
WOLKITE UNIVERSITY

COLLAGE OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

**Project title:- Integrated WKU meeting,digital notice and inter-office communication**


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Wolkite University, Wolkite, Ethiopia

May 25,2021

## Declaration

We here by declare that this BSc final project is our original work and has not been presented for a degree in any other university, and all sources of material used for this Project have been duly acknowledged.

Name: _____Signature _____

_____Signature Name: _____

_____Signature

Name: _____

Name: _____Signature _____

This BSc final project has been submitted for defense with my approval as a project advisor.

Name: Mrs. Frehiwot Tekalgne

_____

Signature: 

Date of submission 25/05/2021

## Approval of board of examiners

We, the members of the board of examiners of the final open defense by BAYE AMANO, YONAS WODAY ,RIYAD AMAN have read and evaluated his/her final project entitled integrated WKU Meeting, digital notice and inter-office communication system" and examined the candidates. This is, therefore, to certify that the project has been accepted in partial fulfillment of the requirement of the Degree of Computer Science.

| | | |
|---|---|---|
| _____ | _____ | _____ |
| Advisor/Supervisor | Signature | Date |
| _____ | _____ | _____ |
| Examiner 1 | Signature | Date |
| _____ | _____ | _____ |
| Examiner 2 | Signature | Date |
| _____ | _____ | _____ |
| Examiner 3 | Signature | Date |

## ACKNOWLEDGEMENT

We want to appreciate the almighty of Allah for the gift of life, protection, Health, academic success and for giving us the strength to preparing the first-semester final project documentation. We want to also in a special way appreciate our Parents and our university for the support and sponsorship of our education from initial to preparing the first-semester final project documentation, for care, patience, and love we pray the Almighty Allah grants them long life on earth to enjoy the fruit of their labor. We want to in a special way acknowledge our project advisor MRS. FIREHIWOT T MSc.) for his support in the realization of this project work. We appreciate all our friends and wellwishers whose name were not mentioned we say our reward you all what you want

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# Abstract

This project is a web-based meeting, digital notice and inter-office communication system designed for WKU. The application will be portable on all devices that have a browser that supports HTML5 and having a webcam camera.

The system provides a user-friendly GUI to make it easy and efficient for the users of the system. In this system, we have used data gathering methodology like an interview, observation, document analysis, and questionnaires to know the real problems. Technologies used for the new system are HTML, CSS and bootstrap framework as front-end and JSP, MYSQL on Apache server. The system uses a three-tier architectural pattern.

In this system, the system admin can register all the system users except visitors who can only view and search public notice. The registered staff can hierarchically perform their tasks. Such as, they can hold and attend the meeting, prepare and post the notice, prepare and send a letter from one office to another. In general, the system is developed to integrates three different modules (i.e. meeting, digital notice, and inter-office communication) and provide a realistic solution to the problems or just communication system.

# Acronyms and Abbreviations

MDNOIC……Meeting digital notice and office inter communication

| | |
|---|---|
| WKU | Wolkite University |
| OOP | Object Oriented Programming |
| UML | Unified Modeling Language |
| CSS | Cascading Style sheet |
| SQL | Structural Query Language |
| HTML | Hyper Text Markup Language. |
| GUI | Graphical user interface |
| MYSQL | MY-Structure query language |
| JSP | java script page |
| PHP | hypertext preprocessor |

# CHAPTER ONE

## 1. Introduction

Integrated WKU Meeting, Digital Notice and Inter-Office communication system is a web-based system that integrates three different systems which include Meeting, Digital notice, and inter office communication. an integrated WKU MDNIOC SYSTEM we are going to develop is web based system in which client will communicate central server through https. So we had chosen client-server architectural style which has 3-tier architectural pattern for our system that we going to develop.the product will be implemented in JSP,PHP,HTML,CSS,JS,Bootstrap framework and MYSQL database.

Integrated WKU MDNIOC SYSTEM is a system that asystem going to digitalize the communication between offices to offices and generally stakeholder to stakeholder that will capable if they are only allowed by the system. For the notice purpose, the notice writer writes the notice (prepare) and then pin the notice on the buildings/notice board. Anyone can look at the notice which is pinned. For the meeting purpose, the meeting helder announces the members for the meeting with the time and place where it will be. While meeting time, the helder informs the meeting agenda and takes new agenda from the member. Finally, they reach a common goal. The secretary writes the decision of what they had agreed and shared a copy of that report to the members. For the office to office communication, all the offices have their name and stamp which represents that office.

The office workers firstly prepare the letter. Then, he/she sends the letter to which they want. The letter is sent by the messenger person. The messenger gets back the reply message back to the letter sender. For this problem, our system will be the suite solution. Because the system allows the stakeholders to be able to get the latest information through digital notice, able to communicate

with other offices easily, also it can allow holding and participating in meeting at any time and any place.

## 1.1. Background

### 1.1.1. Background of the organization

Wolkite University (WKU) is one of the third-generation higher institutions that have been founded in 2012. 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 2020. The University is located in the Southern Nation Nationalities Regional State, in Gurage zone, 158 km southwest of the capital city, Adds Ababa, on the way to Jima. In November 2009 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. The University began its formal activities at Wolkite town with the appointment of the first president, Dr. Admasu Shibru, in February 2012, while other key officials of the University were appointed later. Thanks to the local community who agreed to give away their lands (196 hectares) to the University without any form of exchange for compensation, the main campus's preparations had begun as early as 2010 the first phase of construction (36 blocks) that includes buildings for cafeterias, student dormitories, various academic buildings and other infrastructures were began in May 2010. During the establishment phase, the construction was administered by Wolkite town housing development project office. After July 2012 administration of the construction was fully transferred to the University project

office. Since then, construction of additional facilities and various academic buildings has been conducted in rapid succession.

Integrated WKU MDNIOC SYSTEM is a web-based system that integrates three different systems which include Meeting, Digital notice, and interoffice communication. WKU uses the manual system for Notice on board and personal account, and use some technologies like telegram,Institutional mail,zoom,skype and University website for Meeting, and office to office communication but not organized as a system.

1.2. Statement of the problem

- Time-consuming, energy-consuming, space-consuming due to sticking the notice, organizing the meeting and information exchange between offices.
- Using manual documentation method is vulnerable to external disasters and also, may be lost information.
- Posting (pinned) notice is manual it leads to unable to retrieve info speedily and accurately.
- Data/Info is Loss occurs when valuable or sensitive information on a system is compromised due to theft, human error, It may also occur due to physical damage or absolutely lost..
- The notice board could easily be physically destroyed by due to vulnerable to external disasters.
- The pinned notice leading to confusion and difficult to search if it's not done by unorganized way which may have not right time and correct place.
- extra resource consumption happen by Decrease attractiveness of the environment because pinned notice duplicated over .
- information delay is happen due to poor communication between stakeholder.
- resource wastage occurs due to file stored manually unorganized way. eg.on table.

1.3. Objectives

1.3.1. General objective

The main objective of this project is to automate the meeting, notice and inter-office communication system into an interactive web-based Integrated MDNIOC SYSTEM

for WKU to overcome the problem.

### 1.3.2. Specific objective

To develop a web-based Integrated WCU MDNIOC SYSTEM ➢

Identifying and analyzing the major problems of the existing system.

- ➢ Gathering the customer requirement.
- ➢ Defining system requirements.
- ➢ designing the new system
- ➢ Implementing or coding the designed system
- ➢ Testing and evaluate the proposed system
- ➢ maintain and Deploying the final product of the system

## 1.4. Feasibility Analysis

### 1.4.1. Technical study

The system to be developed by using technologically system development techniques such as JSP, JavaScript, j query, CSS, Bootstrap, HTML5, and MYSQL database without any problems and the group members have enough capability to develop the project. The proposed system can be easily maintained and repaired without requiring high Experts or technical assistants because the system was developed by familiar programming language (environment). Therefore, the system is technically feasible.

### 1.4.2. Economic feasibility study

The system to be developed is economically feasible and the benefit is outweighing the cost. Since this project already computerizes the existing system, by now the reduction of cost for materials used in manual operation becomes beneficial to the organization.

### 1.4.3. Operational feasibility study

The system to be developed will provide accurate, active, secured service and decreases the labor of workers. The system is user-friendly that means the system will be easily operational to operate that's why the systems interface is not complex for the user to use the system. So, the system will be operationally feasible.

### 1.4.4. Legal feasibility study

The system to be developed doesn't conflict with any organizational directives. Those directives are legacy, rules, and regulations that must have to be respected or considered. We had done the system in such a way that the system should have to behave following the organization's legal rules. As the system is done under the organization's legal rules and regulation it is legally feasible.

### 1.4.5. Political feasibility study

The system to be developed does not conflict with any government directives and the constitution, because it gives services for the users effectively and efficiently. So, the government is profitable and the system will be politically feasible.

### 1.4.6. Schedule feasibility study

The system going to be developed is not complex so it will not take much time to design and implement as the operations done in the system are few so the system is feasible according to the schedule.

## 1.5. Scope and limitation of project

### 1.5.1. Scope of the project

The scope of the proposed system is to develop a web-based integrated MDNIOC for wolkite University.

