



**Wolkite University**  
*We Strive for Wisdom!*

**COLLEGE OF COMPUTING AND INFORMATICS**

**DEPARTEMENT OF INFORMATION TECHNOLOGY**

**INDUSTRIAL PROJECT I**

**Project title: Wolkite University Department Selection and Student Placement System**

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**WOLKITE UNIVERSITY**

**COLLEGE OF COMPUTING AND INFORMATICS**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**Title page: Wolkite University Department Selection and Student  
Placement System**

**SUBMITTED TO DEPARTMENT OF INFORMATION TECHNOLOGY  
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE  
OF BACHLER OF SCIENCE IN INFORMATION TECHNOLOGY**

**BY**

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## DECLARATION

This is to declare that this project work, which is done under the supervision of Mr. Moti Bacha and having the title:

**Wolkite University Department Selection and Student Placement System**

is the contribution of:

1 Megabiw Molla

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No part of the project work has been reproduced illegally (copy and paste) which can be considered as Plagiarism. All referenced parts have been used to argue the idea and have been cited properly. We will be responsible and liable for any consequence if violation of this declaration is proven.

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Full Name

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## Approval Form

This is to confirm that the project report entitled Department Selection and Student Placement System for Wolkite university submitted to **Wolkite University, College of Computing and Informatics Department of Inforamtion Technology** By: Megabiw Molla, Mekibib Lake, Melaku Bekele are Approved for submission.

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## **Acknowledgment**

First of all we would like to express our internal and endless thanks to Almighty God who helped us in every aspects of our life and made us one of the participants in this final project. Next we would like to express our most gratitude to our advisor Mr.Moti Bacha for genuine guidance, support and valuable corrective advice for his consideration and help which has been a valuable to us in carry out our Project documentation. He was both our advisor and our source of information. Finally thanks to our friends, who have helped and given us suggestions and idea supports throughout the project.

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## **ABBREVIATIONS AND ACRONYMS**

AMSS: account management subsystem.

BR: business rule.

DSSPS: department selection and students placement system.

OOSAD: object-oriented software analysis and design..

PMSS: placement management subsystem.

RMSS: registration management subsystem.

SADM: Systems Analysis & Design Methodology

SPMSS: selection period management subsystem.

UC: use case.

UI: use interface.

UML: unified modeling language.

## **ABSTRACT**

The current department selection and placement system is manual system. The current system exhibits manual process for the selection which students use paper to select the Department. Relatively this information lacks accuracy. The automated placement system helps students to view their placement but obviously the webpages which the site consists are not working correctly. The proposed system is developed with the aim of solving this problems and adding additional features for the department placement system. We observe how the current website operates and also how the manual system done based on this the proposed systems improves all this process and makes all the process automated. In order to implement this computerized system the proposed system uses PHP programing language as front end and MYSQL as backend. Generally the proposed computerized Department placement system provides services in more effective, user friendly and ease of use.

# CHAPTER ONE

## 1. INTRODUCTION

Online department placement system is a total management and informative system, which provides the up-to date information of all the students in a particular department. Placement helps the colleges to overcome the difficulty in keeping records of hundreds and thousands of students and searching for a student eligible for recruitment criteria from the whole thing. It helps in effective and timely utilization of the hardware and the software resources. The project we have prepared online department placement in WKU also aimed to solve some problems occurred in the Wolkite University. The University performs manually for the department placement of new students, which has some consuming time, resource and requires much employer's power and also reserving the rooms that used. So, to reduce these short comes we have proposed a project called Online Department Placement with after the automation of this system both students and our University are beneficial. Department selection and placement is one of major task for the director. Our project is coming up with the idea of Department selection and placement, because we found it sensitive area to deal with. Since students enter into university and they want to know how this Departments look like. This project takes a huge place. Firstly it keeps students from random choice but in Reality Department selection is totally automated for the sake of fairness and quality. Since the major objective of Department placement is to identify qualified professionals before they complete their education. This project is going to make an advantage on the minds of the students by providing different Department information on the system. By implementing all this it will provide a way for quality, widening student's awareness about Department selection (1).

## **1.1 Background of the organization**

Wolkite University (WKU) is one of the third generation higher institutions that have been founded in 2004 E.C. It is established for the purpose of providing and promoting higher education learning, research, and outreach programs in the country to ensure the realization of the national vision of reaching the level of middle income countries by 2012. The University is located in the Southern Nation Nationalities Regional State, in Guraghe zone, 158 km southwest of the capital city, Addis Ababa, on the way to Jima. In November 2001 the late prime minister, his Excellency Mr. Meles Zenawi, laid the foundation stone of the University in a plain landscape which is quite ideal for academic pursuit. It is situated at Gubreye sub-city, 14 km away from Wolkite town, of the gubreye-butajira road. The major link road to the University is a direct route to Wolkite-Jimma, Wolkite-Hossana and wolkite-Butajira (2).

## **1.2 Statement of the problem**

During requirement gathering we have notice that the colleges have done everything manually. They also manage student files manually. It is highly error prone and tedious work for the employees to handle the data recording process manually. And it's also time consuming. Sometimes there is also a situation that the data or file may be lost (3).

We realize the following problems as indication to the problems of the existing system.

- Wastage of resource during selection by paper.
- After selection there may be errors like the department they choose may be disordered without their knowledge, this is highly offensive for the students when they check their placement.
- Work load of employees.
- Wastage of time during select department by paper.
- Repetition of work like making students to select department.
- Inaccuracy of information (loss of data or information of students)
- The department placement and registration process are not processed on time.
- Redundant flow of student information.

## **1.3 Motivations**

In Wolkite University Department placement has many problems, Such as storing the student information is only done manually whereby the records of all student's department information is allocated and recorded in a piece of paper or spreadsheet. The group is motivated in order to solve the problems in manual department placement system and automate the system. We are interested to maintain the department placement easily by computer system and reduce paper work.

## **1.4 Objectives of the project**

### **1.4.1 General objective**

The main objective of this project is to design and implement online department placement for WKU.

### **1.4.2 Specific objectives**

- To study the existing system of department placement system.
- To design the interactive user interfaces.
- To design and develop database for the system.
- To implement the designed proposed system.
- To evaluate and test the proposed system.
- To deploy the system.

## **1.5 Significance of the project**

The main significance of this project is to provide better services for students in Department placement. There are many problems in association with this process as described in the above statement of problem so this system will work with in assumption of this problem and how to solve that. Here is some of significance.

- It avoid paper which provided by students to select their college and department.
- For the student to choose what they want fairly without any offense.

- For the WKU reduce the work load of employees, Work load of like matching and re matching student choice since it is automated.
- The system can save time for the student and employees.

## **1.6 Beneficiaries of the project**

- For the university:- that use to reduce employee work load, reduce paper work and time consuming,
- For the student: - the students are use to better understanding about choices the department and students have full confidence about select the department. Help option are available for better understanding of the students.
- For the team member: - the team member or developer have get moral sastfaction and have get money.

## **1.7 Scope of the project**

### 1.7.1 Scope of the project

Our project has a big scope to do. Students can access previous information about placement. We can stores information of all students. Our university can access their information. Notifications are sent to students about the university.

- Allow students to select their choice.
- Allow students to see their placement online by using the system.
- The student views their departments online.
- Activate and deactivate student user name and password.
- Allow students to enter the system by using their e-mail address and password.
- Post their orientations on line for students.

## **1.8 Limitation of the Project**

Due to our project huge scope as well as time and resources we have the following limitation in our system.

- ✚ Our system cannot send SMS message.
- ✚ Our system cannot handle across college request (means request must be with in college).

- ✚ Dynamically placing student (placing student in new department cannot be possible before maintenance).

## **1.9 Feasibility Analysis**

### **1.9.1 Technical feasibility**

Technical feasibility study compares the level of technology available in the software development firm and the level of technology required for the development of the product. The level of technology consists of the programming language, the hardware resources, other software tools.

The proposed system implement by using the following tools:

- ✓ Uniform servers (contain My SQL, PHP, and WAP or ZAMP servers)
- ✓ HTML, JAVA SCRIPT,CSS and PHP, Dreamweaver, Notepad<sup>++</sup>Editor
- ✓ We need also the internet browser like Mozilla Firefox, Google chrome, internet explorer
- ✓ 512 MB Minimum RAM
- ✓ 80 GB Minimum hard drive

### **1.9.2 Economic feasibility**

Economic feasibility identifies the financial benefit and cost association with the development project. When we see after the end of our project, WKU students use the site to know department placement online without consuming the resource and time, this means the proposed system reduce the cost when the colleges waste the resource to produce the new student welcome ceremony, preparing department placement form using paper and other electronic devices like: printer, copy machine.

### **1.9.3 Operational feasibility**

Our project creates a good environment towards the user of our system because of the existing system is note suitable for students and also staff member

Causes of the proposed system is operationally feasible

- ✓ The first case of the proposed system is operationally feasible, WKU have not department placement and registration systems for new students of the University without the manual system of the college
- ✓ The proposed system will be acceptable by the colleges because it solves the main problems of the college and decrease the wastage of the resource and time of the college.

### **1.9.4 Schedule feasibility**

The economic feasibility study evaluates the cost software development against the ultimate income or benefits get from the developed system. There must be scope for profit after the success completion of the project

## **1.10 Methodology and tools**

### **1.10.1 Data collection methodology**

In this study primary data was gathered. The primary data was collected through interview and observation of worker and manager.

#### **Observation**

- We observe what limitations are there in the current system.
- We observe how student select department by paper.

#### **Interview:**

- The project team was gathered information by interviewing the College's coordinator or manager about the existing manual department placement system and some of the department employees. The questions of the project team were prepared open ended questions. The project team was chosen this type, because we could get detailed information about the current system and also not to limit the available responses for the question. To gather requirements, form the freshman student coordinator.

### **1.10.2 System Analysis and Design Methodology**

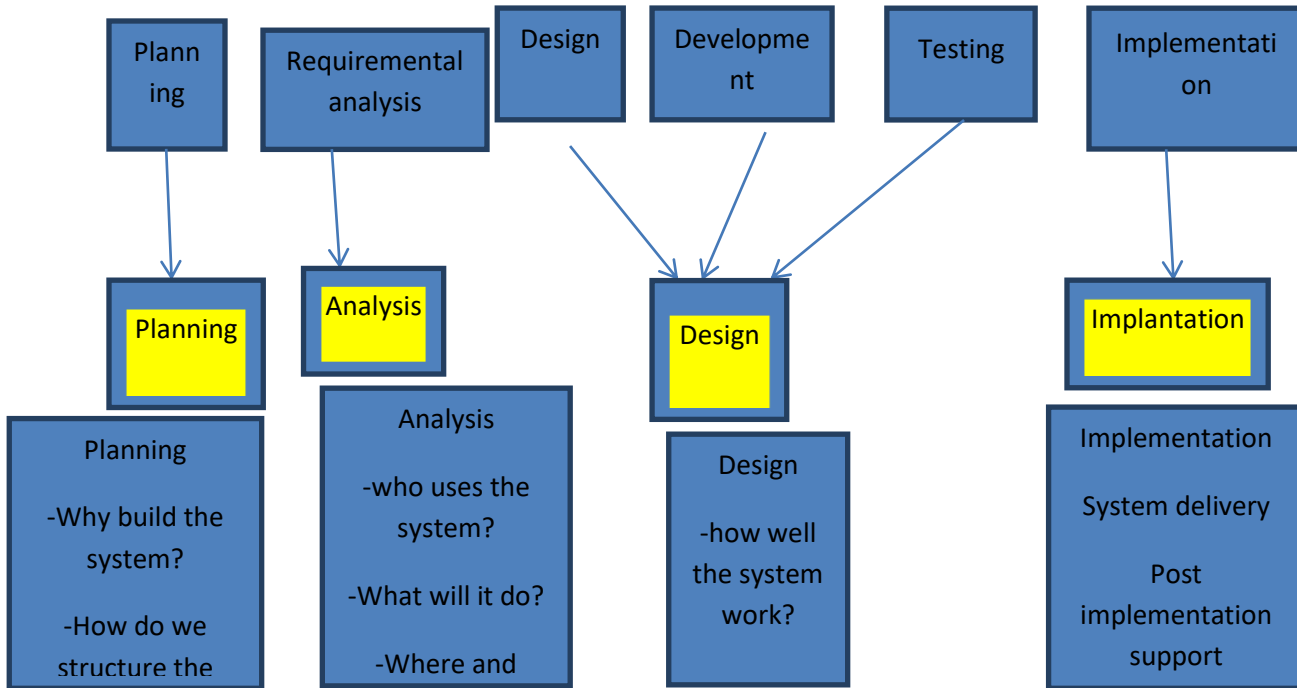
**Systems Analysis & Design Methodology (SADM)** – is recommended collection of phases; procedures; rules; techniques; tools; documentation; management, and training to improve the quality of a software development effort.

The team has agreed to use **RAD** (Rapid Application development) because.

- Greatly reduced manual coding.
- Early visibility
- Increased user involvement
- Possibly reduced cost
- Shorter development cycles
- Standardized look and feel

The life cycle of the Systems development is the process of developing online department placement systems through successive phases in an orderly way.

## System Development Life cycle Phases



## System Development Life Cycle Participant

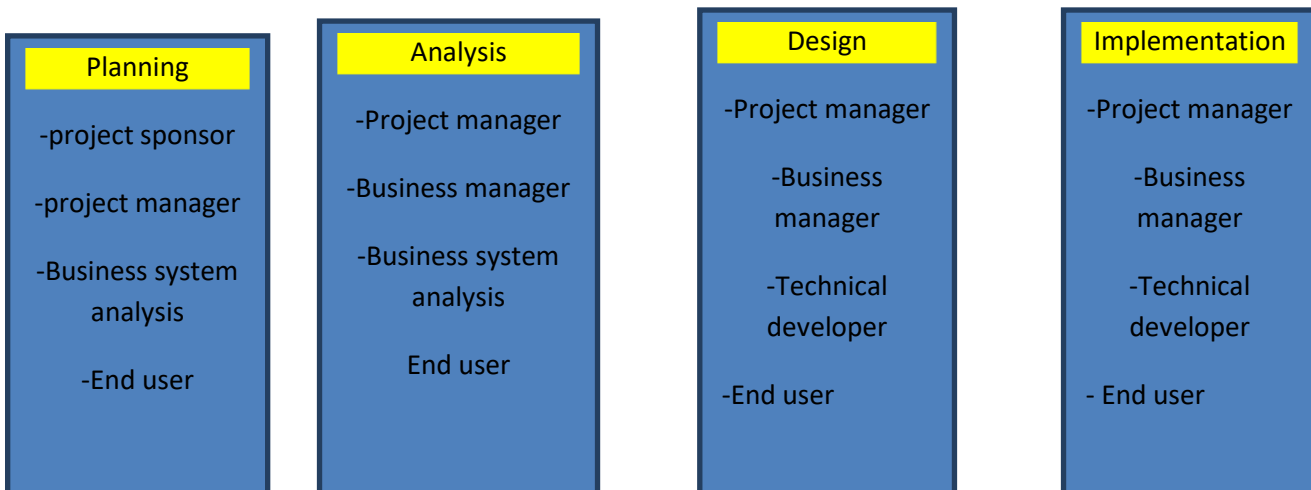


Figure 1 System analysis and design life cycle.

### **1.10.3 System Development tools**

These system development tools are the big deal of our project since they serve as software tools as well as hard ware tools.

#### **1.10.3.1 Hardware Requirement**

To develop the system we use different hardware tools. Those are:

- Computer with 2GB and above RAM.
- Computer with 80 GB hard disk.
- Pc: Documentation and implementation.
- Rewritable CD: for storage.
- Phone: for communicate with team member and adviser.
- 8Flash disk: for storage our documents.
- Photograph camera: for image input.
- Printer: for displaying hard copy.

#### **1.10.3.2 Software Requirement**

To develop the system we use different software. That software's are:

- PHP : Server side scripting
- HTML: To write the code
- Microsoft word 2010: For any word processing and prepare documentation.
- Microsoft PowerPoint 2010.To introduces Presentation.
- Operating System Microsoft Windows
- *EDRAW* :for design diagrams
- Adobe Photo shop C6x32
- Browser: Mozilla, Firefox.
- Micro soft Visio: for design diagram XP.

### 1.11 Task and Time Schedule

Time evaluation is the most important consideration in the development of project. The time schedule required for the development of this project is very important since more development time effect machine time, cost and cause delay in the development of the systems.Regarding our current source, technology and our ability the time that takes to complete this system successfully will be. (6 months.)

Tasks				Months				
No	Steps	Feb15- feb-18	Mar10- Mar16	Mar 21- Apr-05	Apr-06 – Apr-16	Apr 19- Apr-28	Jun-15 – Jun30	Aug-9
1	Data collection and Requirement							
2	Proposal							
3	System analysis							
4	System design							
5	Documentation							
6	Testing							
7	implementation							
Total	Overall project time							

**Table 1 Time Schedule**

## 1.12 Project Budget (cost break down estimation)

The team members have classified the cost for the proposed system into onetime and recurrent cost

No.	Name	Quaintly	Unit price in birr	Total
1	Purchase of flash disk (4GB)	2	180.00 birr for one	360.00 birr
2	Purchas of CD-RW	2	30.00 birr for one	60.00 birr
3	Purchase of CD-R	3	10.00 birr for one	30.00 birr
4	Purchase of stationary paper	2 packet	150.00 birr for one	300.00 birr
5	Pen	15	3.00 birr for one	45.00 birr
6	Computer Hardware	1hp laptop computer	14,000 birr for one	14,000 birr
7	Pencil	4	1.50 birr for one	6.00 birr
<b>Total cost =14801.00 birr</b>				

**Table 2: cost cash for materials**

## 1.13 Team Composition

The project team composed of 3 members, one group leader, one v/ leader, and one member. Problem solving is group activity. Decision on problem and approach are made by group agreement, which is much better than individual decision.

No	Member Name	Responsibility	Email or phone no
1	Mekibib Lake	Documentation	<a href="mailto:Lakemekibib123@gmail.com">Lakemekibib123@gmail.com</a>
2	Megabiw Molla	Programmer	<a href="mailto:megabiwmolla19@gmail.com">megabiwmolla19@gmail.com</a>
3	Melaku Bekele	System Designer and analyzer	<a href="mailto:melakubekel12@gmail.com">melakubekel12@gmail.com</a>

**Table 3**Team composition.

## CHAPTER TWO

### 1.1 EXISTING SYSTEM

#### Existing System Description

Wolkite University receive new student that comes from different countries placed by Ethiopian minister of education on Wolkite University in different field. All lists of students send for Wolkite University by using the university email address after that the university is prepare itself to place the students in to all perspective departments. The university prepare the welcome ceremony for all new students that placed on Wolkite university, normally the list of the students that placed to Wolkite university are came from the MoE, after the students comes, the department head of every colleges are given orientation to new student for about their department in details, after the end of orientation the department selection form will be distributed for all students. In the existing system student department placement is manually in the paper. Since the selection is in paper the students have no confidence about them choose and students only able to see where they are placed. In this chapter of our project we try to define how existing system performs activities and also how to perform the tasks in the manual system. The main registrar imports the students file from the minster of the education and perform the placement in addition, accept course breakdown from department and preparing registration from the slip. The colleges accept the students list from the registrar by importing excel, give orientation for students (4).

#### 2.2 User existing system

The Existing system has some user requirements they are

Main registrar: the Main registrar of the system are control the all work flow of the system

- ✓ It has high priority

Department: department has its own work

- ✓ It has medium priority

Student: students is one of the main part of the system

- ✓ It have high priority

## 2.3 Major function of the existing System

Main registrar:

- ✓ Manage all activity: main registrar allow to manage all activity, work in the system
- ✓ Post information: main registrar post information (notice), like department placement date.
- ✓ Place student: student placed process work by the system but the Main registrar give the command for the system to placed student after the end of the all student select their department.
- ✓ Create account: main registrar are create account for all departments
- ✓ Give orientation for student: the departments give the orientation for the student by posting the text or video message on the system home page.
- ✓ View report: departments view the report that, the reports like list of the student placed their departments.
- ✓ Modify account: departments have their own account to login the system, based on these departments modify their account.
- ✓ View registered student: the department head also view the list of student registered Students.
- ✓ View the department placement date and orientation about all departments: the student view the orientation for about all departments available in the colleges before choose their departments and the student also see department placement date.
- ✓ Choose their departments: the student selects their departments based on their interest.

