner fills the hard copy form, then as transfer request done the officer will add the information to database.

If (input data is correct) {

The system will display successful message ;}

Else {

Error message will be displayed and points the user back to the form ;} End

3.5.6 Login

Method name =login

Begin

Variables: -Username, password

System user will enter username and password.

Read username & password, check will be on database.

If (user enters username and password correctly) {

The system checks the input on database and logged on.

The username and password saved on database and cookies.}

Else {

The system display error message and points the user back to login page ;}

End

3.5.7 Create account

Method name: Create account ();

Input: user name, password;

Output: successful message and user is granted;

Description: system administrator checks whether the user name and password is registered on database or not.

Begin

Connect to database

Call search user method

If there is invalid input

Try to enter another input

End If

Else if user id is not in the database

Account is not created

End Else if

Else

Account is successfully created

End Else

END

3.5.8 Search prisoner information

Method name=search prisoner information ();

Input: prisoner id, prisoner name;

Output: searched prisoner information;

Begin

Connect to database

If the input is correct

Prisoner information is displayed

End if

Else

Error message is displayed and points the user back to search box

End else

End

3.5.9 Change password

Method name=change password ();

Input: old password, new password;

Output: user has new password with successful message;

Description: the method is found in all the staffs (registrar officer staff, discipline officer staff, system administrator staff, release officer staff, police officer staff) and judge class and check the existence of old password and validity of new password.

Begin

Connect to database

If old password is incorrect

Try to enter the correct password

End if

Else if the new password is invalid

Try to enter correct password with the message password is not changed

End Else if

Else

Password is successfully changed

End Else **End**

3.5.10 View prisoner transfer request

Method name= view transfer request ();

Input:

Output: prisoner transfer request list

Begin

Connect to internet

Select view transfer request

The system display the transfer request list

End

3.5.11 View prisoner conditional release request

Method name=view conditional release request ();

Input:

Output: view conditional release request list

Begin

Connect to internet

Select view conditional release request

The system display conditional release request list

End

3.5.12 Generate report

Method name=generate report ();

Input: list of criteria

Output: report

Begin

Connect to internet

login

Link report method

System display report form

Fill the report form

If the input is filled correctly

The report is stored on the database

Else

Error message will display and points the user to fill the form again

End Else

End

3.5.13 Schedule

Method name= schedule visiting date and time ();

Input: date and time

Output: scheduled date and time

Begin

Connect internet

Click on schedule menu

The system display schedule form

 If User fills the form correctly

 The schedule is stored in database

 End if

Else

 Error message will occur and points the user to fill the form again

 End else **End**

3.5.14 Update the schedule

Method name=update schedule ();

Input: date and time that needs to be changed

Output: the updated schedule

Begin

 Connect to internet

 Login

 Click on update menu

 The system display the schedule

 User fills the data need to be modify

User click on update button

The modified data will store on database

End

3.5.15 Update prisoner information

Method name= update prisoner information ();

Input: the data need to be modify

Output: the modified

Begin

Connect to internet

Login

Click on update

The system display prisoner information

User changes the required data

If the validity of data is true

The updated data is stored in database with successful message

End if

Else

Invalid input message is displayed and points the user to fill the data again

End else

End

3.5.17 Check appointment

Method name= check appointment ();

Input:

Output: the appointment list

Begin

Connect to internet

Login

Click on appointment menu

If there is stored appointment in database table

Display the appointment list

End if

Else

No appointment list message

End else

End

3.5.18 Add court decision

Method name=Add court decision ();

Input: decision information passed to the prisoner

Output: prisoner information with the court decision passed

Begin

Connect to internet

Login

Click on register menu

Click on Add court decision information

System display the form

User fills the form

If input is valid

The information is stored in database with successful registered message

End if

Else

Error message will display and points the user to fill the form again

End Else

End

3.5.19 Record room

Method name=Record room ();

Input: **room no and block no;**

Output: stored room information

Begin

Connect to internet

Login

Click on register menu

Click on record room menu item

Room form is displayed

Registrar officer staff fills the room information

If input is valid

System store the data in database

End if

Else

Invalid input message will display and points the registrar officer staff to enter the data again

End else

End

3.5.20 Assign room

Method name=assign room ();

Input: room no and block no

Output: prisoner with room information

Begin

Connect to internet

Search room

System display unreserved room

Registrar officer staff assigns room

If prisoner assigned room information

System display successfully assigned message

End if

Else

Error message is occur

End else

End

References

1. Ramez, E., & Shamkant , N. B. (2004). *Fundamentals of Database Systems* (Fourth ed.).
2. Scott, W. A. (2004). *The Object Primer* (Third ed.). New York: Cambridge University Press.
3. Systems, O. (n.d.). *functional-requirements*. Retrieved January 04, 2014, from www.ofnisystems.com: http
4. Systems, O. (n.d.). *user-requirement-specifications* . Retrieved January 04, 2014, from [www.ofnisystems.com/](http://www.ofnisystems.com/services/validation/userrequirement-specifications/): http://www.ofnisystems.com/services/validation/userrequirement-specifications/
- 5 . wikipedia. (n.d.). *Sequence diagram*. Retrieved January 04, 2014, from [http://en.wikipedia.org](http://en.wikipedia.org/wiki/Sequence_diagram): http://en.wikipedia.org/wiki/Sequence_diagram

Appendix

Appendix I: interview question

Appendix II: observation of existed system

Appendix III: Prisoner Registration Form