The automation of web-based Integrated WKU MDNIOC SYSTEM includes:

- ➢ Allowing the visitor to look public notice without any authentication.
- ➢ Allowing system admin to create an account for the campus community.
- ➢ Allowing to forget the password for the authenticated user.
- ➢ Allowing the stakeholder of the system to log in to the system to access the system functionalities except for the visitor.
- ➢ Enabling the system authorized users to make a meeting with a video chatting system. ➢ Allow the system users to organize a meeting by setting meeting information.
- ➢ Allow the meeting organizer to share the meeting information.
- ➢ Allow the system user to add meeting decisions and finally share it with the members what they had agreed on.
- ➢ Allowing the stakeholder to prepare a notice to post.

- Allow the system users to post a notice privately and publically.
- Allow the higher hierarchy to approve the notice before posting.
- Allow the stakeholder to view notices posted.
- Allow the stakeholder to search notices.
- The system users can get notifications.
- Allowing the office workers to prepare a letter to send to other offices.
- Allow the office worker to send/attach files/letters from the office to offices.
- Allowing the system used to view the sent file and reply for it.
- Allowing the stakeholder of the system to logout from the system.

1.5.2. Limitation of the project

Our proposed system has the following limitation:

- From the local language, it only supports the Amharic language.
- The system doesn't support any grammar check
- The system doesn't support any IOT technology like, at meeting time the system doesn't check whether or not the attendee is paying attention

1.6. Significance of the project

The significance of the project deals with the importance the project has in addition to the values it going to add to the existing system. Some of the significance of this project that the team has identified is listed out as follows: -

➢

➢ The web-based system improves our time management and minimizes our cost, by accessing the system from remote areas online.

Improves the efficiency, control, and security of the system.

➢ Improves the performance of the existing system.

➢ Improve communication between stakeholders.

➢ Improve confidentiality.

➢ Improve the quick accessibility of data.

➢ Minimizes the redundancy of data.

1.7. Beneficiaries of the system

Upon the successful completion of the project, the beneficiaries of the projects are:

Academic staffs, president office workers, administration staff, research staff, and student union. The benefits of these stakeholders from the proposed system include:

➢ Schedule and participate meetings at any time and at any place they were so the system saves their resources (i.e. time, cost & place).

➢ Approve notices before posted.

➢ Post and view notice easily. No need to physically appearing to post or view.

➢ They can share data with other offices.

Secretary: the secretary can be beneficiary from the system

➢

➢ They can view public notices.

➢ Attend meeting.

➢ Generate and share meeting report for meeting colleagues.

Visitors: the benefits that the visitors get from the system include:

Easily view public notices which may be business or academic notices. Which helps them to get updated information without physical appearance.

➢ Easily access information about the university.

1.8. Methodology of the Project

In order to accomplish this project on time and within the cost, we would follow different procedures which are describe bellow.

1.8.1. Data Collection Tools/Techniques

There are different data gathering technique which helps us to understand the manual systems general activities and its procedures. To collect accurate data from the concerned body our team will concern the following fact-finding techniques: -

Interview: - To gather complete and appropriate information for the proposed project our team had taken interviews from some system stakeholders like the college dean, department head, lectures, and another concerning body.

Document analysis: - To get historical information about project activities and to know the rules and regulations the team analyzed documents as possible as relevant to the new system. The team had looked at many documents to analyze how the system works,

➢ Observation: This is also another data collecting method. We have also used this observation method to gather data. This method enables us to observe and understand how the manual system works and what problems are encountered.

### 1.8.2. System Analysis and Design

In this project, our team selected to use object oriented system development methodology for the design.

### 1.8.3. System Development Model

Iterative model: iterative process starts with a simple implementation of a small set of the software requirement and iteratively requirements and iteratively enhance the evolving versions until the complete system is implemented and ready to deployed.

### 1.8.4. Testing Methodology

Software tasting is evaluation of the software against requirement gather from users and system specification. So, our team will use to test the system by using types of testing like unit testing, system testing and integration testing.

- ➢ Unit testing: unit testing is done at the source code level for language specific programming error such as bad syntax, logic errors, or to test particular function or code error.

  Sample test

  - Check whether the return type of function is correct.
  - Check the correct output is produce for different inputs.
  - Check efficiency of the code.

- ➢ System testing: the goal of system testing are to detect fault that can only be exposed by testing the entire integrated system or some major part of it.

  Sample test

  - Verify system completeness-based user's requirement.
  - Evaluating the functionality of the subsystem after a combination of individual subsystem whether it works correctly or not.
  - Check the coherence and coupling of each sub system.

- ➢ Integration testing: in this level of testing, we will examine how the different procedure works together to achieve the goal of the sub system.

  Sample test

  - Check the interaction between individual functionality which performs the specific task.
  - Identify the independence of each subsystem with other subsystem.

## 1.9. Development Tools and Technologies

### 1.9.1. Front end Technique

The user interface is developed using HTML, CSS, JavaScript and XML

### 1.9.2. Backed Technique

We will use Php and Xampp database to develop and manage the backed of the system

### 1.9.3 Documentation and Modeling Tools

This project uses the following system development tools and environments for different activities.

*Table 1. 1 models tools*

| Tools | Activities /purpose |
|---|---|
| Sublime Text, notepad | For editing code |
| CSS, Bootstrap, j query | For attractive layout |
| JavaScript | For validation, |
| JSP+PHP | Back end (Server-side programming) |
| HTML5 | Client-side coding |
| MYSQL | Back-end (database) |
| Apache server on XAMP | As server |
| Mozilla Firefox, Google Chrome, Opera | Browsers |
| MS office word 2016 | For Documentation |
| MS Office PowerPoint 2010 | For Presentation |

| | |
|---|---|
| visual<br>MS Office Visio 2016, Edraw Max, paradigm8.0, and online draw. | To draw UML Diagram and for designs |

Tools hardware Activities

Computer, pen, paper, printer,flush

1.10. Budget and Time Schedule of the Project

*Table 1. 2 budget of the project*

| No | Item | Amount | Each Price | Total price |
|---|---|---|---|---|
| 1 | Personal Computer | 2 | 2*20,000 birr | 40,000 birrs |
| 2 | Paper | 300 | 0.5 cent | 150 birrs |
| 3 | Print | 150 | 1.5 birr | 225 birrs |
| 4 | Pen | 10 | 10 birrs | 100 birrs |
| 5 | programmer | 2000 | 3*2000 | 6000 |
| 6 | Flash 64GB | 1 | 400 | 400 birrs |
| | Total | | | 46,875 birrs |

1.10.2. Schedule

The schedule is analyzing the measures of how reasonable the project timetable that wants to develop a system for each activity and scheduling them by using different

schedule techniques. Our team member uses PERT chart techniques to schedule the time of project completion, this technique uses individual activities to estimate the time for each task.

In any system, some activities must be performed when developing a system. The activities on the development of distributed forgery certificate generation and verification system in determined order are as follows;

A) Feasibility study and gather some requirement for a proposal

B) Write and submit a project proposal

C) Obtain approval of the project

D) Gathering system requirements or Review different sources

E) Designing the proposed architecture of the system

F) Develop the prototype of the proposed solution

G) Implementing the proposed solution

H) Testing the implemented proposed solution

I) Maintaining the proposed solution

J) Submit final result

K) Deploy the completed proposed solution

We can generate the schedule of the project to develop the proposed solution with proper time in a short period.