## 2.4 Forms and Other Documents of the Existing System

Sample of the Form distributed for New Students to select the department:

**Wolkite University**

### Department selection form for First Year Student

Name \_\_\_\_\_

Student ID Number \_\_\_\_\_

Result \_\_\_\_\_

Choices:

1. computer science
2. Information systems
3. information technology
4. software engineering
5. chemical engineering
6. electricalengineering
7. mechanicalengineering
8. foodengineering
9. hydraulicengineering
10. physics
11. biology

Please identify your choice either by writing the number associated to each department or the name of the department for all choices stated below.

Note that you should not choose the same department more than once.

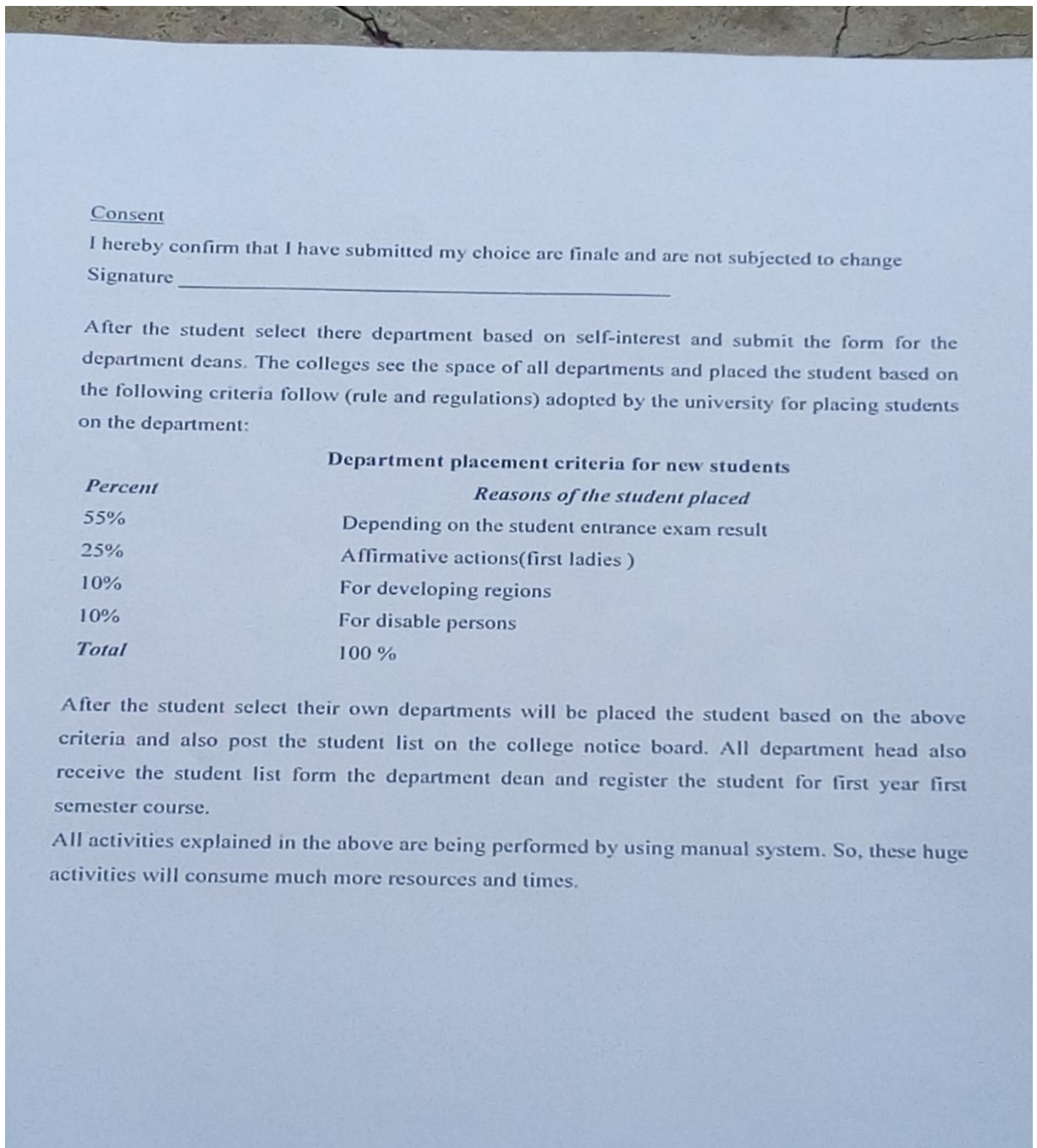
1<sup>st</sup> choice = \_\_\_\_\_

2<sup>nd</sup> choice = \_\_\_\_\_

3<sup>rd</sup> choice = \_\_\_\_\_

4<sup>th</sup> choice = \_\_\_\_\_

5<sup>th</sup> choice = \_\_\_\_\_



**Figure 2 Forms and Other Documents of the Existing System**

## **2.5 Drawback of existing system**

We mention above the existing system working processes. From the above analysis in the existing system there are some problems in different ways. Such as in:

- ✓ Complexity problem: - to the main registrar for investigation of the whole student department choices to preserve the student selection order and to match the required number of students in each department is complex.
- ✓ Economic problem: -to prepare the student placement form needs much copy of papers and the cost of ink is high when comparing to the proposed system no need of these much paper and ink.
- ✓ Tiredness: - manually checking the student department choices is very exhaustive at college (5).

## **2.6 Business Rules**

In this system there are many rules to be applied

BR#1: The data of student between the college dean and the main registrar must be the same

BR#2: student need to select department on-line

BR#3: system place students in their respective department based on the criteria involved in the system.

BR#4: student view his department and need to attend for the class when class start day is posted on the site.

## **CHAPTER THREE**

### **3. PROPOSED SYSTEM**

After observing and identifying the problems of the existing system, we are planning to solve the problem of the university by developing the system called department placement system.

The proposed system should solve the problem of the existing system and must be advanced. So, the key solution to avoid all the problems mentioned previously is to find a unified way to solve the problems mentioned on the problem of the existing system. The only unified way is change the manual systems of the existing system of the university department placement and registration system in to web based(computerized) that means the student will be use the system by using computer with internet connections. Our projects are solving all the problems mission on the problems of existing system (6).

#### **3.1 Functional Requirements**

The main functionality of the proposed systems is ability of placed the students on their department for all students. Functional Requirements are those that refer to the functionality of the system, i.e., what services it will provide to the user. It is Statements about service that the system should provide, and also how the system should react to particular inputs and how the system should behave in particular situations.

The main functionalities of this system are:

- The main registrar will create the users and the users will use the accounts created by main registrar.
- When the user enters into his respective page he can update his details, and the details are to be approve by the main registrar. the system helps main registrar to import student.
- The system helps the college dean to manage departments.
- Enable students to view their placement.
- Enable main registrar to post news.
- Enable student to send request to the Department head.

- The system helps in effective and timely utilization of the hardware and the software resources.
- The system shall allow will provide the sophisticated data management i.e., it reduces data redundancy and inconsistency.
- Enable students to View Notification
- Enable department Head to Update Department information
- Update profile
- Enable students to Select Department
- Enable main registrar to activate selection period
  
- Enable student Change password
- Enable college dean to Add Department
- **Enable** college dean to Post News

### **3.2 Non-functional Requirements**

Non-functional (supplementary) requirements pertain to other information needed to produce the correct system and are detailed separately. Constraints on the services or functions offered by the system such as timing constraints, constraints on the development process, standards.

The non-functional requirement are concerned with security, performance, usability, maintainability, reliability, modifiability, efficiency, portability (across operating systems) testability, understandability.

#### **3.2.1 User Interface and Human Factors**

The proposed system describes the logical characteristics of each interface between the system and the users. This may include any graphical user interface (GUI) standards or product family style guides, screen layout constraints, standard buttons and functions that will appear on every screen, error message display standards, and so on. So, our system does these all functions in easy and efficient way. In other words, the system is user interactive.

### **3.2.2 Hardware Consideration**

The proposed system considers computer hardware without any error and run on different machines like desktop, laptop etc.

### **3.2.3 Security Issues**

The system must be secured and protected by only the top management levels of the university. Every user of the system is not allowed to access data or modify all files in the database without having correct user name, password and their security key. Each member can manipulate the necessary operation that allowed for them on the database.

In addition to these, since the system runs on the internet environment, there are a lot of security treat on the system. Therefore, the system should be secure from the malicious and hackers by developing security key. The system should have a security privilege that secures the system. And also there must be a physical security hat secures (especially) the server computer. That means the server computer is only allowed for the server admin. The admin of the system change yearly.

### **3.2.4 Performance Consideration**

The system performs different operations when data types are numeric, text, date and time. And it also gives an error messages when an authorized person tries to perform some operation without entering inputs, it has validations. The end user computer should have medium processor and the server computer should have large processor. It's measured by its speed of processor.

### **3.2.5 Error Handling and Validation**

The system will check user inputs to the system to handle error. It handles and show error by displaying the error message when the user enters invalid input.

### **3.2.6 Quality Issues**

One of the qualities of the proposed system is its accuracy so that only accurate information is provided to the users so they will be satisfied by correct information at the right time.

### **3.2.7 Backup and Recovery**

The system should be holding a backup of the data. The system should be available any time without interruption back. The system should have back up using external hard disk. The backup is taken weekly.

### **3.2.8 Physical Environment**

The system expected to withstand external problems like when the network connection fails or slow the system must withstand the network frailer, and if the hardware crashed the system must be back-up the file that the user use.

### **3.2.9 Resource Issues**

The system has a resource that requires having the following performance characteristics

- ✓ The server and the client must have memory space.
- ✓ The server and client must have process speed

### **3.2.10 Documentation**

The system has well defined document which helps to easily maintain the system and we will also prepare short and precise help file on how to use the system for the system users.

## CHAPTER FOUR

### 4. SYSTEM ANALYSES

System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. Analysis specifies what the system should do. (7)

#### 4.1 System Model

System modelling is the process of developing abstract models of a system, with each model presenting a different view or perspective of that system.

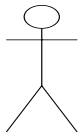
##### 4.1.1 Use Case Model

Use case model includes different actor specifications and their respective description it deals with modelling of the users and how they interact with the system. The next descriptions are concerned with this kind of processes.

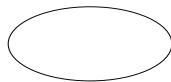
Use case is specifying the actions and interactions between actors and systems.

##### Use case components:

- ❖ **Actor:** is a person, or external system that plays a role in one or more interaction with the system. And represented with:



- ❖ **Use case:** describes a sequence of actions that provides something of measurable value to an actor and is drawn as a horizontal ellipse.



- ❖ **System boundary:** indicates the scope of the system project. Anything within the box represent functionalities in side in scope. It can be represented as follows:



<u>&lt;&lt;Include &gt;&gt;</u> →	Include	-an include relationship specifies how the behavior for the inclusion use case is inserted in to behavior defined for the base use case
← <<Extend>>	Extend	-an extend relationship specifies how the Behavior of the extension use case can be Inserted un to the behavior defined for the base Use case.
→	Dependency	-is a relationship that signifies that a single or a set of a model element requires other model elements.
← - - - - -	Generalization	-is a taxonomic relationship between a more general Classifier and more specific classifier. (8)

## Main Registrar

- Manage account
- Place students
- Manage colleges
- view news and post news
- Change profile
- Change password
- Activate selection period
- Modify selection period
- Update Profile
- Import student

## College dean

- View Placement
- Update Department
- Add Department
- Post News
- View News
- Update Profile

## College Registrar

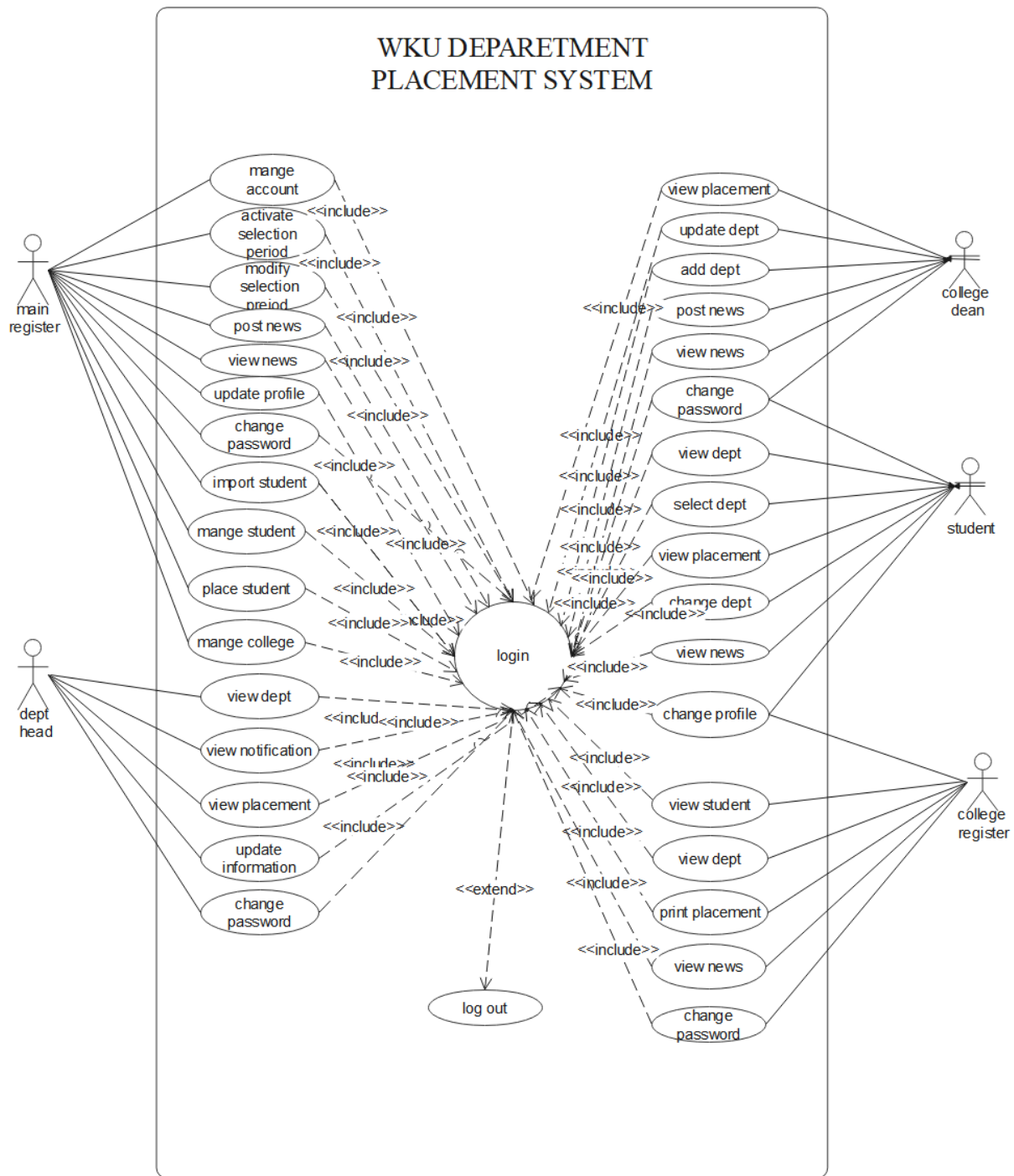
- View student status in the collage
- Change profile
- View Department
- View placement

## Department Head

- View student
- View Notification
- View placement
- Update Department information
- Update profile

## Student

- View Department
- Select Department
- View news
- Request
- View placement
- Change password



**Figure 3: use case diagram.**

#### 4.1.1.2. *Use case description*

**Table 4: login use case description.**

<b>Use case id</b>	UC01	
<b>Use case name</b>	<b>Login</b>	
<b>Actors</b>	Student, collage dean, main registrar, college registrar, department head.	
<b>Description</b>	All actors must be login to system in order to accomplish their tasks	
<b>Pre-condition</b>	User must have valid username and password	
<b>Flow of event</b>	<u>Actor action</u> <b>step1.</b> User open the system. <b>step3.</b> User click login link. <b>Step5.</b> User fill username and password then click login button	<u>System response</u> <b>step2.</b> System displays login link. <b>Step4.</b> System display login form. <b>Step6.</b> The system verifies account form database. <b>Step7.</b> System display user page. <b>Step8.</b> Use case end.
<b>Alternative of action</b>	If user entered an invalid username and password The system displays invalid user name and password warning message.	
<b>Post-condition</b>	The login success and go to user page.	

**Table 5: create account use case description.**

<b>Use case id</b>	UC02	
<b>Use case name</b>	<b>Create Account</b>	
<b>Actors</b>	Main registrar	
<b>Description</b>	Main registrar create accounts	
<b>Pre-condition</b>	Main registrar must know required data for creating account	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Main registrar click on login link.</p> <p><b>Step3.</b> Main registrar fill username and password and click login button.</p> <p><b>Step5.</b> The Main registrar click on manage account link, then click on create account link.</p> <p><b>Step7.</b> The Main registrar fill data and then click on create button.</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page for Administrator.</p> <p><b>Step4.</b> System verify account from database and login to admin page.</p> <p><b>Step6.</b> The system displays account page.</p> <p><b>Step8.</b> The system check validity of data and create account.</p> <p><b>Step9.</b> The use case end.</p>
<b>Alternative of action</b>	<p>If the Main registrar entered an invalid user name or password.</p> <p>The system displays invalid username or password warning message.</p> <p>The Main registrar back to step 3 of basic course of action.</p>	
<b>Post-condition</b>	The account successfully created.	

**Table 6:** place student description

<b>Use case id</b>	UC03	
<b>Use case name</b>	<b>Place student</b>	
<b>Actors</b>	Main registrar	
<b>Description</b>	Main registrar place students based on the criteria of department placement	
<b>Pre-condition</b>	The student must choose department, main registrar must login to the system	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Main registrar clicks on login link.<b>step3.</b> Main registrar Fill user-name and password and click on login button.</p> <p><b>Step6.</b> Main registrar navigates to place student link on navigation bar and click.<b>Step 7.</b> The main registrar selects the college click link.</p> <p><b>Step 9.</b> the main registrar clicks on place button</p>	<p><u>System response</u></p> <p><b>step2.</b> system display login page form for main registrar</p> <p><b>Step4.</b> System verify account from database.</p> <p><b>Step5.</b> System display main registrar page.</p> <p><b>Step8.</b>The system display the page.</p> <p><b>Step10.</b> The system place successful.</p> <p><b>Step11.</b>Use case end.</p>
<b>Alternative of action</b>	<p>If the main registrar entered an invalid username and password.</p> <p>The system displays invalid username and password warning message</p> <p>The main registrar back to step 3 of basic course of action.</p>	
<b>Post- condition</b>	The students are placed to the department successfully.	

**Table 7: adds department use case description.**

<b>Use case id</b>	UC04	
<b>Use case name</b>	<b>Add department</b>	
<b>Actors</b>	College dean	
<b>Description</b>	Colleges dean register a new department	
<b>Pre-condition</b>	College dean must know required data for adding new department and must login to the system.	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> College dean click on login link.</p> <p><b>step3.</b> College dean Fill username and password and click to login button.</p> <p><b>Step6.</b> The College dean click on add department link on the navigation bar.</p> <p><b>Step8.</b> The College dean fill required data for adding department and click add button.</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page for College dean.</p> <p><b>Step4.</b> System verify account from database.</p> <p><b>Step5.</b> System login successfully.</p> <p><b>Step7.</b> The system displays the add department form.</p> <p><b>Step9.</b> The system check validity of data and add department successfully.</p> <p><b>Step10.</b> Use case end.</p>
<b>Alternative of action</b>	<p>If the College dean entered an invalid data.</p> <p>The system displays invalid input warning message</p> <p>The College dean back to step 3 of basic course of action.</p>	
<b>Post-condition</b>	The department added successfully.	

**Table 8: activates selection period use case description.**

<b>Use case id</b>	UC05	
<b>Use case name</b>	<b>activate selection period</b>	
<b>Actors</b>	Main registrar	
<b>Description</b>	Main registrar activate and deactivate selection period	
<b>Pre-condition</b>	Main registrar must login to the system.	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Main registrar click on login link <b>step3.</b> Main registrar Fill username and password then click login button.</p> <p><b>Step6.</b> The Main registrar clicks on activate period link on the navigation bar.</p> <p><b>Step8.</b> The Main registrar fill required data for setting period and click set button.</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page for Main registrar.</p> <p><b>Step4.</b> System verify account from database.</p> <p><b>Step5.</b> System display Main registrar page successfully.</p> <p><b>Step7.</b> The system display activates period form.</p> <p><b>Step9.</b> The system check validity of data and set date successfully.</p> <p><b>Step10.</b> Use case end.</p>
<b>Alternative of action</b>	<p>If the Main registrar entered invalid username and password. The system displays invalid username or password warning message The Main registrar back to step 3 of basic course of action.</p> <p>If Main registrar entered invalid data for setting date The system displays invalid input warning message The Main registrar goes back step 8 basic course of action.</p>	
<b>Post-condition</b>	The date activated successfully.	

**Table 9: post news use case description.**

<b>Use case id</b>	UC06	
<b>Use case name</b>	Post news	
<b>Actors</b>	Main registrar	
<b>Description</b>	Main registrar post news.	
<b>Pre-condition</b>	Main registrar must login to the system.	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Main registrar click on login link.</p> <p><b>step3.</b> Main registrar Fill username and password then click on login button.</p> <p><b>Step6.</b> The Main registrar clicks on post news link on the navigation bar</p> <p><b>Step8.</b> The Main registrar fill required information on the forms and click on post button.</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page for Main registrar.</p> <p><b>Step4.</b> System verify account from database.</p> <p><b>Step5.</b> System display admin page.</p> <p><b>Step7.</b> The system display post news form.</p> <p><b>Step9.</b> The system check validity of data's and post the information's.</p> <p><b>Step10.</b> Use case end</p>
<b>Alternative of action</b>	<p>If the Main registrar entered a username and password. The system displays invalid username or password warning message The Main registrar back to step 3 of basic course of action.</p> <p>If Main registrar entered invalid data for posting news. The system displays invalid input warning message The admin goes back step 8 basic course of action.</p>	
<b>Post-condition</b>	The new is posted successfully.	

**Table 10: change password use case description.**

<b>Use case id</b>	UC07	
<b>Use case name</b>	<b>Change password</b>	
<b>Actors</b>	student, college dean, Main registrar, department head, college registrar	
<b>Description</b>	All actors can change their own account password of the system in order to accomplish their tasks	
<b>Pre-condition</b>	User must have valid username and password	
<b>Flow of event</b>	<u>Actor action</u> <b>step1.</b> User click on change password link. <b>Step3.</b> User type his/her old password and new password, then click on change button.	<u>System response</u> <b>step2.</b> System ask the user to enter Old password and new password. <b>Step4.</b> The system change password successfully. <b>Step5.</b> Use case end
<b>Alternative of action</b>	If user entered an invalid data The system displays invalid data warning message.	
<b>Post-condition</b>	The password changed successfully.	

**Table 11: view placement use case description.**

<b>Use case id</b>	UC08	
<b>Use case name</b>	<b>View department</b>	
<b>Actors</b>	Student	
<b>Description</b>	Student can view all departments information before choosing department	
<b>Pre-condition</b>	Student must have valid username and password	
<b>Flow of event</b>	<u>Actor action</u> <b>step1.</b> Student click on login link. <b>step3.</b> Student fill username and password and click on login button. <b>step5.</b> Student navigate to departments link then click.	<u>System response</u> <b>step2.</b> System display login page to student. <b>Step4.</b> The system verify account from data base and login to student page. <b>Step6.</b> System display department background information to student. <b>Step7.</b> Use case end
<b>Alternative of action</b>	If student entered an invalid username or password The system displays username or password warning message. The student goes back to step 3 and try again	
<b>Post-condition</b>	The department is viewed successfully.	

**Table 12: choose department use case description.**

<b>Use case id</b>	UC09	
<b>Use case name</b>	<b>Select department</b>	
<b>Actors</b>	Student	
<b>Description</b>	Student can select department what he/she wants.	
<b>Pre-condition</b>	Student must have valid username and password.	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Student click on login link.</p> <p><b>step3.</b> Student fill username and password and click on login button.</p> <p><b>step5.</b> Student navigate to select department link then click on colleges selection forms.</p> <p><b>Step7.</b> Student can fill the necessary data for department selection and click on choose button</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page to student.</p> <p><b>Step4.</b> The system verify account from data base and login to student page</p> <p><b>Step6.</b> System display department selection form to student.</p> <p><b>Step8.</b> The system check validity of data and display success message.</p> <p><b>Step9.</b> usecase end.</p>
<b>Alternative of action</b>	<p>If student entered an invalid username or password</p> <p>The system displays invalid username or password warning message.</p> <p>The student back to step 3 and try again</p>	
<b>Post-condition</b>	The department choose is successfully.	

**Table 13: change department use case description.**

<b>Use case id</b>	UC10	
<b>Use case name</b>	<b>Change department</b>	
<b>Actors</b>	Student	
<b>Description</b>	Student can change department that he/she choose first to what he/she wants.	
<b>Pre-condition</b>	Student must have valid username and password	
<b>Flow of event</b>	<u>Actor action</u> <b>step1.</b> Student click on login link. <b>step3.</b> Student fill username and password and click on login button. <b>step5.</b> Student navigate to select department link then click on colleges selection forms links. <b>Step7.</b> Student can fill the necessary data for department selection and click on change button	<u>System response</u> <b>step2.</b> System display login page to student. <b>Step4.</b> The system verify account from data base and login to student page <b>Step6.</b> System display department selection form to student. <b>Step8.</b> The system check validity of data and display success message. <b>Step9.</b> usecase end.
<b>Alternative of action</b>	If student entered an invalid username or password The system displays invalid username or password warning message. The student back to step 3 and try again If student entered invalid data for selection	
<b>Post-condition</b>	The department choose is successfully.	

**Table 14: view placement use case description.**

<b>Use case id</b>	UC12	
<b>Use case name</b>	<b>View placement</b>	
<b>Actors</b>	Student	
<b>Description</b>	Student can view department where he placed	
<b>Pre-condition</b>	Student must have valid username and password	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Student click on login link.</p> <p><b>step3.</b> Student fill username and password and click on login button.</p> <p><b>step5.</b> Student navigate to view placement link on navigation bar then click on it.</p> <p><b>Step7.</b> Student fill his registration number and click on view button</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page to student.</p> <p><b>Step4.</b> The system verify account from data base and login to student page</p> <p><b>Step6.</b> System ask the student to fill his registration number.</p> <p><b>Step8.</b> The system check validity of data then displays the student placement successfully.</p> <p><b>Step9.</b> use case end.</p>
<b>Alternative of action</b>	<p>If student entered an invalid username or password</p> <p>The system displays invalid username or password warning message.</p> <p>The student back to step 3 and try again</p> <p>If student entered invalid identification number</p> <p>The system displays empty message to student</p> <p>The student back to step 7 and try again</p>	
<b>Post-condition</b>	The department is viewed successfully.	

**Table 15: deactivate account use case description.**

<b>Use case id</b>	UC13	
<b>Use case name</b>	deactivate <b>Account</b>	
<b>Actors</b>	Main registrar	
<b>Description</b>	Main registrar deactivate account	
<b>Pre-condition</b>	Main registrar must login to a system	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> Main registrar click on login link.</p> <p><b>step3.</b> Main registrar Fill username and password.</p> <p><b>Step6.</b> Main registrar click on manage account Link then click on deactivate account link.</p> <p><b>Step8.</b> Main registrar click on deactivate button on user account</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page for Main registrar.</p> <p><b>Step4</b> The system verify account from data base and login to Main registrar page.</p> <p><b>Step5.</b> Stop a page of Main registrar.</p> <p><b>Step7.</b> The system displays a user's account</p> <p><b>Step9.</b> The system deactivate user account success fully.</p> <p><b>Step10.</b> Use case end system successfully login</p>
<b>Alternative of action</b>	<p>If the Main registrar entered an invalid username and password.</p> <p>The system displays username or password invalid input warning message</p> <p>The Main registrar back to step 3 of basic course of action.</p>	
<b>Post-condition</b>	The account removed successfully.	

**Table 16: update department use case description.**

<b>Use case id</b>	UC14	
<b>Use case name</b>	<b>Update department</b>	
<b>Actors</b>	College dean	
<b>Description</b>	College dean must update number of students it takes every year.	
<b>Pre-condition</b>	College dean must know required data for update department and must login to the system.	
<b>Flow of event</b>	<p><u>Actor action</u></p> <p><b>step1.</b> College dean click on login link.</p> <p><b>step3.</b> College dean Fill username and password then click on login button.</p> <p><b>Step6.</b> The College dean click on update department link on the navigation bar</p> <p><b>Step8.</b> The College dean clicks on update button.</p> <p><b>Step10.</b> The college dean fill data on form then click on update button.</p>	<p><u>System response</u></p> <p><b>step2.</b> System display login page for Collage dean.</p> <p><b>Step4.</b> The system verifies account from data base.</p> <p><b>Step5.</b> System login successfully.</p> <p><b>Step7.</b> The system displays the departments.</p> <p><b>Step9.</b> The system displays update department form.</p> <p><b>Step11.</b> The system check validity of data's and update department successfully</p> <p><b>Step12.</b> Use case end.</p>
<b>Alternative of action</b>	If the College dean entered an invalid username and password. The system displays invalid username or password input warning message	
<b>Post-condition</b>	The department updated successfully.	

#### **4.1.1.3. Use case scenario**

A scenario is a sequence of steps that represents a single use case execution. It is made up of a number of simple, discrete steps that are designated as being performed by either the “System” or a “User”.

The following are scenario of the proposed wolkite university department selection and student placement system.

##### **Name of scenarios: department selection**

**Actor name:** Henok

##### **Flow of events:**

1. He opens the system
2. Insert username and password then click login button.
3. Clicks on the department selection link, then click to college selection form.
4. Fill data on selection form then click on choose button.

##### **Name of scenarios: view department**

**Actor name:** Henok

##### **Flow of events:**

1. He starts the system
2. Insert username and password then click login button.
3. Click on departments link.
4. View department background.

##### **Name of scenarios: change department**

**Actor name:** Henok

##### **Flow of events:**

1. He opens the system
2. Insert username and password then click login button.
3. Clicks on the department selection link, then click to college selection form.
4. Fill data on selection form then click on change button.

##### **Name of scenarios: add department**

**Actor name:** Mr. Korabza

**Flow of events:**

1. He opens the system
2. Insert username and password click login button.
3. Clicks on the add department link.
4. Fill data on the form and click add button.

**Name of scenarios: place student**

**Actor name:** Mr. Aberham

**Flow of events:**

1. He opens the system
2. Insert username and password then click on login button.
3. Clicks on the college link.
4. Click on place button.

**Name of scenarios: activate selection period**

**Actor name:** Mr. Aberham

**Flow of events:**

1. He opens the system
2. Insert username and password then click on login button.
3. Clicks on activate selection period link.
4. Fill data on the form and click activate button.

**Name of scenarios: create account**

**Actor name:** Mr. Aberham

**Flow of events:**

1. He opens the system
2. Insert username and password then click on login button.
3. Click on create account button.
4. Fill data for creating account and click on create button.

**Name of scenarios: post news**

**Actor name:** Mr. Aberham

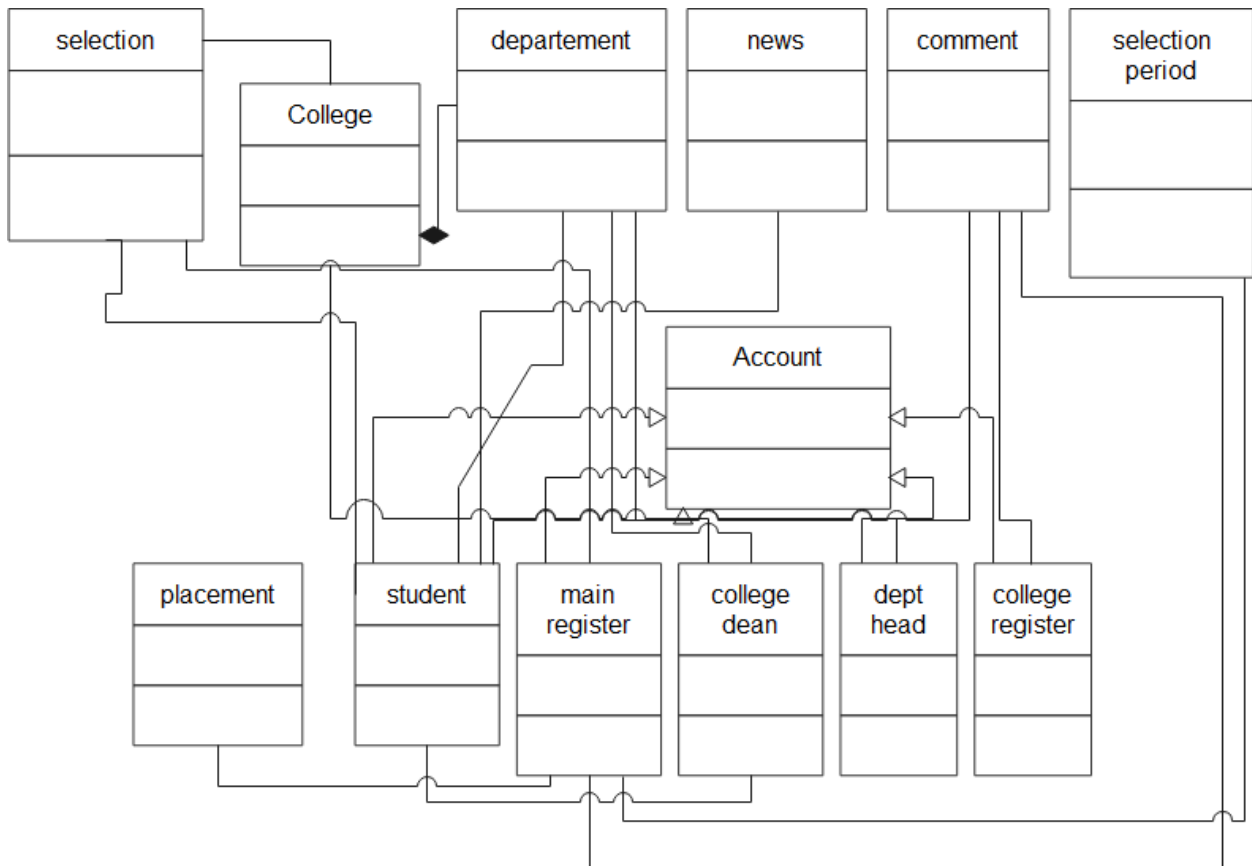
**Flow of events:**

1. He opens the system
2. Insert username and password then click on login button.
3. Clicks on post news link.
4. Fill data on the form and click post button.

**4.2 Object Model**

**4.2.1 Class Diagram**

Class diagrams have a lot of properties to consider while drawing but here the diagram will be considered from a top level view. Class diagram is basically a graphical representation of the static view of the system and represents different aspects of the application. A collection of class diagrams represent the whole system.



**Figure 4 :class diagram.**

## 4.2.2 Data Dictionary

**Table 17: student data dictionary.**

Attribute	Datatype	Default	Relation
Stud-id	Varchar(12)	Not null	Primary
First-name	Varchar(21)	Null	
LastName	Varchar(14)	Null	
Nationality	Varchar(17)	Null	
Region	Varchar(38)	Null	
Gender	Varchar(8)	Null	
Disability	varchar (14)	Null	
EnteranceResult	Int(3)	Null	
College	Varchar(12)	Null	

**Table 18: selection period data dictionary.**

Attribute	Datatype	Default	Relation
Id	int	Not Null	Primary key
Start-date	date	Null	
End-date	Date	Null	

**Table 19: placement data dictionary**

Attribute	Datatype	Default	Relation
Stud-id	Varchar(11)	Not Null	Primary key
First-name	Varchar(22)	Null	
LastName	Varchar(21)	Null	
College	Varchar(26)	Null	
Id	int	Not Null	Foreign key

**Table 20: colleges data dictionary.**

Attribute	Data type	Default	Relation
Id	Int	Null	primary
College	Varchar(22)	Null	
Department	Varchar(30)	Null	
Number of Student	int	Null	
Free	int	Null	
Background	Varchar(22)	Null	

**Table 21: account data dictionary.**

Attribute	Data type	Default	Relation
Id	Int (3)	Not Null	Primary key
First-name	Varchar(12)	Null	
LastName	Varchar(24)	Null	
Username	Varchar(12)	Null	
College	rchaic(25)	Null	
Password	Varchar(21)	Null	
userType	Varchar(22)	Null	
Profile	Varchar(110)	Null	
Status	Int(1)	Null	

### **4.3. DYNAMIC MODEL**

The dynamic model represents the time–dependent aspects of a system. It is concerned with the temporal changes in the states of the objects in a system. The main concepts are State, which is the situation at a particular condition during the lifetime of an object. Action, an uninterrupted and atomic computation that occurs due to some event.

### 4.3.1. Sequence diagram

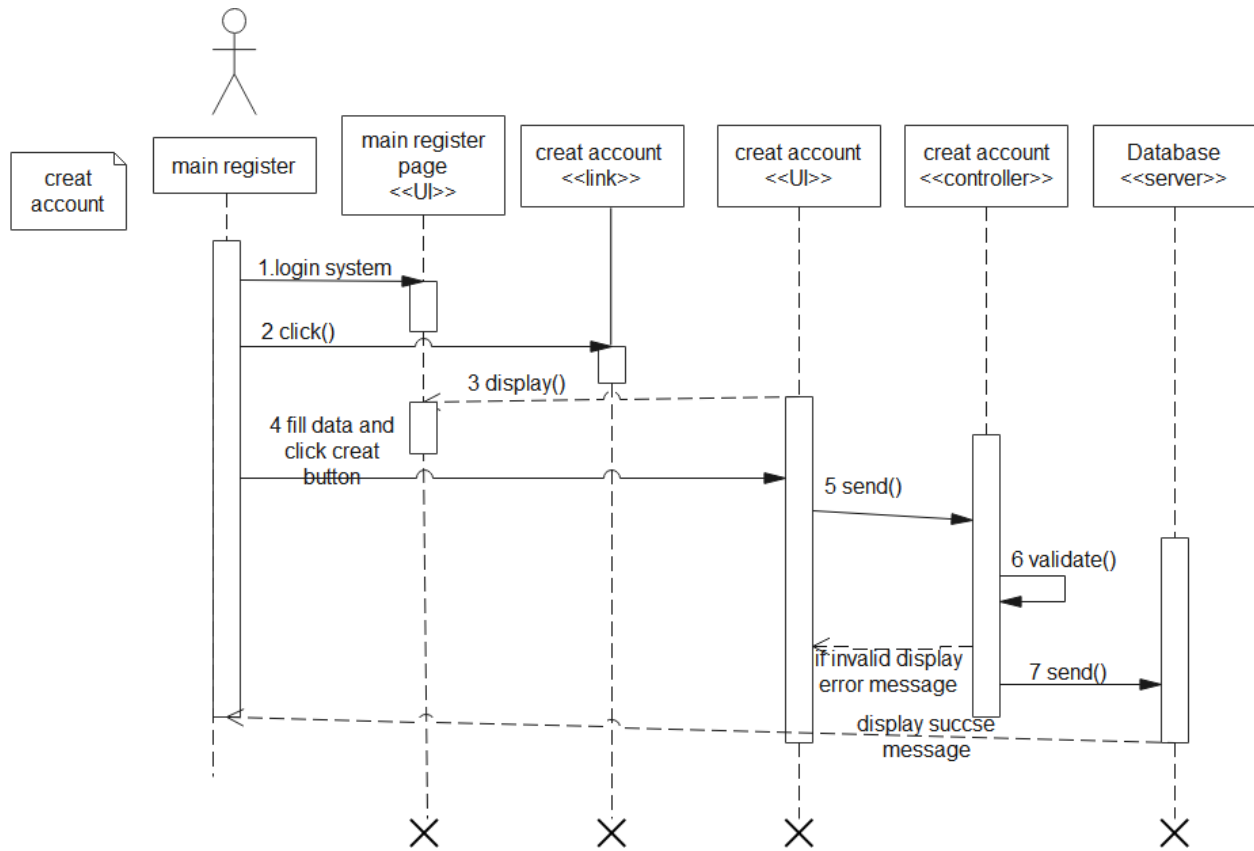


Figure 5: Sequence diagram for create account.