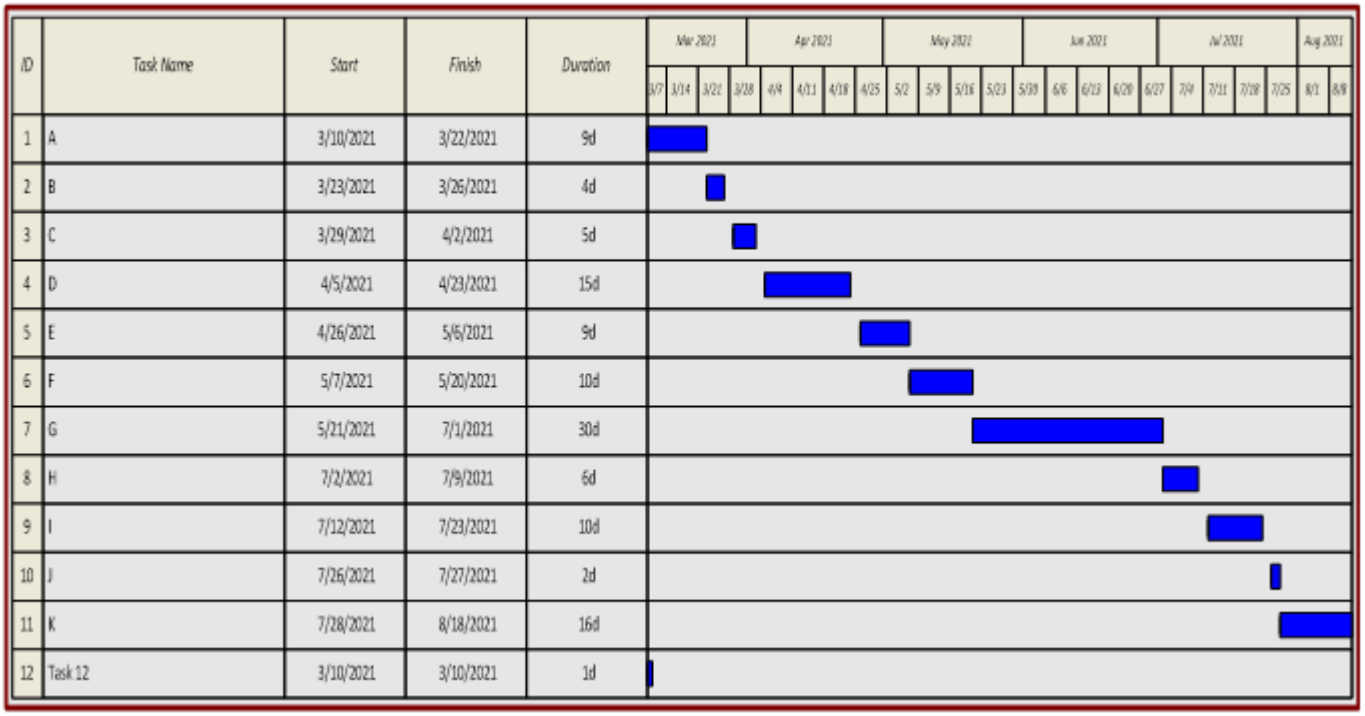



*Figure 1. 1 Time schedules of project*

The Critical Path (CP) is A->B->C->D->F->G->H->I->J->K

# CHAPTER TWO

## 2. Description of the existing system

### 2.1. Introduction

The existing WKU system uses the some manual system for Notice pinned purpose and use some technologies like telegram,Institutional mail,zoom,Skype and University website by contacting their personal account to contact them firstly search their account and informed for all individual stakeholder one by one their is no organized system just for store stakeholder information to contact and searching individual account of stakeholder for meeting , and office to office communication but there is no system stands for just only doing this purpose as one together and organized as a integrated system,they may exercised particularly. For the notice purpose, Excess amounts of papers and human resources are needed for the notice writer writes the notice (prepare) and then pin the notice on the buildings/notice board and Anyone can look at the notice which is pinned. For announce the meeting for the stakeholder used specifically announce method like email,notice use both manual and some technologies like personal account. For this problem, our system will be the suite solution. Because the system allows the stakeholders to be able to get the latest information through digital notice, able to communicate with other offices easily, also it can allow holding and participating in meeting at any time and any place.

### 2.2.User of the existing system

Different stakeholders participate in the existing system, which is listed below:

➢ Staff: The staff is all members who are listed in the naming and conventions. Like, academic staff, president office workers, admin staff, the research staff, and the secretary. They can hold and attend the meeting, can write, pin and took notice, as well as they can communicate with another

office through the letter and some personal account. In addition to this, they can approve/disapprove some

decisions forwarded from others. From the staff workers, the secretary can attend, add the decision of meeting and finally share the meeting decision report to the meeting member. Also, everyone can view notices which are pinned publically.

➢ Visitor: the visitors are people who can view notices. Sometimes it is students and other local peoples.

2.3. Functions or main activities of the existing system

The major activities performed in the existing system are the following

1. Pinning new notices on notice board: any information's are posted/pinned on the notice board such as

- business notices
- meeting notices
- assignment/test/project and other class information's
- student registration and others

The notice paper has the following features:

- Pinned date
- Subject/title
- Body of the notice Legal Stamp

2. Organizing and attending meeting: any arrangements for the meeting are done in different ways:

- Announcement using a microphone and mini-media.
- Sending short notice letters to a private person.
- Pinning papers on notice board and another place.

First of all, the meeting is divided into two which are regular and urgent meetings.

But both of them have the most similar structure. Here is their structure.

- agenda is forwarded to the meeting members before the meeting
- Sub-agendas may be raised by the members.
    - All the member's discus and reached a common decision.
    - After that, all the meeting report is written and forwarded to them.
    - Finally, all the meeting members should sign with their names.

The place where the meeting will be performed may be in the classroom, LTH, office and meeting hall. The meeting will be performed only in a specific place and also the meeting members must participate together in a specific place.

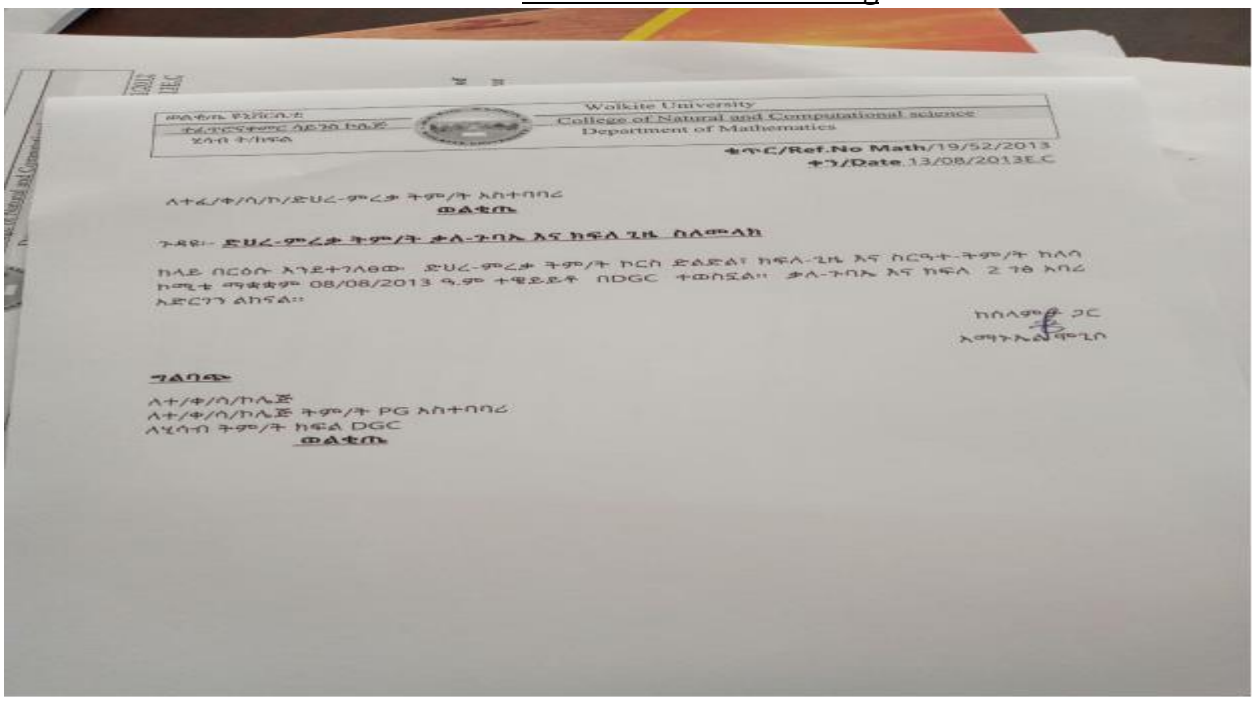
3.Inter-office communication in which offices can communicate with each other through a paper-based letter and some technologies. The letters are sent by messenger person. In addition to the letter, some offices communicate with each other using email, physical contact, phone call, telegram, and other social media.

Exchanging information: information is sent and received from one to another through a paper and some technologies.

## 2.4 Forms and Documents used in the existing system

The existing system use many forms in manual documents ways as the following figures. figure

2. 1 Documents used in meeting



Wolkite University
College of Natural and Computational science
Department of Mathematics

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አማኑኤል ሳሙኤል

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figure 2. 2.document prototype for meeting agenda