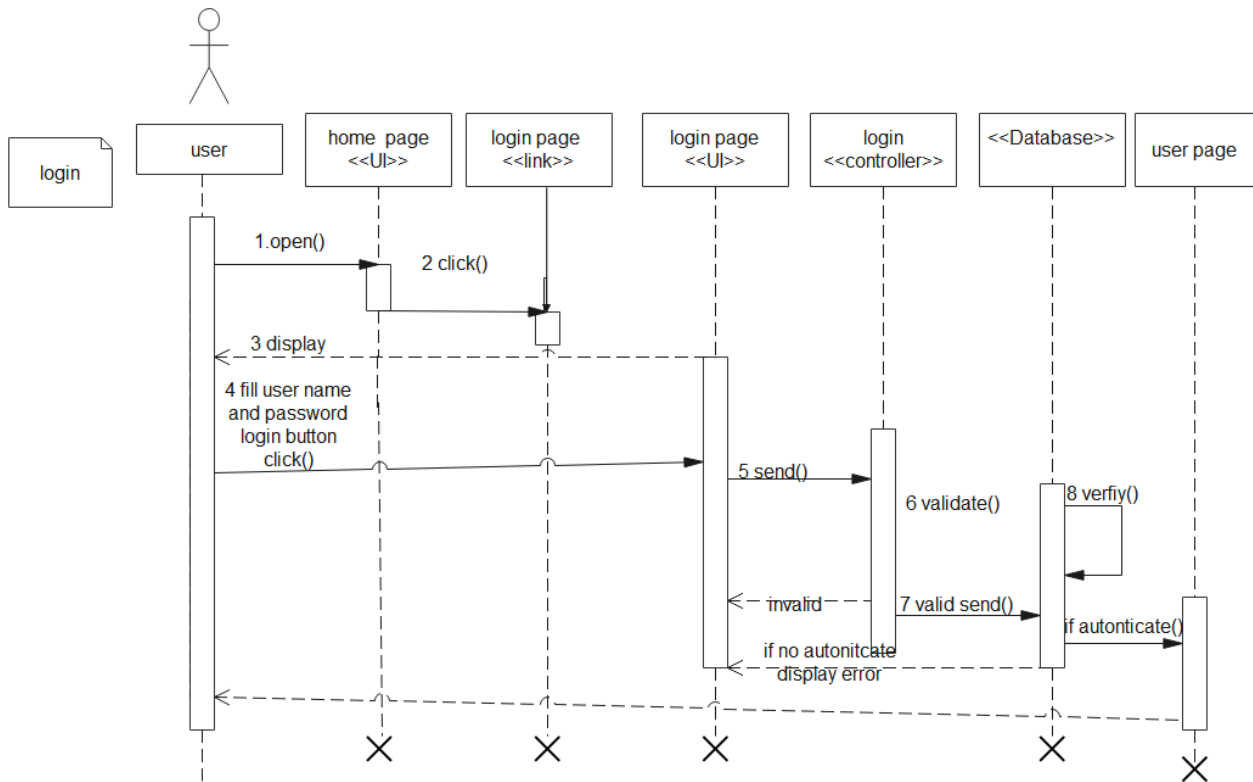
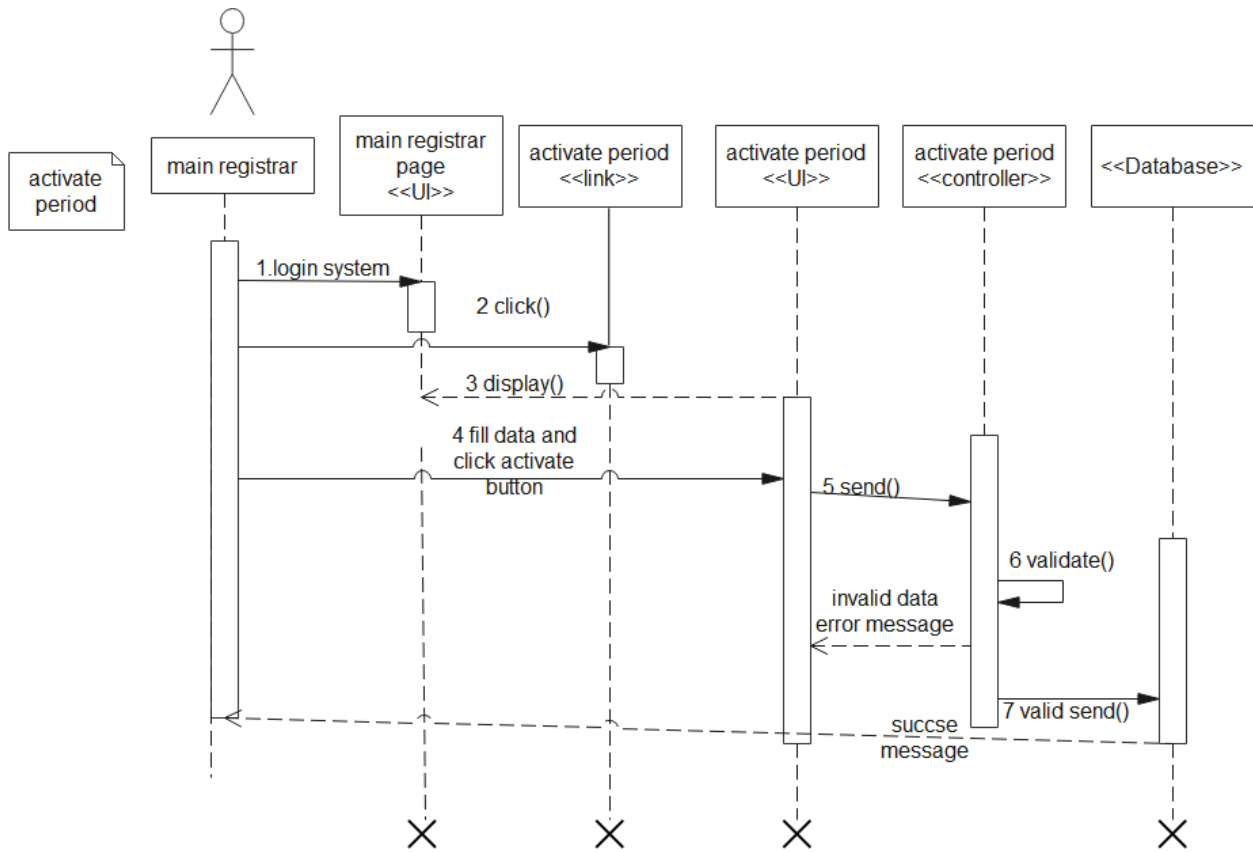
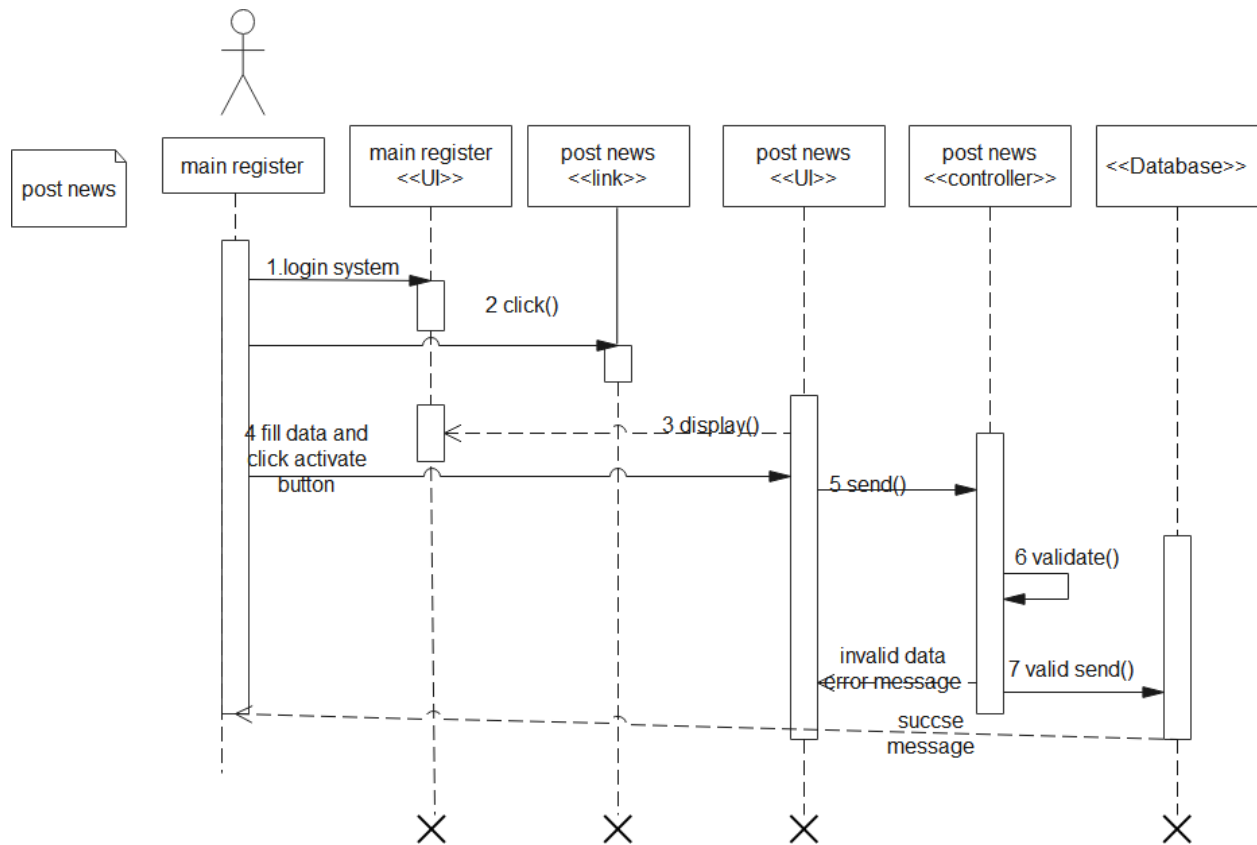


Figure 6: Login sequence diagram.



**Figure 7: Activate selection period sequence diagram**



**Figure 8: Post news sequence diagram.**

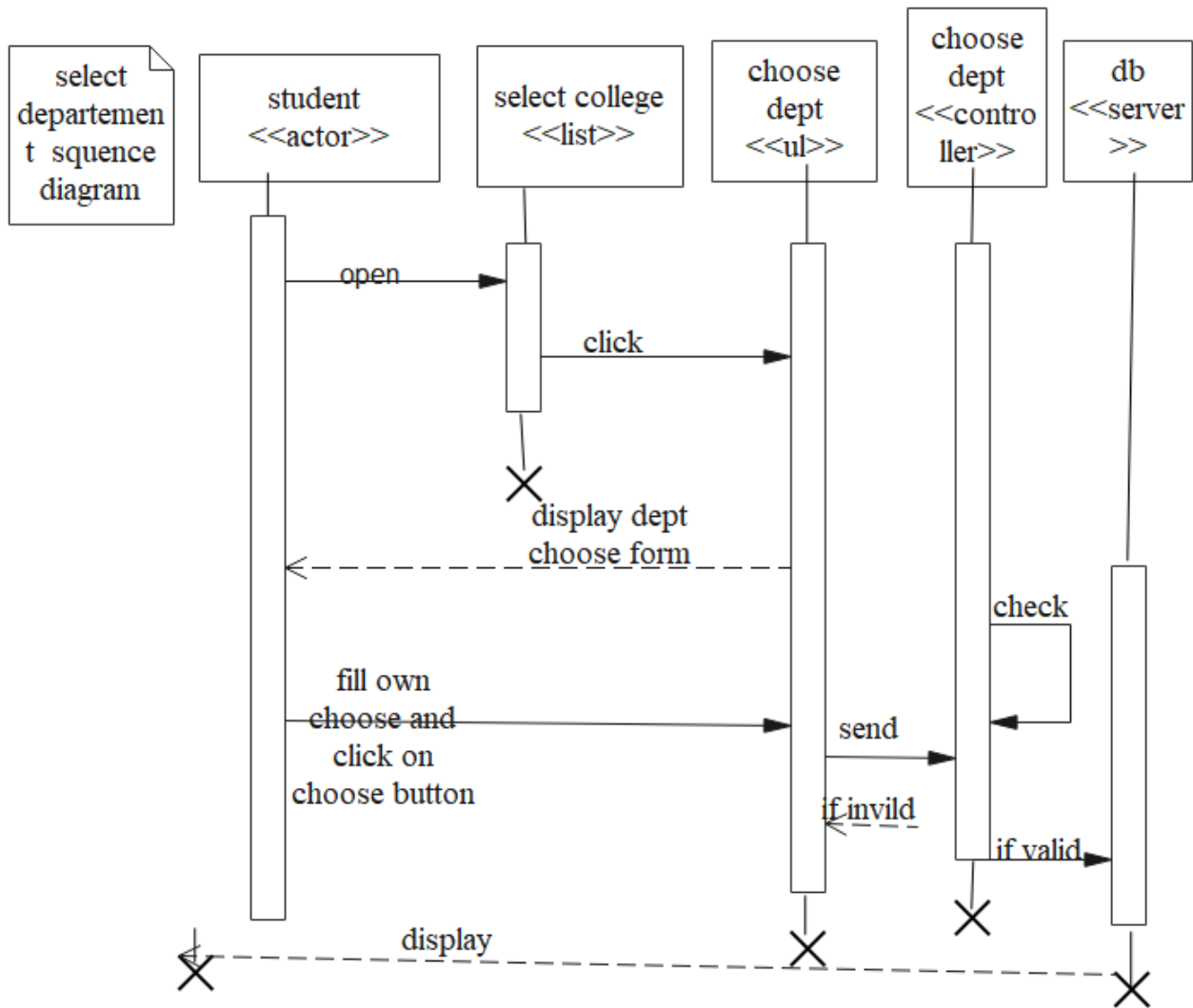


Figure 9: Department selection sequence diagram.

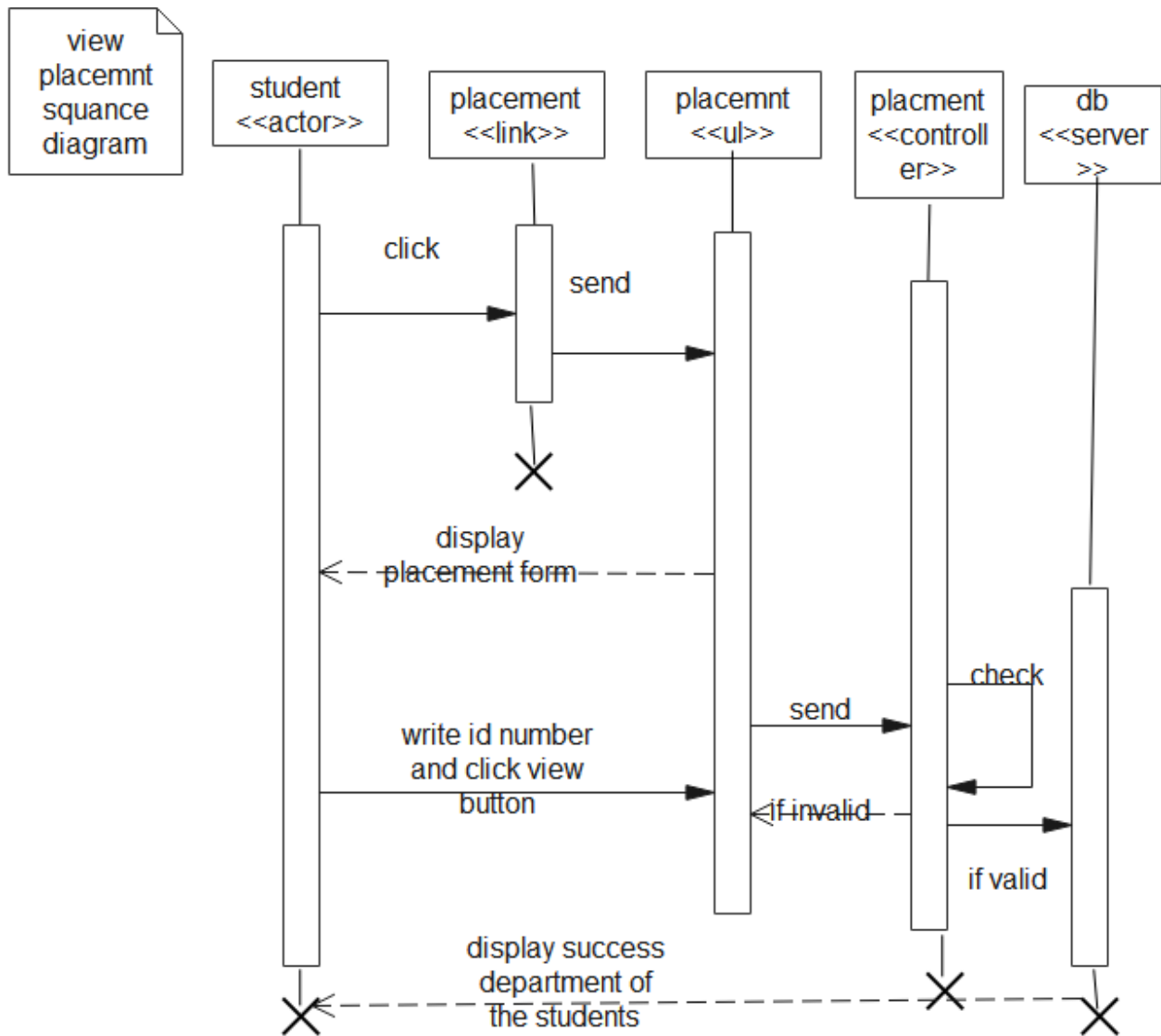
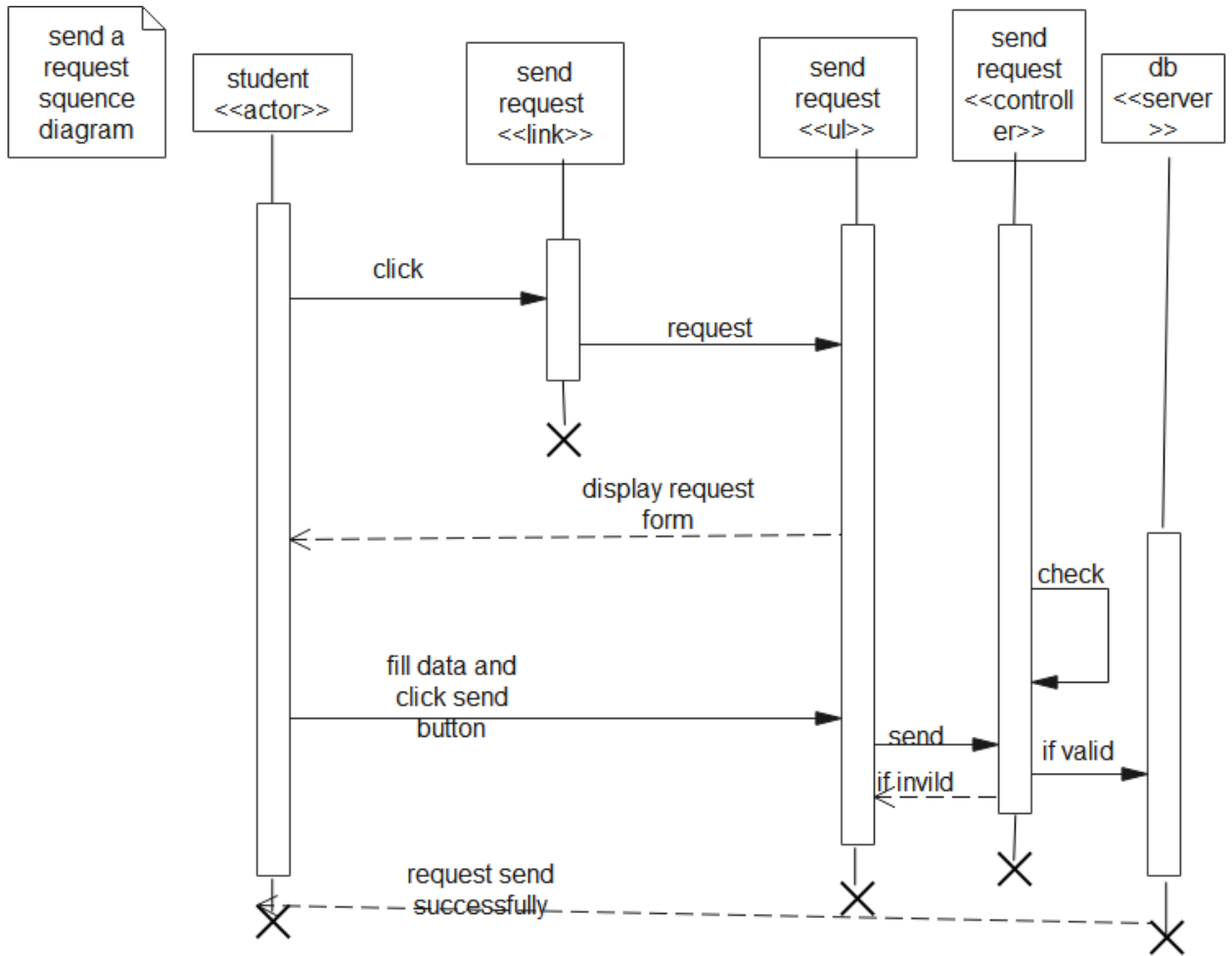
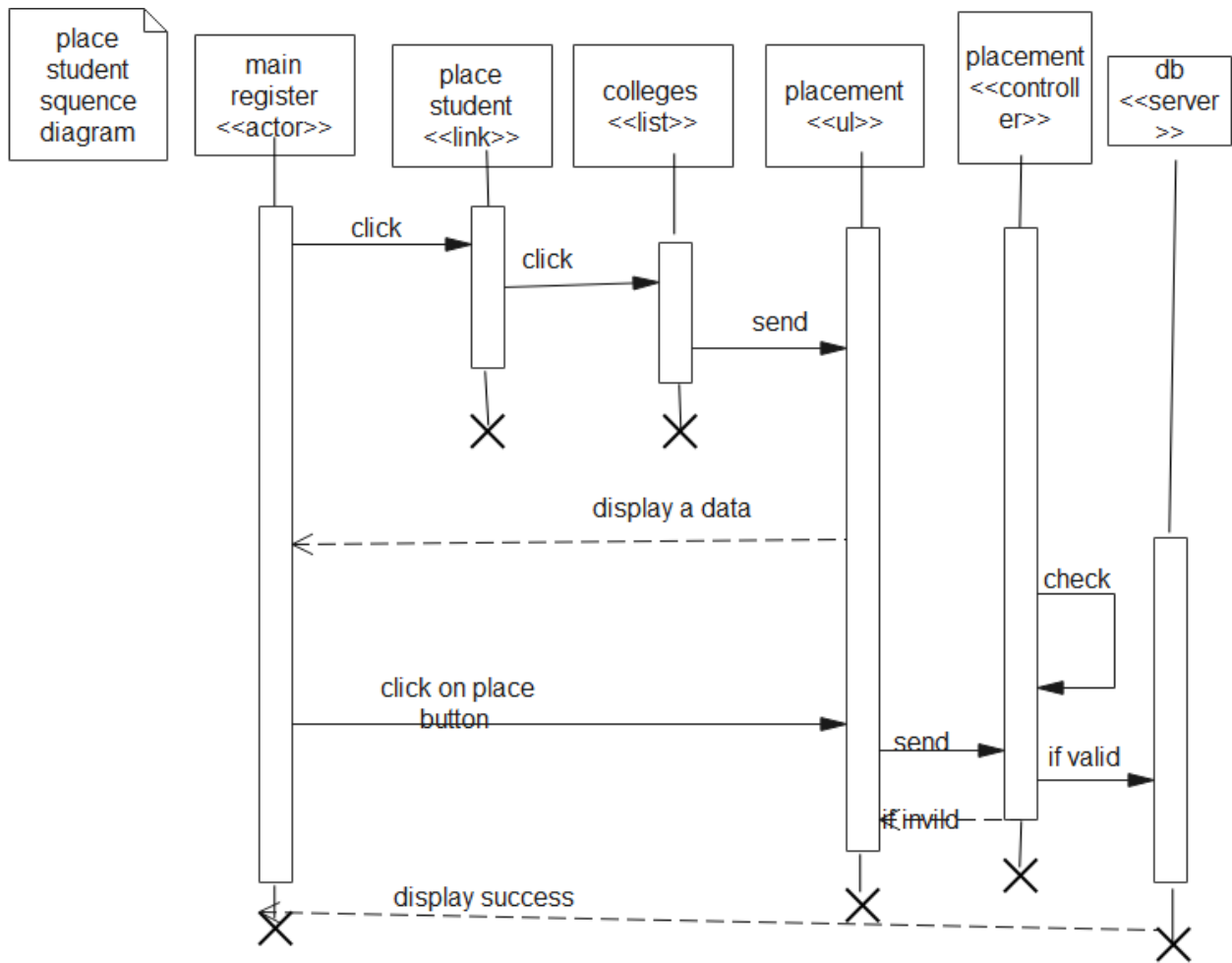


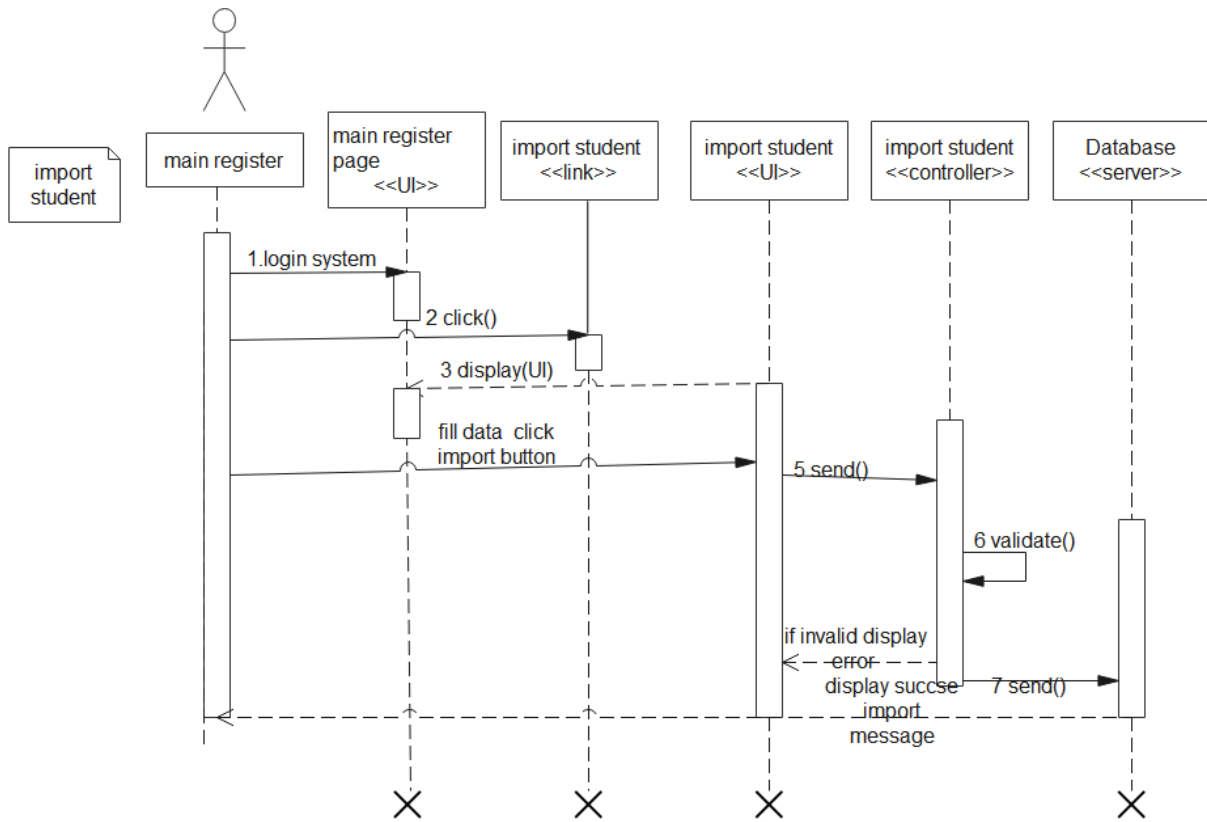
Figure 10: View placement sequence diagram.



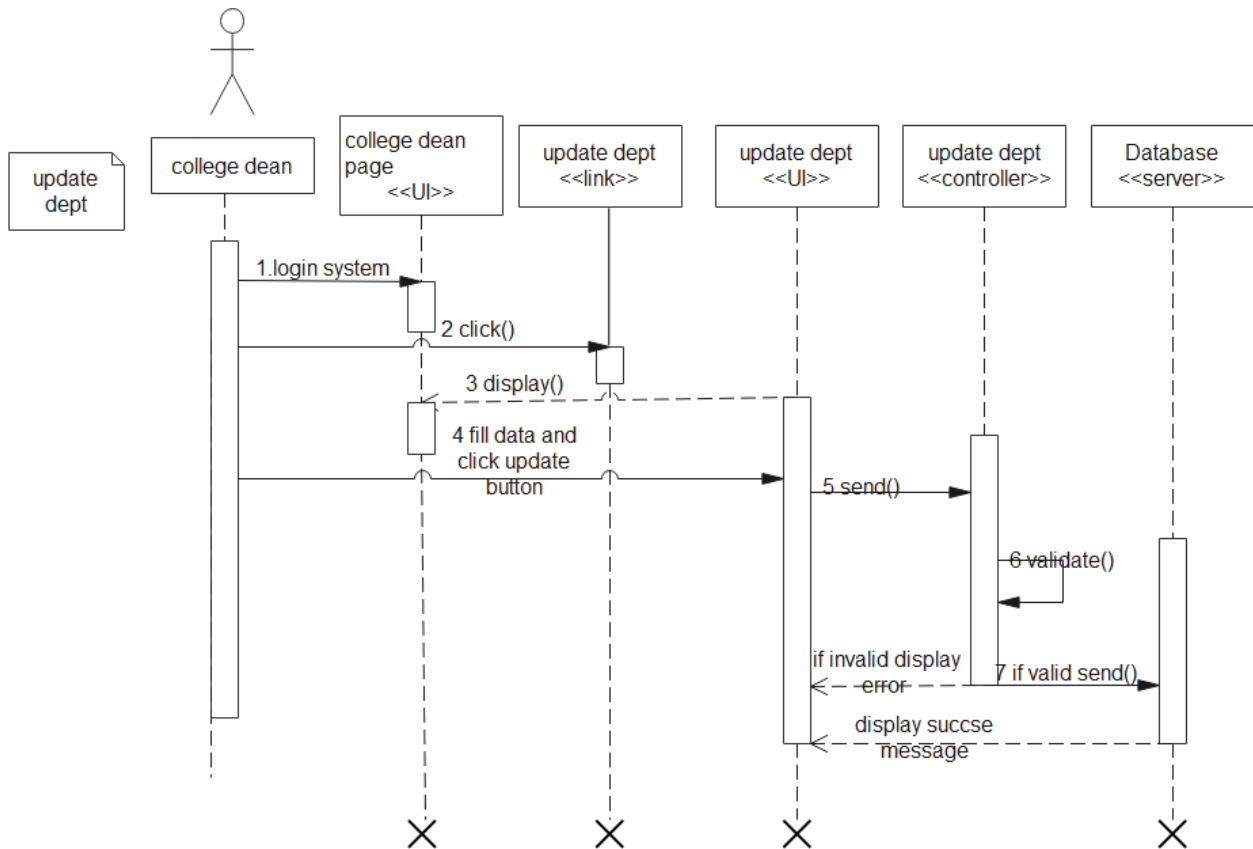
**Figure 11: Send request sequence diagram.**



**Figure 12: Place student sequence diagram.**



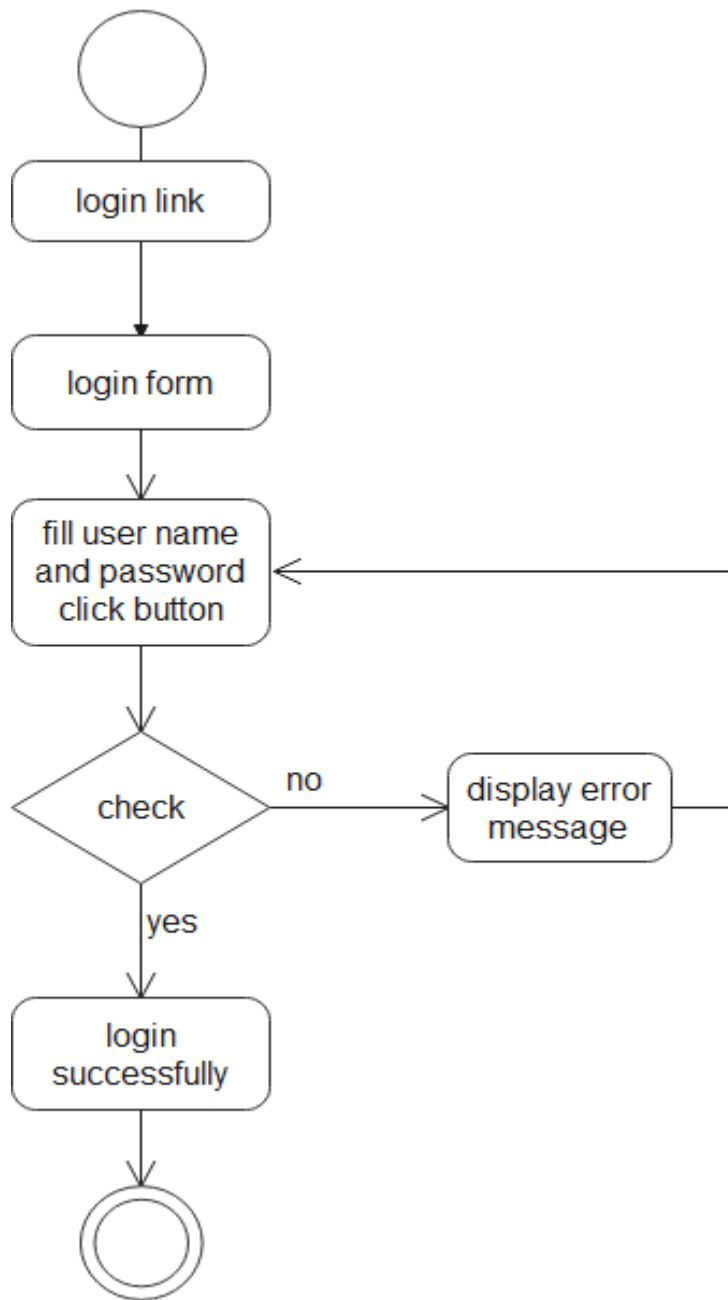
**Figure 13: Import student sequence diagram**



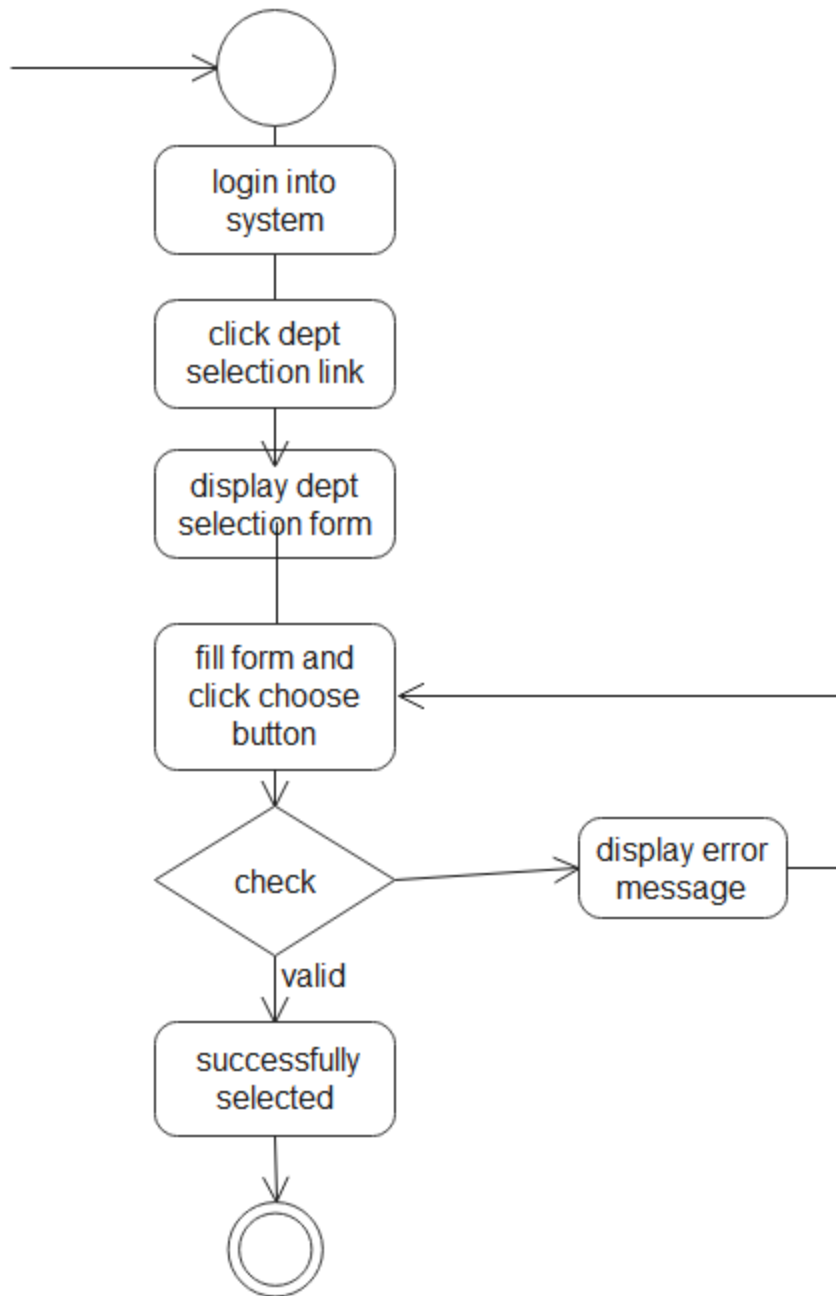
**Figure 14: Update department sequence diagram.**

### 4.3.2 Activity Diagram

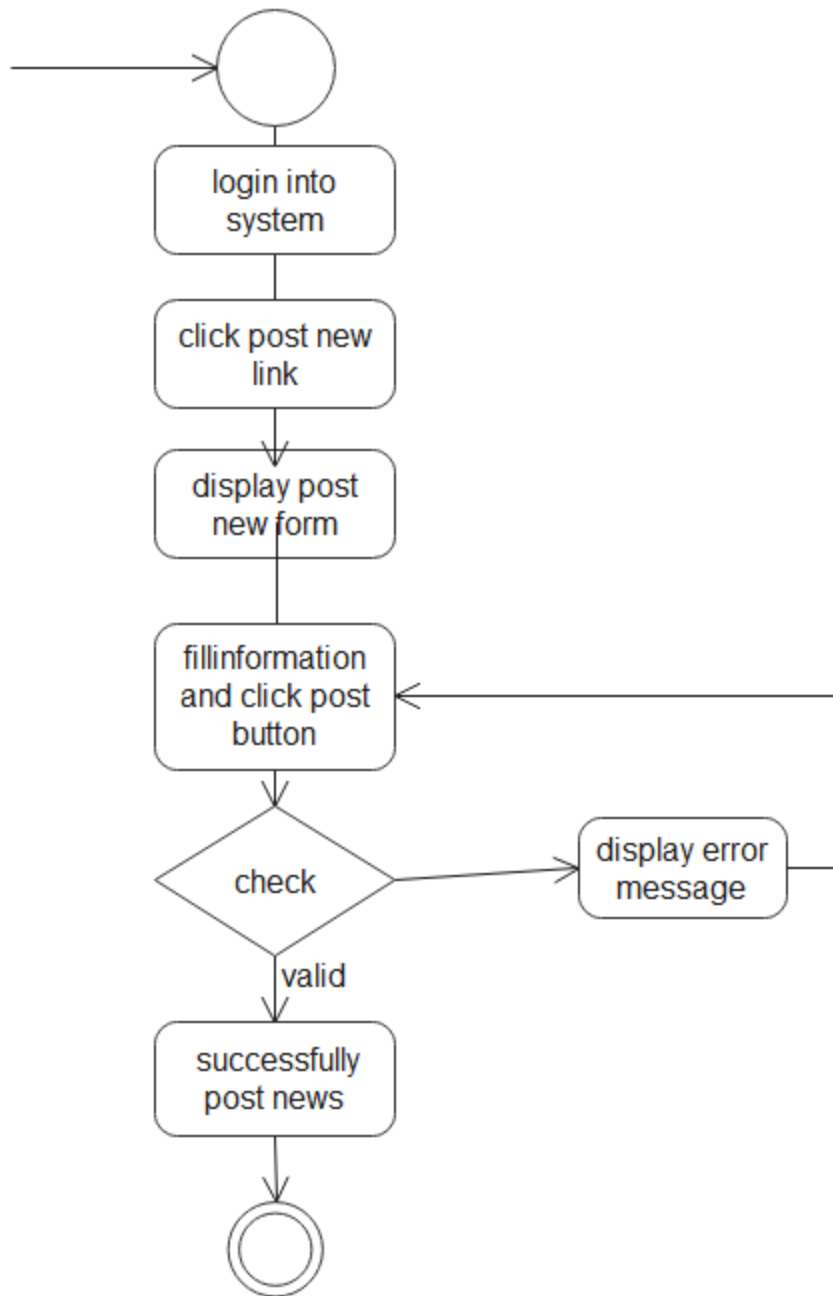
Activity diagram is the series of actions or flow control of activity. In activity diagram there must exist start and ending state.