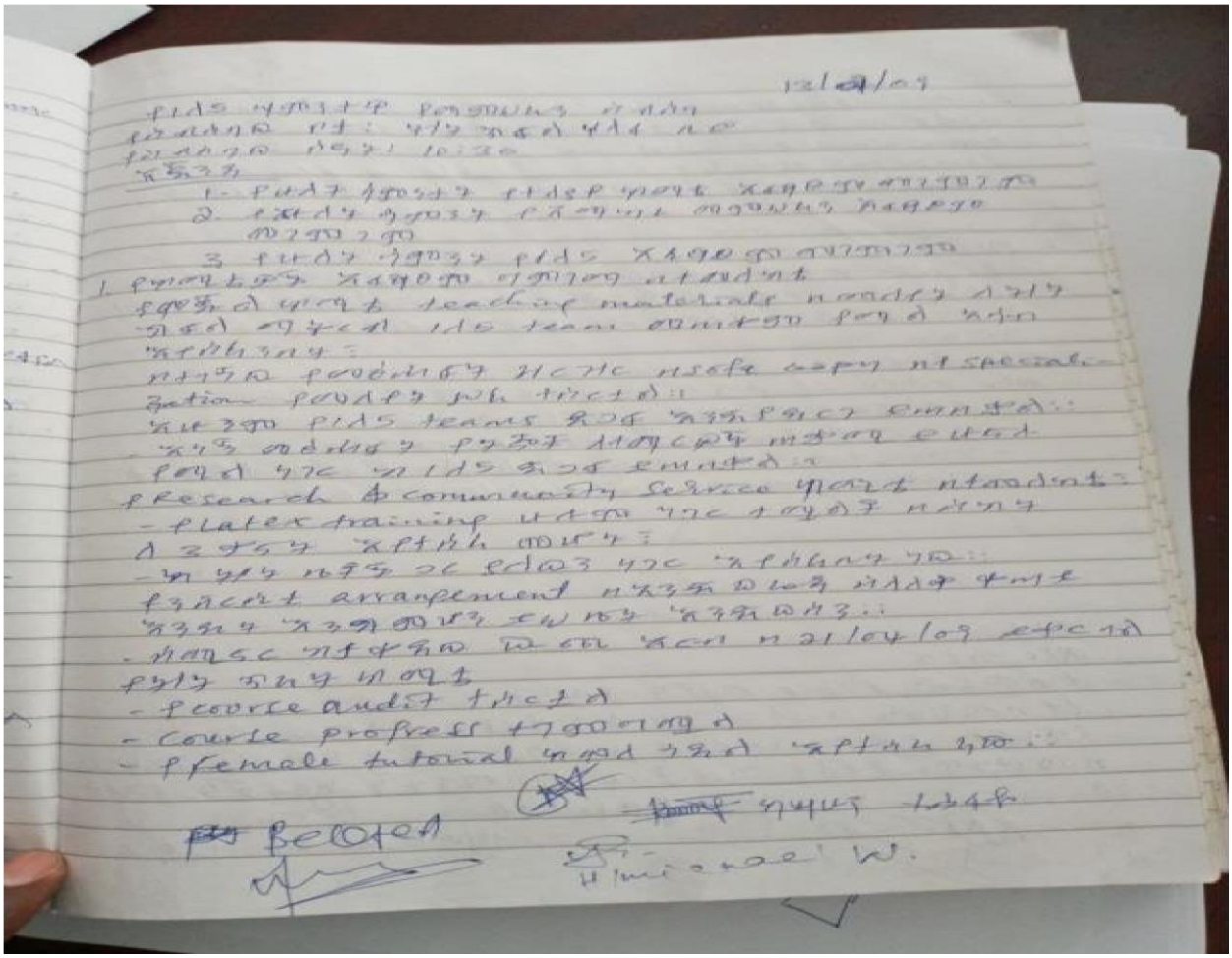
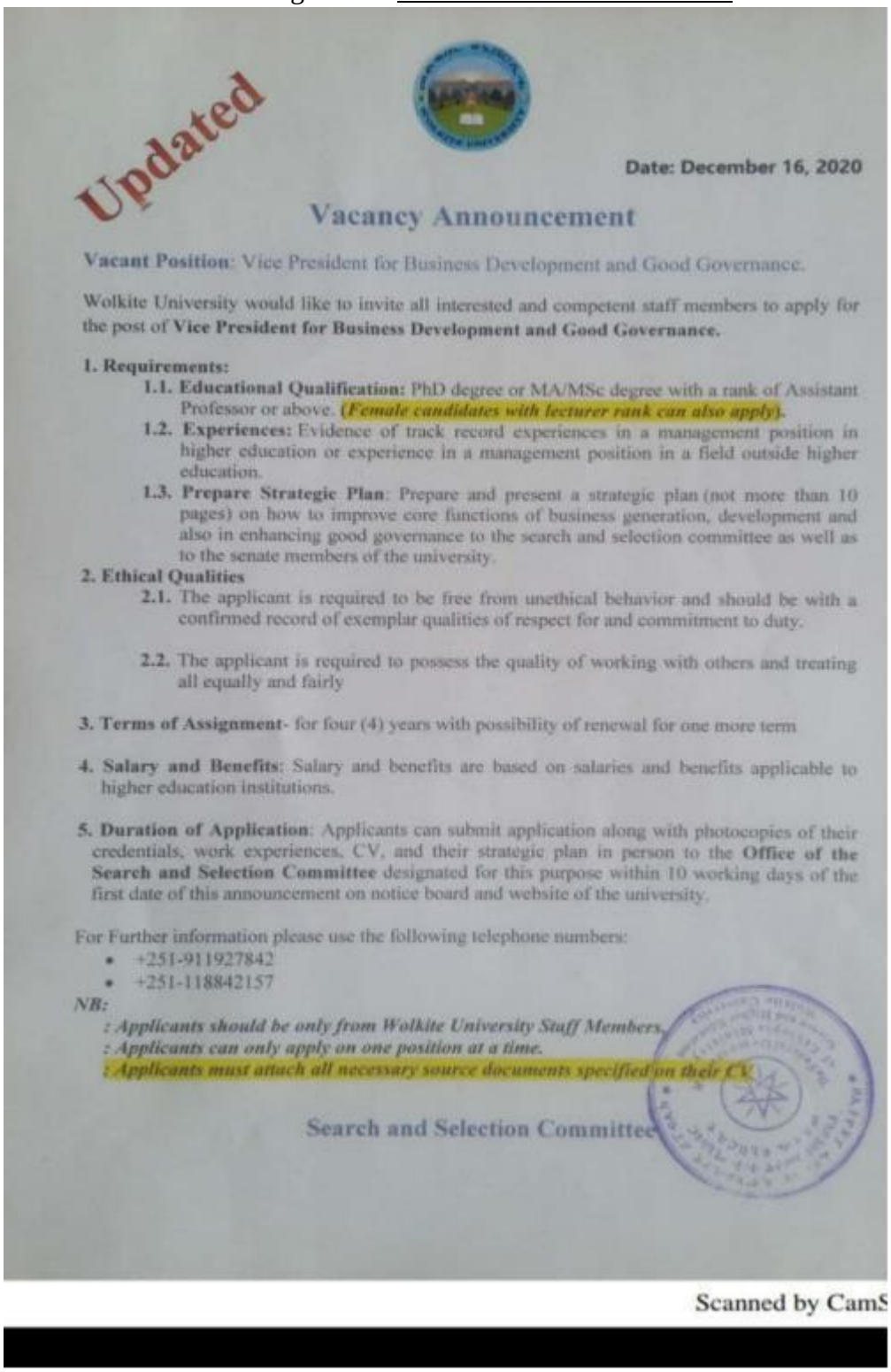


figure 2. 3.Documents used in the notice



Updated

Date: December 16, 2020

## Vacancy Announcement

**Vacant Position**: Vice President for Business Development and Good Governance.

Wolkite University would like to invite all interested and competent staff members to apply for the post of **Vice President for Business Development and Good Governance.**

1. **Requirements:**
   - 1.1. **Educational Qualification:** PhD degree or MA/MSc degree with a rank of Assistant Professor or above. ***(Female candidates with lecturer rank can also apply).***
   - 1.2. **Experiences:** Evidence of track record experiences in a management position in higher education or experience in a management position in a field outside higher education.
   - 1.3. **Prepare Strategic Plan**: Prepare and present a strategic plan (not more than 10 pages) on how to improve core functions of business generation, development and also in enhancing good governance to the search and selection committee as well as to the senate members of the university.
2. **Ethical Qualities**
   - 2.1. The applicant is required to be free from unethical behavior and should be with a confirmed record of exemplar qualities of respect for and commitment to duty.
   - 2.2. The applicant is required to possess the quality of working with others and treating all equally and fairly
3. **Terms of Assignment**- for four (4) years with possibility of renewal for one more term
4. **Salary and Benefits**: Salary and benefits are based on salaries and benefits applicable to higher education institutions.
5. **Duration of Application**: Applicants can submit application along with photocopies of their credentials, work experiences, CV, and their strategic plan in person to the **Office of the Search and Selection Committee** designated for this purpose within 10 working days of the first date of this announcement on notice board and website of the university.

For Further information please use the following telephone numbers:

- +251-911927842
- +251-118842157

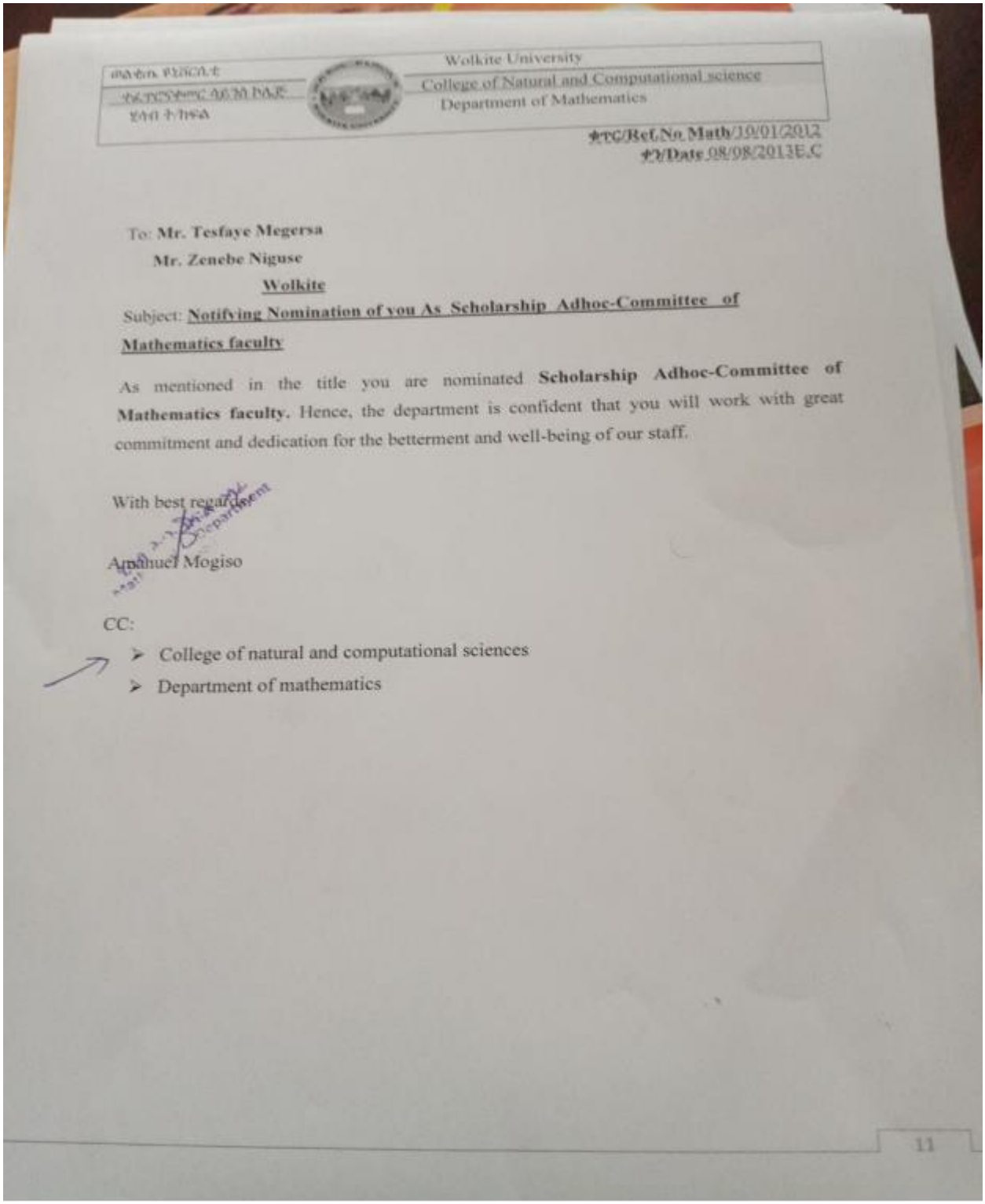
***NB:***

***: Applicants should be only from Wolkite University Staff Members.***
***: Applicants can only apply on one position at a time.***
***: Applicants must attach all necessary source documents specified on their CV.***

**Search and Selection Committee**

Scanned by CamS

figure 2. 4.document prototype for letter paper



Wolkite University
College of Natural and Computational science
Department of Mathematics

★TC/Ref.No Math/10/01/2012
★Y/Date 08/08/2013E.C

To: **Mr. Tesfaye Megersa**
**Mr. Zenebe Niguse**
**Wolkite**

Subject: **Notifying Nomination of you As Scholarship Adhoc-Committee of Mathematics faculty**

As mentioned in the title you are nominated **Scholarship Adhoc-Committee of Mathematics faculty.** Hence, the department is confident that you will work with great commitment and dedication for the betterment and well-being of our staff.

With best regards

Amanuel Mogiso

CC:
- College of natural and computational sciences
- Department of mathematics

11

2.5 Strength and weakness of the existing system

2.5.1. Strength of existing system

- The system is network independent and everyone can access it without using any device.
- Anyone can look pinned notices at any time.

- ➢ Any meeting members can share their ideas face to face and most of the time it is better to get the feeling of the person from his facial reaction.
- ➢ For the confidentiality purpose of letters sent from one office, there is an acceptance form that ensures the reaching of the letter to the intended person.
- ➢ and increase the interaction with the environment

2.5.2. The weakness of the Existing System

- ➢ Extra manual effort is needed for sticking the notice, arranging the meeting and information exchange.
- ➢ Problems of information distribution method: - The information distribution method is very slow. Since information transformation is manually using paper.
- ➢ No security mechanism used.

2.6 Business rules and constraints

A business rule is an operating principle or policy that syatem must satisfy. Every organization has its own set of business rules, rules that must be reflected in the software it develops. Business rules and constraints that should be obeyed in our system are:

- ➢ Meeting business rule

BR1: The meeting can start if more than 50% of members available.

BR2: Members of the meeting can raise their ideas and agenda.

BR3: Meeting to be held, assembler and all members should know the agenda before the meeting class start, If the meeting is urgent the meeting members are not obliged to know the agenda.

BR5: talking without permission, talking out the scope of agenda, making noise while meeting time is forbidden and illegal.

- Notice business rule

BR1: The user should prepare a notice to post.

BR2: Any authenticated person of the university can post a notice.

BR3: The higher hierarchy should approve the post before it was posted.

BR4: Everyone can read public notices.

BR5: Notices without a stamp are not legal and it is invalid.

BR6: The paper should have the pinning date with its title.

- Business rule for office-inter communication

BR1: Offices should have their stamp.

BR2: Messenger should take information from one office to another office.

BR3: Offices can send letters to another office.

BR4: Offices can view the letters which are sent from other office and reply to it.

- Additional business rules

BR: Every community of the university must have a university identification card.

BR: When the user registered once, he or she does not have permission to register again.

BR: The employee that is not registered does not allow to perform any activity.

# CHAPTER THREE

## 3.PROPOSED SYSTEM

### 3.1.Functional Requirement of the Proposed System

Functional requirements explain what has to be done by identifying the necessary task, action or activity that must be accomplished. Functional requirements analysis will be used as the toplevel functions for functional analysis. A function is described as a set of inputs, the behavior, and outputs. Functional requirements may be calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish. Behavioral requirements describing all the cases where the system uses the functional requirements are captured in use cases. Functional requirements drive the application architecture of a system. Functional requirements are essential requirements that the system should handle.

- The system should allow authorized users to log in and access the system. The system also has the following functionalities.
- Create Account: the system shall allow the system admin to create an account for all the system users.
- Inactive Account: the system should allow system admin to inactive accounts of the system user while some changes happened.
- Forgot password: the system shall allow an authorized user to recover their account based on some criteria.
- Organize meeting: the system should allow the authorized user to organize the meeting.
- Attend a meeting: the system should allow the user to attend the meeting.
- Add meeting decision: the system should allow the secretary to add the meeting decision and share the meeting decided to the members.
- View meeting decision: the system should allow the users to view the meeting decision.
- Prepare notice: the system should allow the authorized user to post a notice but it needs approval.
- Post notice: the system should allow the authorized user to post notices.

- View notice: The system allows all users to view the notice on the newsfeed.
- Search notice: the system should allow the user to search notices with its title.
- Prepare letter: the system should allow authorized users to prepare a letter.
- Send a letter: the system should allow the user to send the prepared letter to wanted offices.
- View letter: the system should allow the user to view the letters which are sent from other offices and allow them to reply to it.
- Search letter: the system should allow the system users to search for letters.
- View notification: the system should allow the system users to view notification.
- Generate report: the system should allow the system used to generate reports of the meeting, notices, and letters.
- Logout: The system enables the user to logout from the system.
- The system cross-checks the meeting agenda of every meeting with the strategic plan of the university.

3.2. Non-functional Requirement

A Non functional requirement describe the user visible aspect of the system that are not directly related to the system and not designated as functionality of the system and it mainly deals with the additional quality of the system.

A non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. Non-functional requirements are

often called qualities of a system. Qualities, that is, non-functional requirements, can be divided into two main categories:

Execution qualities: - such as security and usability, which are observable at run time.

Evolution qualities: - such as testability, maintainability, extensibility, etc. which are embodied in the static structure of the software system.

- Security: - the system must allow only authorized users to access the system by checking login information entered by the user. In our system, the authorized user should have to access documents by logging into the system and this should be supported by the system. For the security purpose we had used: Access control: used methods to prove that a user has access right to the data or resources owned by the system. Examples of proofs are username and password.

Encipherment: this is hiding or covering of data that provides confidentiality. it is also used to complement other mechanisms to provide other services. Cryptography is used for enciphering.

(Priority: high).

- Usability: -The system should allow the new user to send file with five minute of time. Therefore, our system should be user-friendly and easily usable by the user by having a good user-interface that follows user experience rule. (Priority: high).

- Testability: - Our system should have to be tested to evaluate its performance whenever necessary.

- Maintainability: - Our system should be maintainable easily to meet changes in user requirements and also to operate as it should have to. For this, we had used the

modularization concept for our system. (Priority: high)

- Extensibility: -Our system should allow additional features to be added to it easily.

(Priority: medium)

- Availability: -Our system should be accessible to an authorized user whenever they want to use it to perform their activity. The system should be available for 24 hours... (Priority: high). Additional non-functional requirements are listed below:

- Performance and Access time: The system should provide fast access to the customer according to their privilege.

- Reliability: The system should show the correct and accurate results.

- Portability. Because the system is a web-based system it can work on all platforms like Linux,

Windows and another operating system that has an updated browser that supports HTML5.

- Implementation requirements: The system is platform-independent because it is a webbased system, it can run in any device that supports HTML5 to browse the site.

- Operations requirements: the system contains a help task that is used to show how to the system.

### 3.2.1.User Interface And Human Factors

The user interface of our proposed system is simple to understand, easy to use and works with a user friendly manner. We consider the following list when designing our interface.

- Keep the interface simple,Be purpose full in page layout and Strategically use color and texture

### 3.2.2 Hardware Consideration

The system that to be developed should run on the existing standard computers. And the system will be portable that can run in any types of computer and any types of browser which have full features about our system.

### 3.2.3 Security Issue

The system is much secured and only authorized persons can access the system by using their user-name and password. The password with which users are provided will protect them from potential threats, who could jeopardizing their responsibility and the stakeholder who have permission to access only access the system. Our system protects any confidential information of the all users of the system.