**Figure 15: Login activity diagram**



**Figure 16: Department selection activity diagram.**



**Figure 17: Post news activity diagram.**

### 4.3.3 State chart diagram

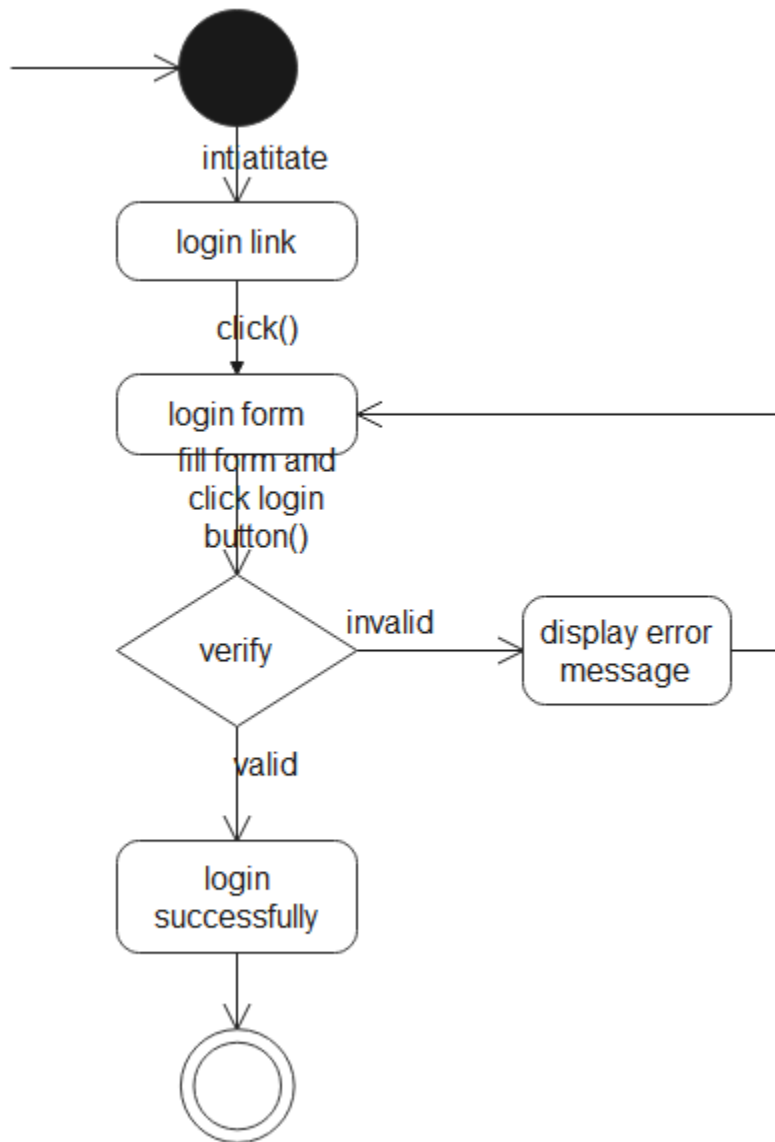
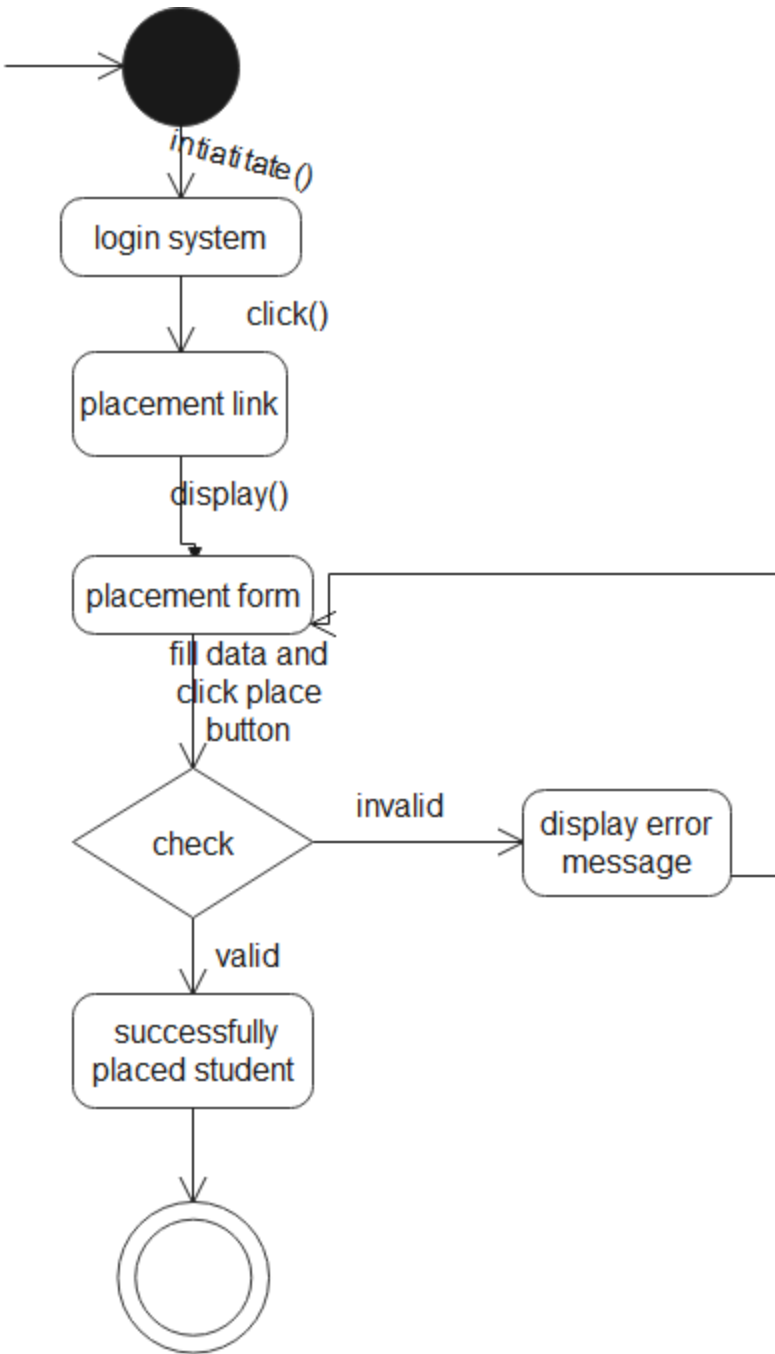
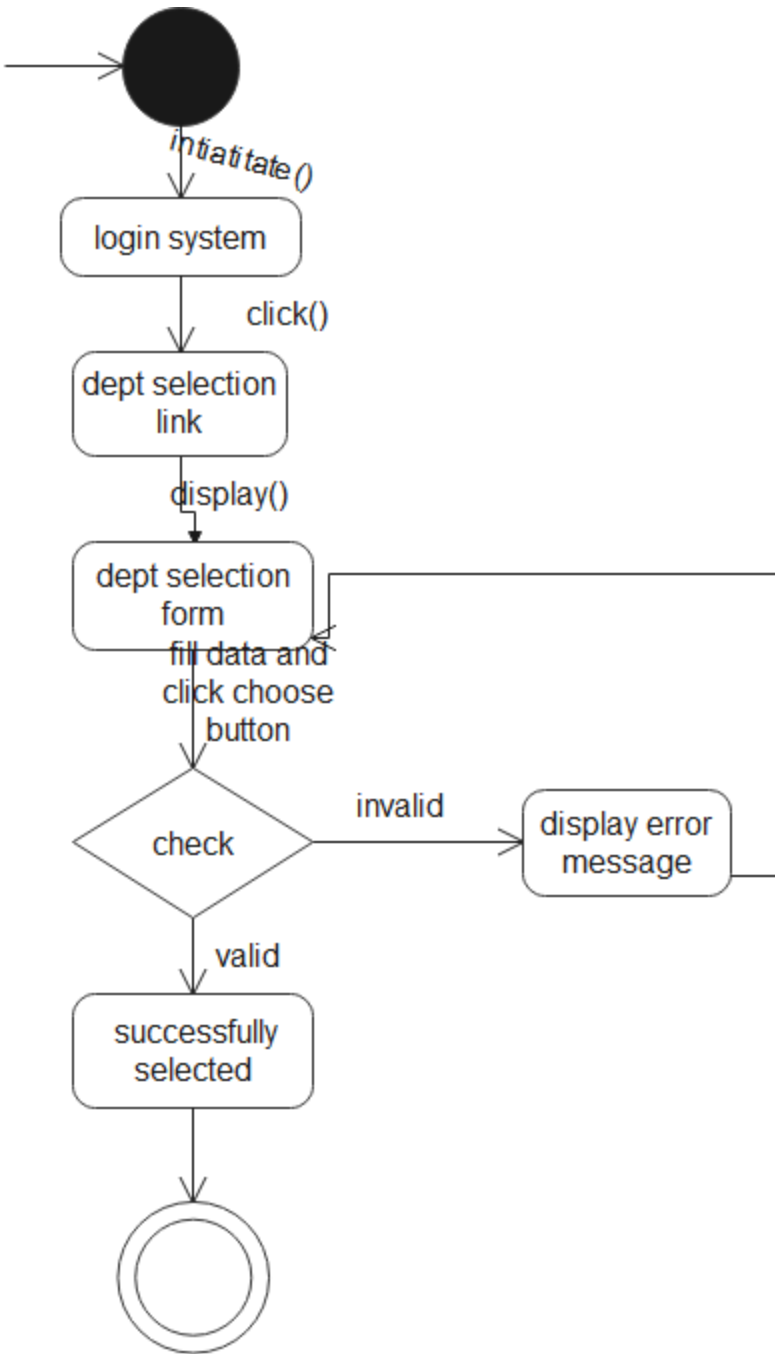


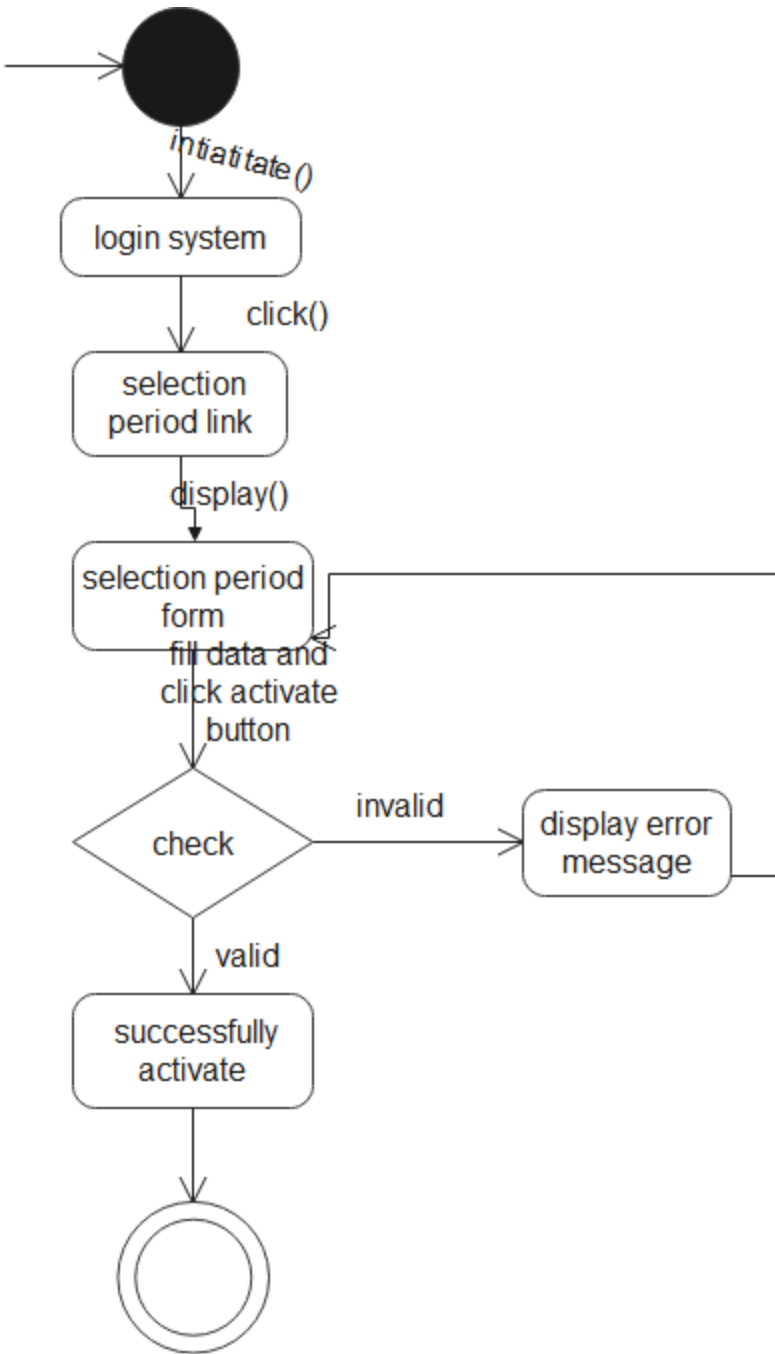
Figure 18: Login state chart diagram



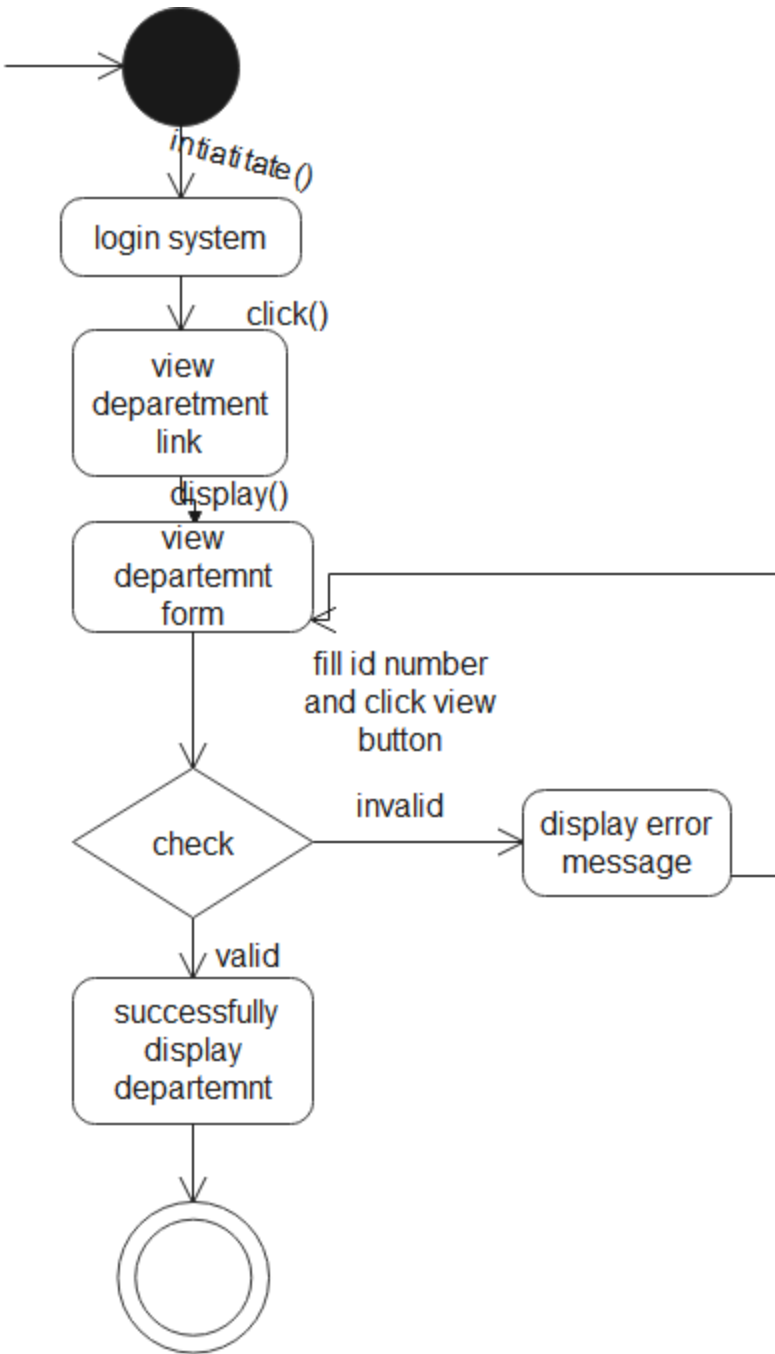
**Figure 19: place student state chart diagram.**



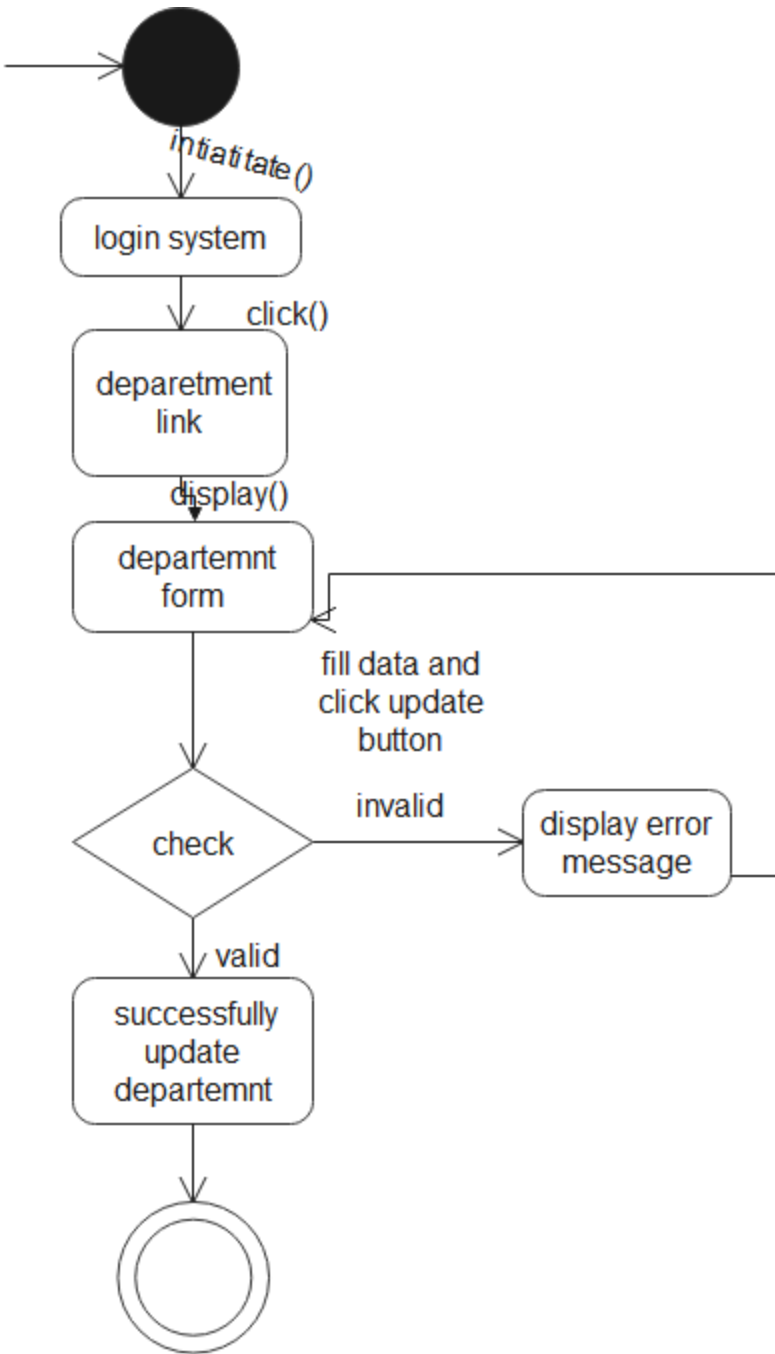
**Figure 20: Department selection state chart diagram.**