### 3.2.4 Performance Consideration

The system should provide fast access to the customer according to their privilege.

system can be accessed by many users at a time so our system should be capable of handling and processing many queries at a given time quickly.generally, the system should be responsibly fast in order to access the required information and its load time shall not take longer times and Office Automation and Conference Proceedings who have permissions to participate and number user it can support any number of user as much as needed.

### 3.2.5 Error Handling And Validation

The system will check the user input to send error free information for the systems database. And it shows the users error in user friendly manner.We will handle this errors by using some java script techniques.

### 3.2.6 Quality Issue

The system will minimize crash during its run time, since many users can use the system at a time.

### 3.2.7 Backup And Recovery

The system include a secondary database which contains the copy of the original database used for recovery purpose when a problem is occurred on the systems original database.

### 3.2.8 Physical Environment

The system will be deployed on the Client-server side script.

### 3.2.9 Resource Issue

The system needs resource that have high processor speed and memory mainly for the server.
It enables the system to provide the required service in efficient and effective manner.

### 3.2.10 Documentation

Our system will have a well defined document which helps to maintain and guidelines the system. We will also prepare a short and précised helping guide for the system users which
helps users how to use the system and access.

# CHAPTER FOUR

## 4.SYSTEM ANALYSIS

### 4.1.System Model

model is an abstraction of the real world. It allows us to deal with the complexity of a realworld problem by focusing on the essential and interesting features of an application.

The techniques and associated notation used for object-oriented analysis and design are incorporated into a standard object-oriented language called unified Modeling Language (UML).

An important goal of requirement modeling comes to an understanding of the useless problem that the new system is to address. This chapter focuses on developing the requirement and analysis models for the new system using the UML use case model, sequence diagram, activity diagram, and class diagram.

### 4.2. Use Case Model

#### 4.2.1.Actor Identification

Actor classes are used to model and represent roles for "users" of a system, including human users and other systems. Based on this we identify the following use of our system:

- Staff
- Visitors
- System admin

#### 4.2.2. Use-Case Identification

The use of case identification is the process of identifying the functionality of the system as a whole.

- Create an account: used to create accounts for the other user.
- Inactive account: used to inactive the user account.
- Forgot password: used to forget the password.
- Login: to login to the system

- Organize meeting: used to set meeting time, add agenda, add member, etc. functions to organize a meeting
  - Attend a meeting: used to attend the meeting.
- Add meeting decision: used to add meeting decision.
- View meeting decision: used to view meeting decision.
- Prepare notice: used to prepare a notice to post.
- Post notice: used to post the prepared notice but, it requires to be approved.
- Search notice: used to search notices with its title.
- View notice: used to view notice.
- Prepare a letter: used to prepare letters to send.
- Send a letter: used to send letters to wanted offices.
- View letter: used to view letters that are sent from other offices.
- View notification: used to view the notification.
- Generate report: used to generate a report for all those meetings, notices, and letter reports.
- Logout: used to logout from the system

## 4.3 .Use-Case Diagram

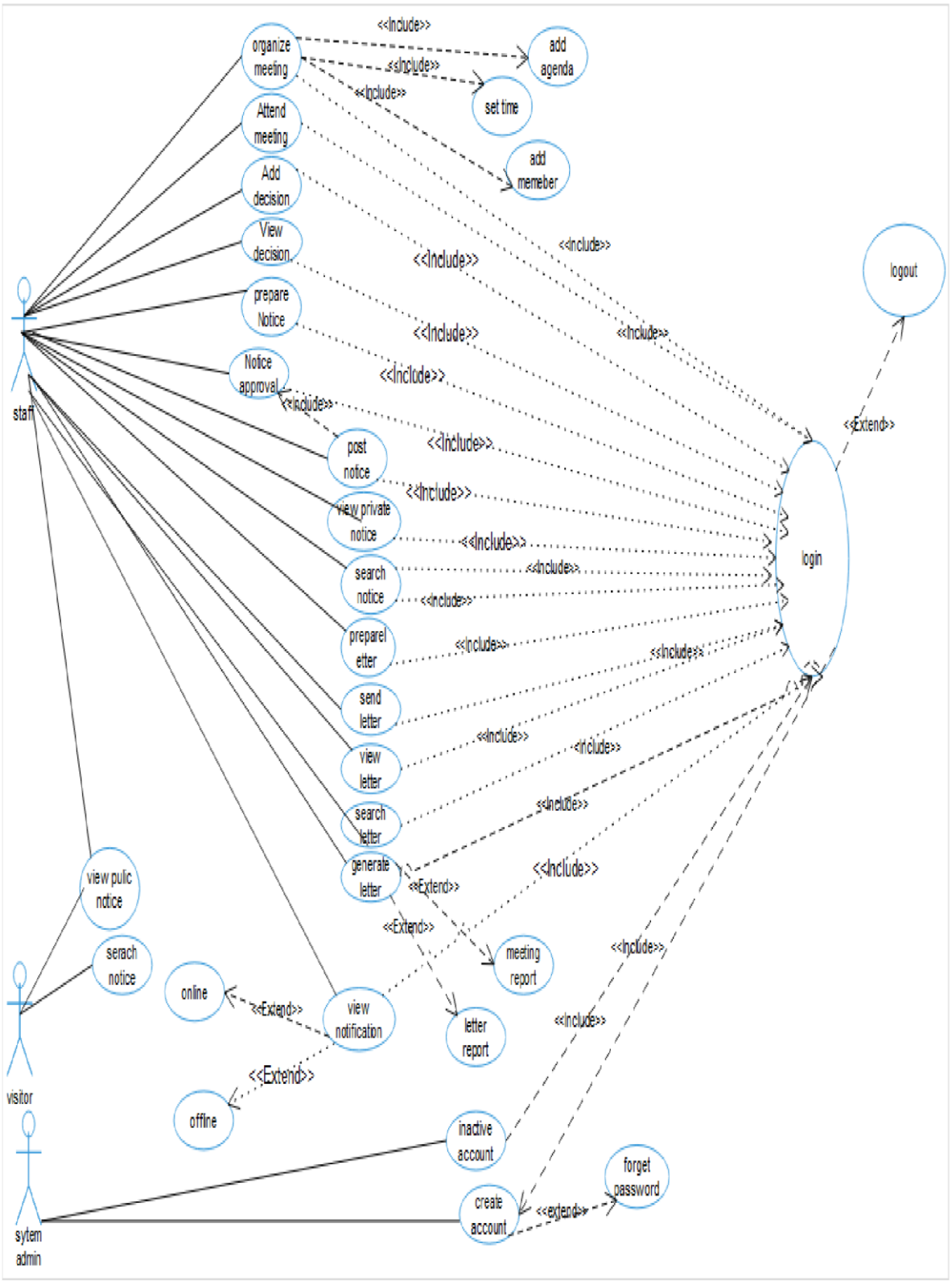



*Figure 4. 1 use case diagram*

4.3.1 Description of Use Case Diagram

| | | |
|---|---|---|
| Use case id/no | u-1 | |
| Use case title | login | |
| description | To use the systems, users should have to log in to the system using his/her account. | |
| actor | Staff and System admin | |
| precondition | The users must be registered on the system | |
| Basic course affection | Actor affection | System response |
| | Step1: This use case starts when a user browses the system<br>Step3: The user will provide username and password and clicks 'login' button | step2: The system will display the welcome page with login form<br>Step4: The system will check if the provided information is valid step5.display the homepage |
| The alternative course of action | Alt4: If the username and password is not validated and verified | Alt5: system displays an error message and goes to step2 |
| Post-condition | Login page displayed | |

*Table 4. 1 Use-case description for login*

| | | |
|---|---|---|
| Use case id/number | U-2 | |
| Use case title | Create an account | |
| Description | This activity is performed when the system administrator wants to create a new user account | |
| Actor | System Admin | |
| Pre-condition | The system admin should log in to the system | |
| Basic course of action | Actor Action | System Response |
| | Step1: system admin wants to create a new user account<br><br>Step2: System administrator clicks the account link from the sidebar.<br><br>Step4: system admin clicks create account link | Step3: System display account page creates an account page.<br><br>Step5: System checks whether all the required information is entered. Step6: use case ends |
| The alternative course of action | Alt4: if the user information is not fully provided | Step2: system display message and go to step3 |
| Post-condition | The user account created successfully | |

*Table 4. 2Use-case description for Create account*

| | | |
|---|---|---|
| Use case id/number | U-3 | |
| Use case title | Inactive account | |
| Description | This activity is performed when the system administrator wants to inactivate users account | |
| Actor | System Admin | |
| Precondition | The system admin should log in to the system | |
| Basic course of affection | Actor action | System responce |
| | Step1: system admin wants to inactivate users account<br><br>Step2: System administrator clicks on the Account link from the sidebar.<br><br>Step4: system admin clicks on the inactive account button<br><br>Step6: system admin enters the id of account user and clicks on the search button<br><br>Step8: system admin clicks on the inactive button | Sep3:System display account page.<br><br>Step5:The system displays an inactive account page with a search bar.<br><br>Step7: System checks from the database, whether the id founds. If found, the system displays all the information of the user.<br>Step7: system displays “the user is inactive now” message Step8: use case ends |

| | | |
|---|---|---|
| The alternative course of action | Step1: if the user id searched is not found in database | Step2: system display "no userid found just like that" message and go to step5 |
| Post-condition | User account being inactive successfully | |

*Table 4. 3 Use-case description for inactive account*

| | | |
|---|---|---|
| Use case id/number | U-4 | |
| Use case title | Organize meeting | |
| description | Actors can organize a meeting by setting time, create an agenda,etc. | |
| actor | staff | |
| precondition | The system user should log in to the system. | |
| Basic course affection | Actor action | System response |

| | | |
|---|---|---|
| | Step1: System user wants to organize a meeting. Step2: The user clicks the meeting link from the homepage.<br><br>Step4: The user clicks the organize meeting link.<br><br>Step6: system user fills the form for scheduling meeting time, select member and invite a guest and clicks on save and broadcast button<br><br>Step8: user clicks on the 'yes' option | Step3: system displays a group page<br><br>Step5: System displays organize meeting page with a form.<br><br>Step7: The system checks all-weather or not the meeting time is set, the agenda is provided, and members are selected. If all these provided, the system provides yes or no option with "are you sure to save and broadcast this information?" question.<br><br>Step9: System displays "meeting information successfully saved and broadcasted" message.<br><br>Step10: the use case ends |
| The alternative course of action | Step1: when the user not provide full information on the meeting and wants to click on 'finish' button | Step2: System shows error message "provide full information" message and system go to step5<br><br>Step4: system shows'meeting |
| | Step3: user clicks 'no' button | information is saved" but not broadcasted |
| Post-condition | Organized meeting information broadcast successfully | |

*Table 4. 4 Use-case description for organizing meeting*

| | | |
|---|---|---|
| Use case id/number | U-5 | |
| Use case title | Attend meeting | |
| description | Actors can easily attend the meeting | |
| actor | staff | |
| precondition | The system user should be a member of the meeting | |
| Basic course affection | Actor action | System response |
| | Step1: System users want to attend the meeting. Step2: The user clicks on the attend icon from the meeting page. Step4: The system user clicks on the attend meeting button. | Step3: System displays the group page. Step5: The system checks whether the user is a member of the meeting. If yes, System starts displaying live streaming videos of the meeting members Step6: the use case ends |
| The alternative course of action | Step1: If the user is not a member of the meeting | Step2: System shows the message “Sorry you are not a member of this meeting!!” And backs to the current page. |
| Post-condition | User attend the meeting | |

*Table 4. 5 Use-case description for attend meeting*

| | |
|---|---|
| Use case id/number | U-6 |

| | | |
|---|---|---|
| Use case title | add meeting decision | |
| description | This action is performed when the secretary wants to add the meeting decision as a combination and share the decision to meeting member | |
| actor | secretary | |
| precondition | The secretary should log in to the system | |
| Basic course affection | Actor action | System response |
| | Step1: Secretary wants to add the meeting decision Step2: Secretary clicks on the meeting page link. Step4: Secretary clicks on the decision link.<br><br>Step6: Secretary fill the meeting title and decision and clicks on add decision button | Step3: system displays a meeting page<br><br>Step5: The system displays the decision page with a form. Step7: The system checks all-weather or not the meeting time is set, the agenda is provided, and members are selected. If all these provided, the system provides yes or no option with “do you want to broadcast this information?” question.<br><br>Step9: if yes, System displays “meeting information successfully saved and broadcasted” message.<br><br>Step10: the use case ends |

| | | |
|---|---|---|
| The alternative course of action | Step1: If the secretary hasn't entered the title of the meeting.<br><br>Step2: if secretary clicks 'no' button | Step2: The system shows a warning message to write the title of the meeting. Step3: system displays "meeting decision successfully saved but not broadcasted' message. |
| Post-condition | Secretary successfully add meeting decision | |

*Table 4. 6 Use-case description for add decision*

| | | |
|---|---|---|
| Use case id/number | U-7 | |
| Use case title | View meeting decision | |
| description | This action is performed when actors want view theto meeting decision | |
| actor | Staff | |
| precondition | The system user should have a login to the system | |
| Basic course affection | Actor action | System response |
| | tep1: System user wants to view the meeting decision. Step2: The user clicks the meeting link from the homepage. Step4: The user clicks view decision link. | Step3: System displays meeting page Step5: if available, the System fetches data from the database and the system views the decision.<br><br>Step6: the use case ends |

| | | |
|---|---|---|
| The alternative course of action | Step1: If the decision not available in the database | Step2: The system displays “sorry no data found. And go back to step3 |
| Post-condition | System user successfully view meeting decision | |

*Table 4. 7 Use-case description for view meeting decision*

| | | |
|---|---|---|
| Use case id/number | U-8 | |
| Use case title | prepare notice | |
| description | This action is performed when actors want to prepare a notice to post | |
| actor | Staff | |
| precondition | The system user should log in to the system | |
| Basic course affection | Actor action | System response |
| | Step1: system user wants to prepare a notice<br><br>Step2: The user clicks on the notice link from the home page. Step4: the user fills the notice information and clicks on the prepare button | Step3: System displays a notice page with a prepare button. Step5: the system checks whether the title and message are provided or not.<br><br>Step6: if provided, the System saves the information and displays “the notice is prepared successfully”.<br><br>Step7: the use case ends |

| | | |
|---|---|---|
| The alternative course of action | Step1: If the user hasn't entered the notice information. | Step2: The system shows error message "information missing". |
| Post-condition | System user successfully prepare a notice | |

*Table 4. 8 Use-case description for prepare notice*

| | | |
|---|---|---|
| Use case id/number | U-9 | |
| Use case title | post notice | |
| description | This action is performed when the system user wants to post a notice. | |
| actor | Staff | |
| precondition | The system user should log in to the system | |
| Basic course | Actor action | System response |

| | | |
|---|---|---|
| affection | Step1: System user wants to post a notice<br><br>Step2: The user clicks the notice icon from the homepage. Step4: System user inserts the notice letter with full information.<br><br>Step5: system user clicks <>button. | Step3: The system displays notice page with text area and button.<br><br>Step6: The system notifies a higher hierarchy to approve for notice information.<br><br>Step7.if information is not innocent, a higher hierarchy approves the system the registers the notice and instantly posts the notice. Step8. The system displays a successful post of the notice message.<br><br>Step9: the use case ends |
| The alternative course of action | Step1: if the notice has innocent/invalid information, the higher hierarchy disapproves of the post. | Step2: The system displays a warning message "the information is innocent/invalid!!" and go to step3. |
| Post-condition | User posts the notice successfully | |

*Table 4. 9 Use case-description for post notice*

| | |
|---|---|
| Use case id/number | U-10 |
| Use case title | Search notice |

| | | |
|---|---|---|
| description | Helps actors to search publically post notices | |
| actor | Staff and visitors | |
| precondition | The system user should browse the system | |
| Basic course affection | Actor action | System response |
| | Step1: A user wants to search a notice Step2: The user clicks on the search bar Step4: System user inserts the notice title wanted Step5: System user clicks on the search button | Step3: search bar being ready Step6: System searches the notice title from the database. If found, displays the notice information of that title. Step7. The use case ends |
| The alternative course of action | Step1: if the notice title provided on the search bar does not exist in the database. | Step2: the system display “The notice is Not posted Yet with this title” message and return to step3. |
| Post-condition | The necessary information about the notice must be displayed for the user. | |

*Table 4. 10 Use-case description for search notice*

| | |
|---|---|
| Use case id/number | U-11 |
| Use case title | View notice |

| | | |
|---|---|---|
| description | This action is performed when the actor wants to view the notices posted | |
| actor | Staff and visitors | |
| precondition | The system user should browse the system | |
| Basic course | Actor action | System response |
| affection | Step1: System user wants to view notices which are posted Step2: The user clicks on the newsfeed link of the home page | Step3: System displays notices with its order Step4: use case ends |
| The alternative course of action | ----------. | ---------- |
| Post-condition | user view the notice successfully | |

*Table 4. 11 Use-case description for view notice*

| | |
|---|---|
| Use case id/number | U-12 |
| Use case title | Prepare letter |
| description | This action is performed when actors want to prepare a letter to send |
| actor | Staff |

| | | |
|---|---|---|
| precondition | The system user should log in to the system | |
| Basic course affection | Actor action | System response |
| | Step1: system user wants to prepare a letter Step2: The user clicks on the IOC link Step4: the user inserts the letter information and clicks on the finish button | Step3: System displays an IOC page with forms and buttons. Step5: the system checks whether the ref.no and message are provided.<br><br>Step6: if provided, the System saves into the database and displays "the letter is prepared well". Step7: the use case ends |
| The alternative course of action | Step1: If the user hasn't provided the information | Step2: The system shows error message "information missing". And return to step3 |
| Post-condition | System user successfully prepare a letter | |

*Table 4. 12 Use-case description for prepare letter*

| | |
|---|---|
| Use case id/number | U-13 |
| Use case title | Send letter |
| description | This action is performed when actors want to send letters to other offices |
| actor | Staff |

| | | |
|---|---|---|
| precondition | The user should have been prepared the letter | |
| Basic course affection | Actor action | System response |
| | Step1: user wants to send the letter to other offices Step2: user clicks on send letter link from the IOC page<br><br>Step4: the user inserts the letter information and clicks on the finish button Step7: the user selects the offices to send the letter and clicks the send button. | Step3: System displays an IOC page with forms and buttons. Step5: the system checks whether the ref.no and message are provided.<br><br>Step6: if provided, the System displays "the letter is prepared well".<br><br>Step8: the system displays a "successfully sent" message. Step9: the use case ends |
| The alternative course of action | Step1: if the letter ref.no is not provided | Step2: system displays error messages "sorry you haven't entered the letter ref.no" and returns to step3 |
| Post-condition | System user successfully send a letter | |