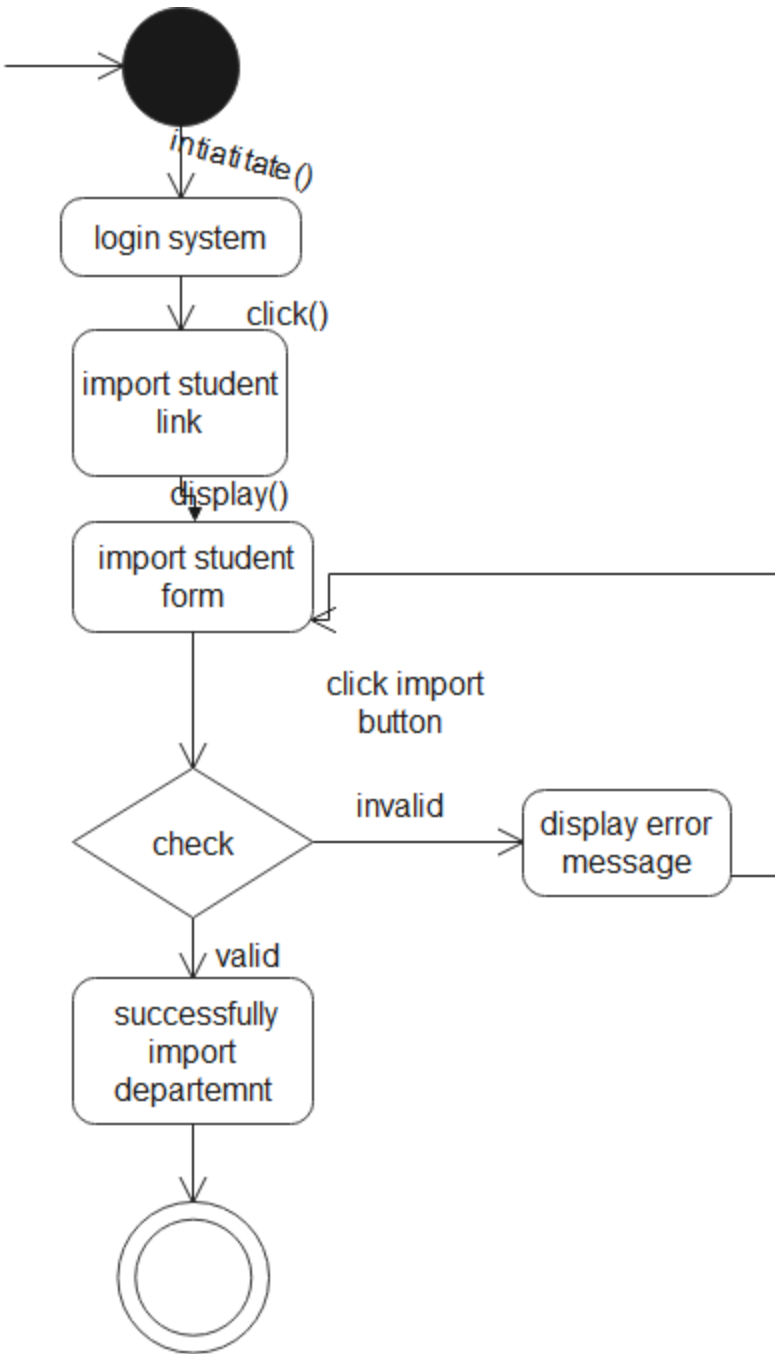
**Figure 21: Activate selection period state chart diagram.**



**Figure 22: View department placement state chart diagram.**



**Figure 23: Update department state chart diagram.**



**Figure 24: Import student state chart diagram.**

## CHAPTER FIVE

### 5. SYSTEM DESIGN

System design could be seen as the application of systems theory to product development.

#### 5.1 Design Goal

This design goals help as stay focus on what we have determined to be most important in a project. They can serve as a quality check by making sure the designs meet the intended goals. The following design goals are the major goals of the proposed system. (9)

**User friendliness:** - The proposed department placement system is graphical user interface (GUI) oriented which makes users to interact easily with the system.

**Adaptability:** - These design goals describes, an interactive system (adaptive system) adapts its behaviors to individual users based on information acquired by its users. Therefor the proposed department placement system is very adaptable to its users by giving them a chance to easily interact with the system like customizing their account.

**Understandability:** - This design goal refers to the system capability of being understood by the user. The proposed system consists of different pages which are easy and understandable by the user.

**Efficiency:** - The proposed department placement system exercises different methods for the system to be effective. Therefore it is efficient in using different resources available.

**Low cost:** - The proposed system regarding cost is perfectly reduces the cost of paper and other materials related to the manual system. There for it is effective in reducing cost.

**Flexibility:** - The proposed system is highly flexible since users can access the components as they need. For instance if a student wants to select a department, the student can choose directly by entering his/her user name and by filling other necessary fields.

**Good documentation:** - the documentation of the proposed system is available for maintenance at any time.

**Maintainability:** -Since we have good documentation and other available resources the proposed system can be maintained easily.

## 5.2. Proposed system Architecture

### Architecture of the system

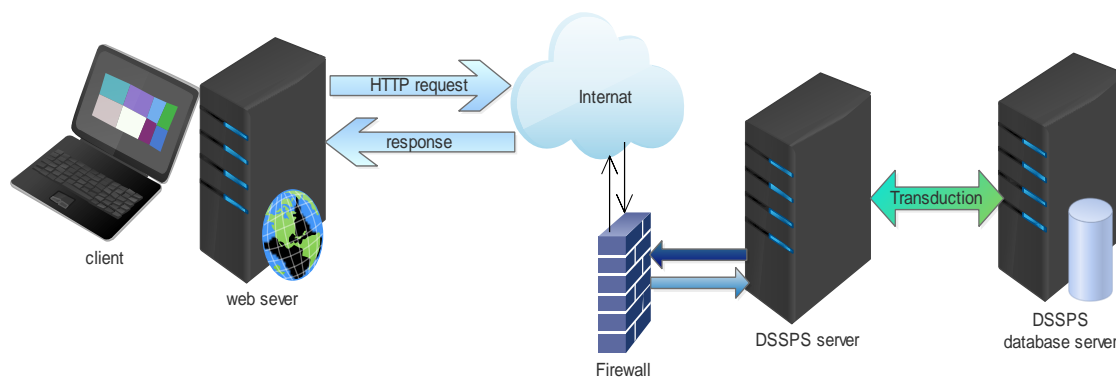
The proposed subsystem will be implement in Client/Server architecture. Wherever a user is as long as there is Internet connection he/she can browse the online WKU registration and department placement page, fill the required inputs by the web page, and then submit it then the request of the user will be sent to the central server. The server will give response based on the user request. From this description the architecture of the system is depicted diagrammatically.

**web server:** - End-users operate on this tier and they know nothing about any existence of the database beyond this layer. At this layer, multiple views of the database could provide by the application.

**DSSPS server:** - At this tier reside the application server and the programs that access the database. For a user, this application tier presents an abstracted view of the database. End-users are unaware of any existence of the database beyond the application. At the other end, the database tier is not aware of any other user beyond the application tier. Hence, the application layer sits in the middle and acts as a mediator between the end-user and the database.

**Database server:** - At this tier, the database resides along with its query processing languages. We also have the relations that define the data and their constraints at this level.

Additionally, firewall used to filter the network that comes from outsider for security purpose.



**Figure 25: system Architecture.**

### **5.2.1. Subsystem Decomposition and Description**

Sub-system decomposition is the processes of breaking down the system into sub-systems, and each sub-systems analysis separately. The main aim is to minimize the complexity of the system. Subsystems could consider as packages holding related classes/objects. The DSSPS system can decompose as the following:

Registration management subsystem (RMSS): this subsystem performs the following tasks.

- ❖ Add Department
- ❖ Update Department
- ❖ Import student

Notification management subsystem (NMSS): this subsystem performers the following tasks.

- ❖ Post news
- ❖ View news
- ❖ Send request
- ❖ Approve request

Account management subsystem (AMSS): this subsystem performs the following operations.

- ❖ Create Account
- ❖ Change password
- ❖ Deactivate account

Student placement management subsystem (SPMSS): this subsystem performs the following operations.

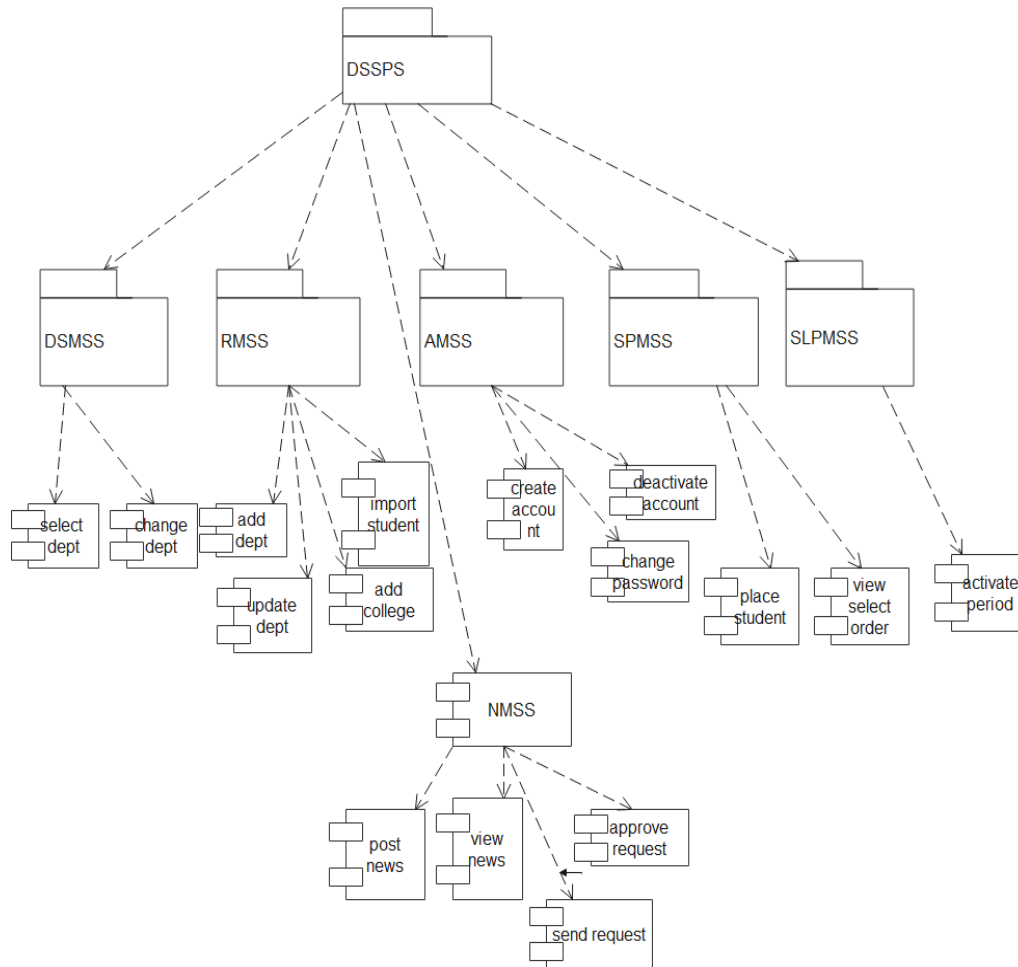
- ❖ Place student
- ❖ View selection order

Department selection management subsystem (DSMSS): this subsystem performs the following operations.

- ❖ Select department
- ❖ Change department

Selection Period management subsystem (SLPMSS): this subsystem performs the following operations.

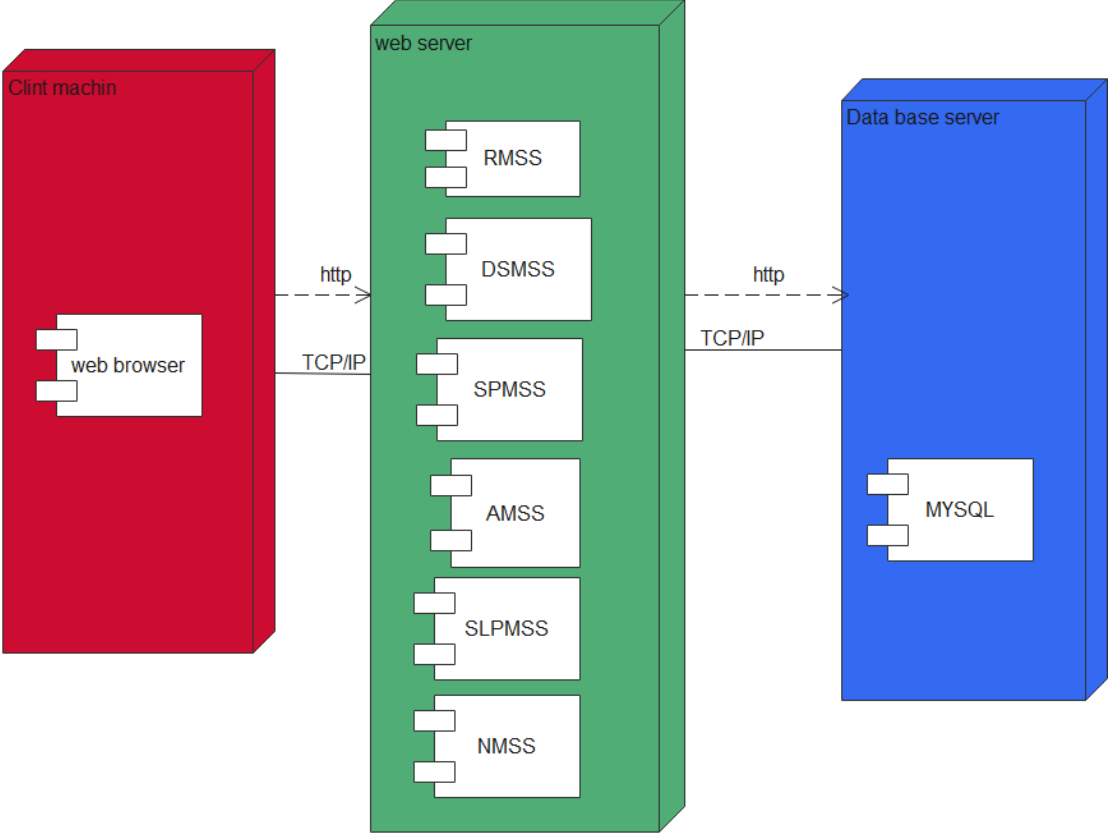
- ❖ Activate Period
- ❖ Modify period



**Figure 26: system Decomposition.**

### 5.2.2. Hardware /Software Mapping

Hardware and software mapping shows us how the hardware and software components are connected together to perform user tasks. The one and the main diagram, which shows this hardware and software mapping, is deployment diagram.



**Figure 27: hardware software mapping diagram.**

### 5.2.3. Detailed Class Diagram

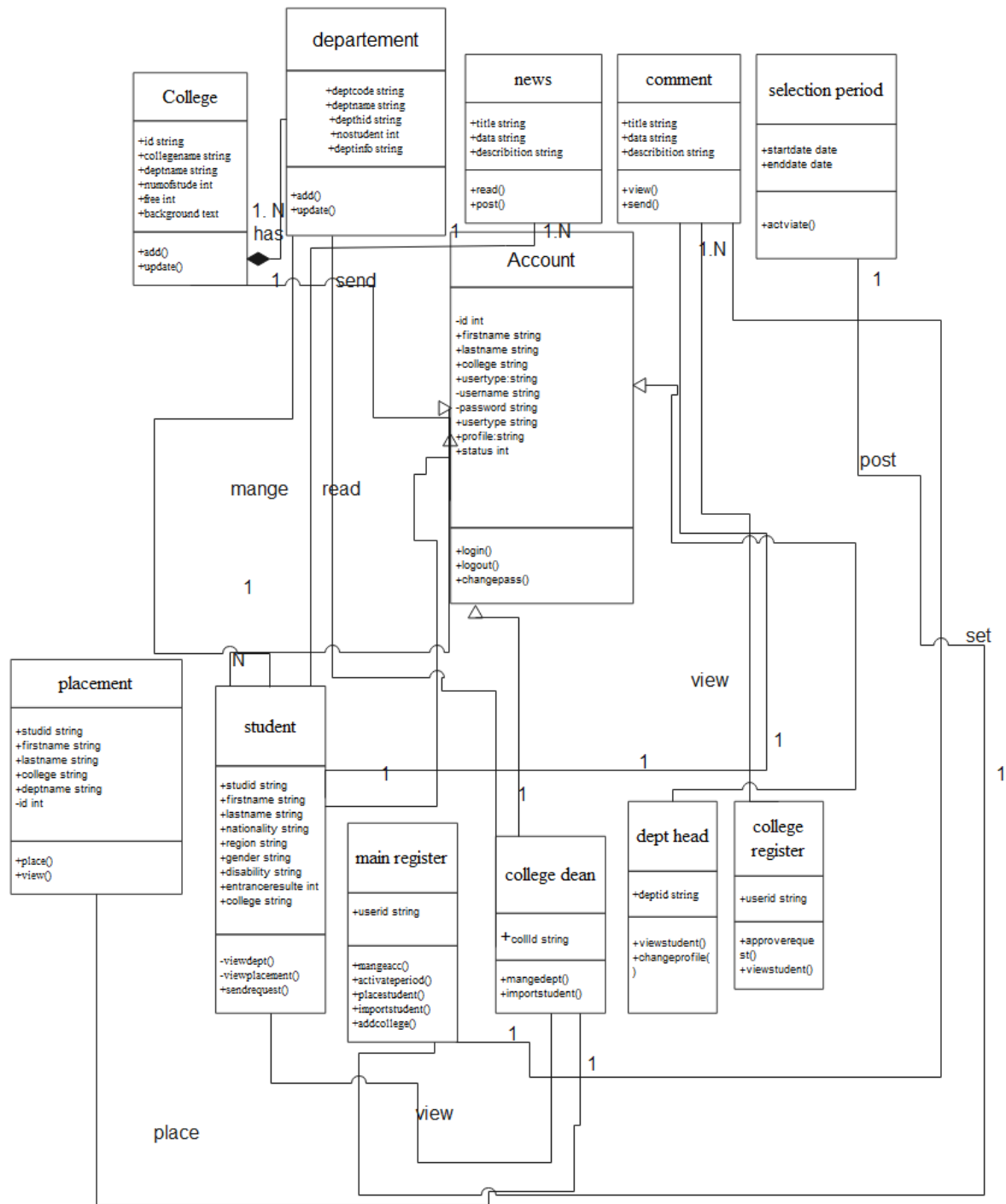


Figure 28: detailed class diagram

## 5.2.4. Persistence Data management

When user interacts with the system persistent data management is need. during this activity persistent object is identified, storage management strategy is selected, and description of database encapsulation is described, in order to store information persistently we map objects into tables and the attributes into fields to the specific table based on the objects found on the system. This part is to describe and show the necessary relationships among the tables, which are selected to store the data persistently in the system. (10)

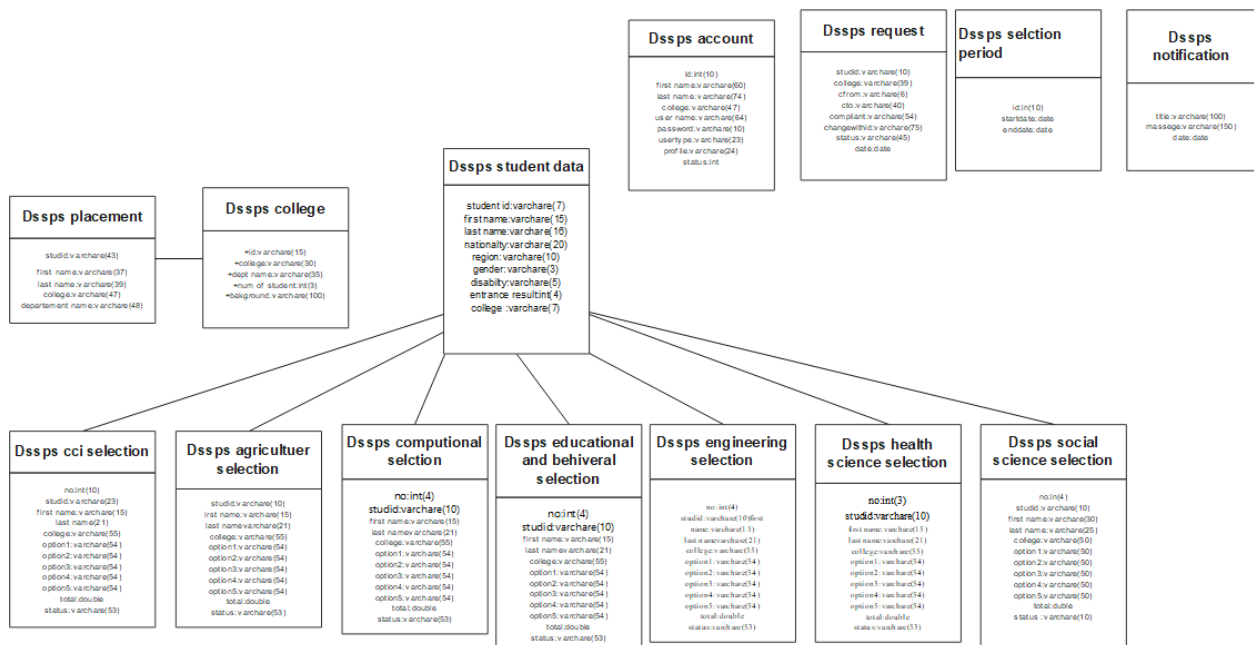


Figure 29 : persistence data diagram.

### 5.2.5. Access Control and Security

The access control and security specify what the user can access or what the user cannot do. This access control is verified by user name and password. The following table shows the access control of our system.

**Table 22: access control and security.**

<b>Actor</b>	<b>Account</b>	<b>Selection</b>	<b>Department</b>	<b>News</b>	<b>Selection Period</b>	<b>Place ment</b>
<b>Student</b>	Change password	Fill	View	View		View
<b>College dean</b>	Change password		Add Update	view		
<b>Main registrar</b>	Manage	view	View	Post	Activate	Place
<b>Department head</b>	Change password		Update info	view		
<b>College registrar</b>	Change password			view		View

### 5.3 Packages

A package is a UML construct that enables to organize model elements and it enables to logically modularize a complex diagram in to package.

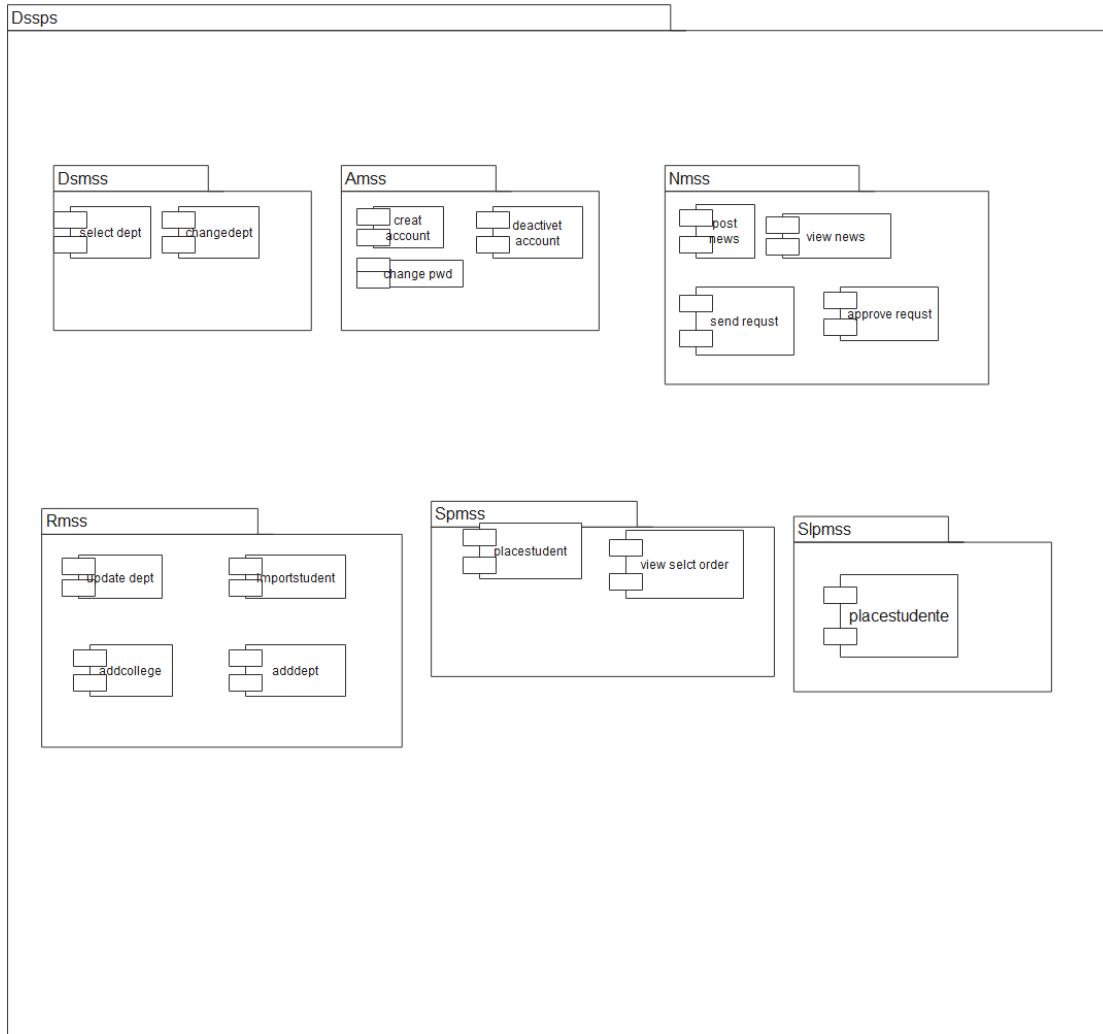


Figure 30: package diagram.

## 5.4. Algorithm Design

### Algorithm for login

Procedure

Method name: **login ()**

**Begin**

**GET** username;

**GET** password;

**IF** (Username==Entered Username && password==Entered password)

{

Login successful

}

**ELSE**

{

Login failed and displays an error message

}

**END**

### Algorithm for selection

Procedure

Method name: **addMyChoice()**

**Begin**

**GET** myDeptChoice[value];

**IF** (valid)

{

Send to database and display choose sent message

}

**ELSE**

{

Display an error message and show what the error is

}

**END**

## 5.5. User Interface Design

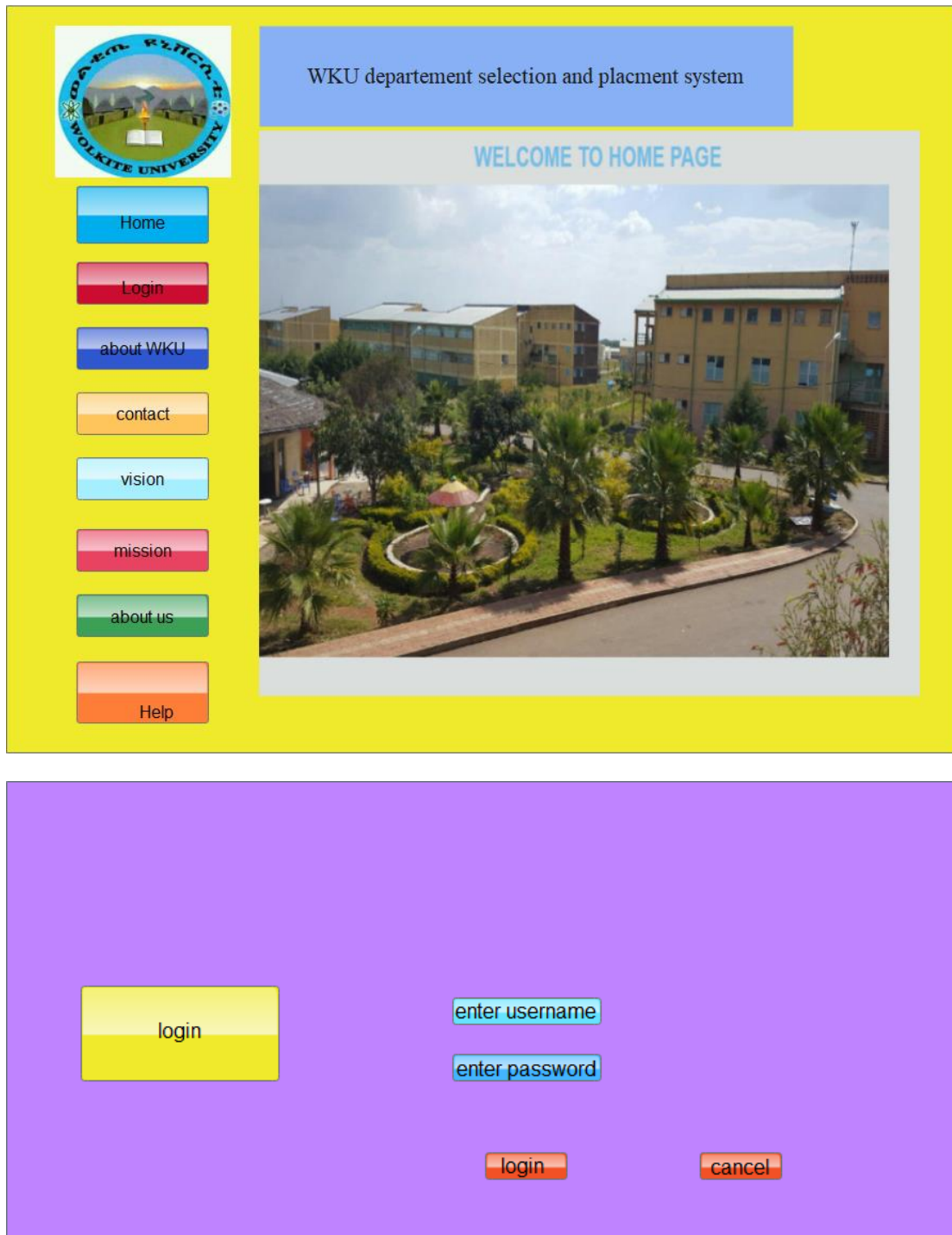


Figure 31: User Interface Design

## **CHAPTER SIX**

### **6 IMPLEMENTATION AND TESTING**

In this chapter we discuss about implementation of database, detailed class diagram, application server, application security.

#### **6.1 Implementation of the Database**

We use MYSQL database to manage our system which assists to insert, update, delete and view data which is stored in the database.

We use MySQL because it can be deployed and run on any operating system. MySQL is easy, fast and can be used for any type of database whether it is relational or simple, large or small.

#### **6.2 Implementation of the Class Diagram**

We use EDRAW MAX to implement class diagram of the system and we implemented the class diagram in our project code.

#### **6.3 Configuration of the Application Server**

We use Xampp application server because Xampp is simple, lightweight Apache distribution it is extremely easy to create a local web server for testing and deployment purposes. Everything you needed is to set up a web server – server application (Apache), database (Maria DB), and scripting language (PHP). XAMPP works equally well on Linux, Mac, and Windows. Since it is suitable and have the function, we listed above we use Xampp application server.

#### **6.4 Configuration of Application Security**

Our system validates all the input by returning error message and suggesting to try again when invalid input occur by using JavaScript. We implement encryption for user password when the system admin creates a user account or when the user changes their password the system encrypts the password by using base64 encryption algorithm. The system has six role and the role are defined clearly. We implemented session for each user login page.

#### **6.5 Implementation of User Interface**

We implement the user interface by considering the users of our system and easy for use interface of our system is developed using English language. Because the student can understand simple way by using bootstrap and CSS.

## **6.6 Testing**

### **6.6.1 Testing Tools and Environment**

Test Environment consists of elements that support test execution with software, hardware and network configured. Test environment configuration must mimic the production environment in order to uncover any environment/configuration related issues.

A typical Environmental Configuration for a web-based application is given below: For web server we use Apache server, for Database MySQL, we use windows operating system, and we use chrome browser.

### **6.6.2 Unit Testing**

Unit testing is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use

Unit testing is done at the source or code level for language-specific programming errors such as bad syntax, logic errors, or to test particular functions or code modules. The unit test cases shall be designed to test the validity of the program's correctness by using JavaScript.

In this level of testing process, Wolkite university department selection and student placement system developers test the different sub procedures, functions and tested. Sample Tests Check whether the return type of the functions is correct.

1. Check how the sub procedures or functions are call correctly.
2. Check if the correct output is produced for different inputs.
3. Check the input data that we write on the GUI must be submitted to the data base.
4. Check the GUI can access the privileged data from the data base

### **6.6.3 System Testing**

In this level of testing process, we have examined how the whole subsystems of department selection and student placement System work together to achieve the desired goal (user's requirements of the system). The goals of system testing are to detect faults that can only be exposed by testing the entire integrated system or some major part of it. Generally, under this testing is mainly concerned with areas such as performance, security, validation, load/stress, and

configuration sensitivity of the System. But we will more focus only on function validation and performance.

#### Sample Tests

1. Evaluate the functionality of subsystem after combination of individual sub system weather it works correctly or not.
2. Check the coherence and coupling of each subsystem.
3. Check the overall functionality of the System that achieves the user's requirement.
4. Measure the system boundary which is beyond the goal or not.
5. Measure the weakness and the strength of the system using different metrics.
6. Check the interaction of each subsystem that performs the specified business process.
7. Verify the system completeness-based the requirement of end user.

#### **6.6.4 Integration Testing**

In this level of testing we have examined how the different procedures work together to achieve the goal of the sub system. The type of integration testing that we have followed is bottom up. Since our system is web-based system each and every access is depending on hypertext transfer protocol (HTTP). So, we integrate each component from single functionality (individual interface) to the main function incrementally step by step through link tag by using test driver. Sample Tests are check the interaction between individual functionality which performs the specific tasks, evaluate the functionality of subsystem after combination all individual functionality.

#### **6.6.5 Acceptance Testing**

Fourth year students (real users) will participate on the acceptance testing of our system. According to system requirements and other resources (documentation, source code, user manual) test cases are generated to determine (validation and verification) whether the system satisfies users need and expectation to maintain the reliability of our system and also meet the user's requirements.

## CHAPTER SEVEN

### 7 CONCLUSION AND RECOMMENDATION

#### 7.1 Conclusion

Currently Wolkite university department selection and student placement is manual system. Due to this many problem are occurring such as information losing, data accessibility for privileged users, schedule creation and also repetitive activities as recording same information, updating information, adding new data or information is not that easy. By analyzing this problem, the group team proposed, analyze, design, and implement this computerized system for Wolkite university. The system that will provide more efficiency, and accuracy than the manual based system. The new computerized and management system perform many operations performed manually. It prevents the loss of paper documents, time, and effort. This system solves many problems such as lose of information form, and data duplication. But now there is a clear and base idea how the system can be developed and integrated, this project can be seen as an initiation for students who are doing project on the same field.

#### 7.2 Recommendation

While doing this system the team has faced different types of challenges. But by the cooperation of all the group members and the adviser, the team is now able to reach to the final result. All the group members strongly fought these challenges and take the turn to the front. We would like to recommend the next fourth year student of computing and informatics to add some of the extra features add to this System which we could not do due to time limitation and unavoidable reasons and challenges including the following features.

- ✚ SMS placement notification.
- ✚ Our system cannot handle across college request (means request must be with in college).
- ✚ Dynamically placing student (placing student in new department cannot be possible before maintenance).

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## 9 APPENDICES

### Appendix A: Existing System Forms and Reports

Sample of the Form distributed for New Students to select the department:

**Wolkite University**

**Department selection form for First Year Student**

Name \_\_\_\_\_

Student ID Number \_\_\_\_\_

Result \_\_\_\_\_

Choices:

1. computer science
2. Information systems
3. information technology
4. software engineering
5. chemical engineering
6. electricalengineering
7. mechanicalengineering
8. foodengineering
9. hydraulicengineering
10. physics
11. biology

Please identify your choice either by writing the number associated to each department or the name of the department for all choices stated below.

Note that you should not choose the same department more than once.

1<sup>st</sup> choice = \_\_\_\_\_

2<sup>nd</sup> choice = \_\_\_\_\_

3<sup>rd</sup> choice = \_\_\_\_\_

4<sup>th</sup> choice = \_\_\_\_\_

5<sup>th</sup> choice = \_\_\_\_\_

Consent

I hereby confirm that I have submitted my choice are finale and are not subjected to change

Signature \_\_\_\_\_

After the student select there department based on self-interest and submit the form for the department deans. The colleges see the space of all departments and placed the student based on the following criteria follow (rule and regulations) adopted by the university for placing students on the department:

<i>Percent</i>	<b>Department placement criteria for new students</b> <i>Reasons of the student placed</i>
55%	Depending on the student entrance exam result
25%	Affirmative actions(first ladies )
10%	For developing regions
10%	For disable persons
<b>Total</b>	100 %

After the student select their own departments will be placed the student based on the above criteria and also post the student list on the college notice board. All department head also receive the student list form the department dean and register the student for first year first semester course.

All activities explained in the above are being performed by using manual system. So, these huge activities will consume much more resources and times.

## Appendix B: Sample Source Code

```
<html lang="en">

<head>

  <meta charset="utf-8">

  <meta http-equiv="X-UA-Compatible" content="IE=edge">

  <meta name="viewport" content="width=device-width, initial-scale=1">

  <!-- The above 3 meta tags *must* come first in the head; any other head content must come *after*
these tags -->

  <title>activate period</title>

  <!-- Bootstrap -->

  <script type="text/javascript">

function v1()

{

var startDate=document.selection.startDate.value;

var endDate=document.selection.endDate.value;

var letter=/^[a-zA-Z[ ]+$/;

var digit=/^[0-9]+$/;

if (startDate==null || startDate=="")

{

alert("fill startDate please!");

return false;

}

}
```

```
if (endDate==null || endDate=="")
{
alert("fill endDate please! ");
return false;
}
else{
alert("data is validated!!");
return true;
}
}

</script>

</head>

<body>

<div class="continar">

<div class="row">

<div class="col-md-20 col-md-offset-3 " id="form" align="center">

<form class="form-group" name="selection" action="activateperiod.php" method="post">

<br><br>

<label>

<br>
```

```

    startDate <input type="date" name="startDate">

    endDate <input type="date" name="endDate">

    <input type="submit" class ="btn btn-primary" name="set" value ="set" onclick='return v1()'
required>

    <input type="reset" class ="btn btn-danger" value ="cancel">

</form>

<?php

$db= mysql_connect("localhost","root","","dssps");

if(isset($_POST['set']))

{

    $sqlc = mysql_select_db("dssps");

    $startDate=$_POST['startDate'];

    $endDate=$_POST['endDate'];

    $today = date("Y-m-d");          // 2001-03-10 17:16:18 (the MySQL DATETIME format)

    echo "".$today;

    if($today==$startDate)

    {

        $sql1 = "INSERT INTO selectionperiod ". "(id,startdate,endDate) ".

"VALUES(1,'$startDate',$endDate)";

        $result=mysql_query($sql1);

        if($result)

        {

            echo "<script>alert('successfully set')</script>";

```

```
}else
{
echo "<script>alert('try again!')</script>";
}

else{
echo "<script>alert('already activated!')</script>";
}

?>

</div>

</div>

</div>

</body>

</html>
```