*Table 4. 13 Use-case description for send letter*

| | |
|---|---|
| Use case id/number | U-14 |
| Use case title | Search letter |
| description | Helps actors to search for a letter which he/she wants. |

| | | |
|---|---|---|
| actor | Staff | |
| precondition | The system user should log in to the system | |
| Basic course affection | Actor action | System response |
| | Step1: A user wants to search a letter Step2: The user clicks on the IOC link.<br><br>Step4: System user inserts the letter ref.no wanted into the search bar Step5:<br>System user clicks on the search button | Step3: System displays an IOC page with the search bar.<br><br>Step6: the system will check the letter information from the database.<br><br>Step7: system displays the searched letter information Step8. The use case ends |
| The alternative course of action | Step1: if the letter ref.no provided on the search bar does not exist in the database | Step2: the system display “The letter is Not sent Yet with this ref.no” message and return to step3. |
| Post-condition | The necessary information about the letter must be displayed for the user. | |

*Table 4. 14 Use-case description for search letter*

| | |
|---|---|
| Use case id/number | U-15 |
| Use case title | view letter |

| | | |
|---|---|---|
| description | This action is performed when the actor wants to view the letters sent from other offices | |
| actor | Staff | |
| precondition | The system user should log in to the system | |
| Basic course affection | Actor action | System response |
| | Step1: System user wants to view letter which is sent from other offices<br><br>Step2: The user clicks on the IOC link<br><br>Step4: System user clicks on the message link<br><br>Step6: System user selects a message and clicks on it.<br><br>Step8. The system user write a reply and clicks send button | Step3: System displays IOC page<br><br>Step5: System displays message page with all sent letters in LIFO order<br><br>Step7. The system displays the letter with a reply bar<br><br>Step9: the system displays a "successfully sent" message. Step10: the use case ends |
| The alternative course of action | ---------- | ------- |
| Post-condition | User view the letter successfully | |

*Table 4. 15 Use-case description for view letter*

| | | |
|---|---|---|
| Use case id/number | U-16 | |
| Use case title | Generate report | |
| description | This action is performed when the system user wants to generate meeting, notices and letter reports | |
| actor | Staff | |
| precondition | The system user should log in to the system | |
| Basic course affection | Actor action | System response |
| | Step1: System user wants to generate a report<br><br>Step2: The user clicks on report link from the sidebar<br>Step4: users select on any button of the three report | Step3: System displays generate report page which contains three buttons (meeting report, notice report and letter report)<br><br>Step5: system fetches the data from the database and displays all the needed reports<br><br>Step6: use case ends |
| The alternative course of action | ---------- | ------- |
| Post-condition | User generate report successfully | |

*Table 4. 16 Use-case description for generate report*

| | | |
|---|---|---|
| Use case id/number | U-17 | |
| Use case title | logout | |
| description | When the user wants to exit from the system. | |
| actor | Staff and System admin | |
| precondition | The system user should log in to the system | |
| Basic course | Actor action | System response |
| affection | Step1: the user wants to logout from the system.<br><br>Step2: The user clicks the logout button. Step4: when the user clicks yes 'button' its logout from the system. | Step3: the system displays 'are you sure?' messages with yes and no button.<br>Step5: use case ends |
| The alternative course of action | Step1: when the user selects no button. | Step2: The system back to the current page |
| Post-condition | The user exit from the system. | |

*Table 4. 17 Use-case description for logout*

### 4.3.2.Use case Scenario

A use case scenario real world example of how one or more user can interact with the system.it describes the steps action which occurs during the interaction .use case scenario is a very detailed indicates how some one works with the system using user interface.

Scenario name Login

Participant actor mr.X

Normal flow of events mr.X click on login in link on the

landing page The system display login page mr.X fill

username and password and click login button The system

validate the input mr.X access his account as needed.

End of use case

Alternative flow If mr.X inputs wrong information the system display “wrong information message”.

4.4 .Object Model

An object model refers to a visual representation of soft-ware or system ’objects’,attribute,action and relationship.it enables the creations of an architectural software or system model prior to the development or programming.in our system we used type of object models like class diagram and data dictionary .

4.5.Class Diagram

The class diagram shows the static structure of data and the operations that act on the data, i.e. it shows the static structure of an object-oriented model the object class, their internal structure, and the relationships in which they participate. The class diagram represents a detailed view of a single use-case, shows the classes that participate in the use case, and documents the relationship among the classes.

It is a logical model, which evolves into a physical model & finally becomes a functioning information system.

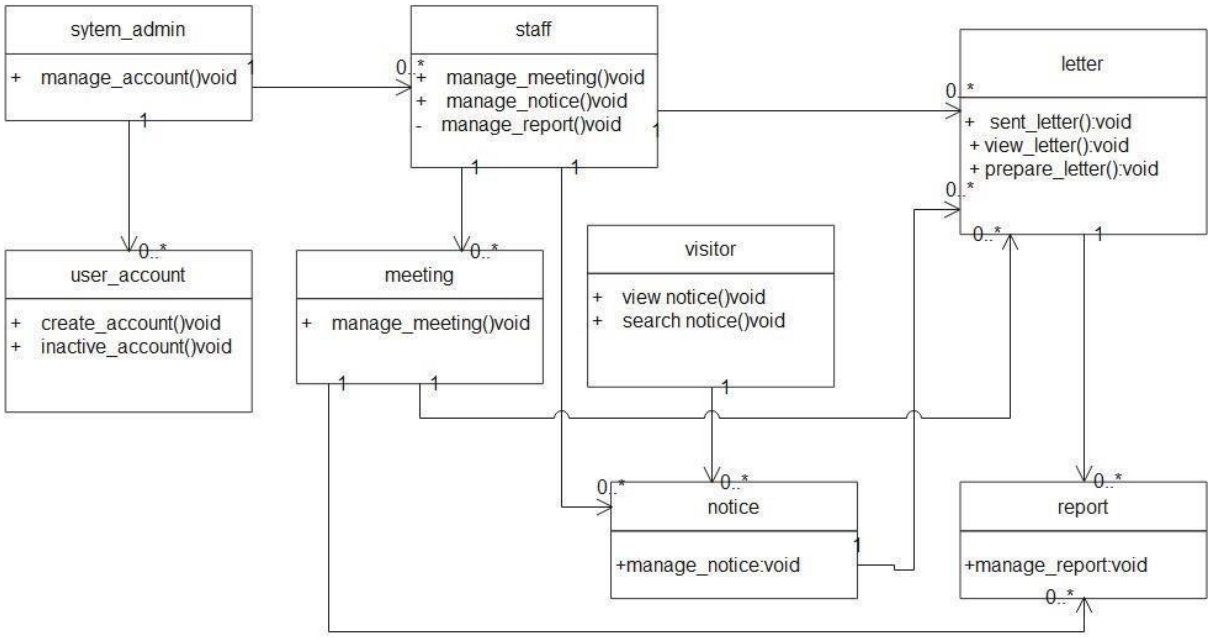



*Figure 4. 2 use class diagram*

4.6. Data Dictionary

A data dictionary is a file or a set of file that includes a databases metadata.

A data dictionary hold records about other objects in the database,such as data ownership, data relationships to other objects and other data. The data dictionary is an essential component of any relational database. In our system we use the following tables to describe the data dictionary of the system.

Table Name: user Account

Primary Key: user Id

Description: Used to store list of user

| Attributes | Data Type | Data size | Constraint | Description |
|---|---|---|---|---|
| Id | String | 40 | Primary key | Unique identification of each user |

| | | | | |
|---|---|---|---|---|
| Name | String | 40 | Not null | Name of user |
| Gmail | String | 10 | Not null | gmail of user |
| position | String | 40 | Not null | Work Level of user |
| type | String | 10 | Not null | Type of user |
| sub type | Double | 10 | Not null | Sub_level of user |
| User_name | Double | 30 | Foreign key | User name of user |
| password | String | 40 | Foreign key | Password of user |

Table Name: create group

Primary Key:group Id

Description: Used to store list of group

| Attributes | Data Type | Data size | Constraint | Description |
|---|---|---|---|---|
| Id | String | 40 | Primary key | Unique identification of each group |
| Name | String | 40 | Not null | Name of group |
| owner | String | 10 | Not null | Owner of group |
| dates | Date | 40 | Not null | date |

## 4.7.Dynamic model

Dynamic model describes those aspect of the system that are concerned with time and sequencing of the operations. It is used to specify and implement the control aspect of the system.dynamic model is represented graphically with the help of state diagrams.

In our system we use sequence diagram,state chart diagram and activity diagram to study the dynamic nature of the system.

### 4.8. Sequence Diagram

The sequence diagram describes behavior as a sequence of messages exchanged among a set of objects. Sequence diagram which is also known as interaction diagrams is one of the diagrams used in UML, for modeling the dynamic aspects of the system. It shows an interaction consisting of a set of objects and their relationship including messages that may be dispatched among them. It emphasizes the time ordering of messages. It shows an interaction arranged in time sequence. In particular, it shows the instances participating in the interaction by their “lifelines” and the stimuli that they exchange arranged in time sequence.

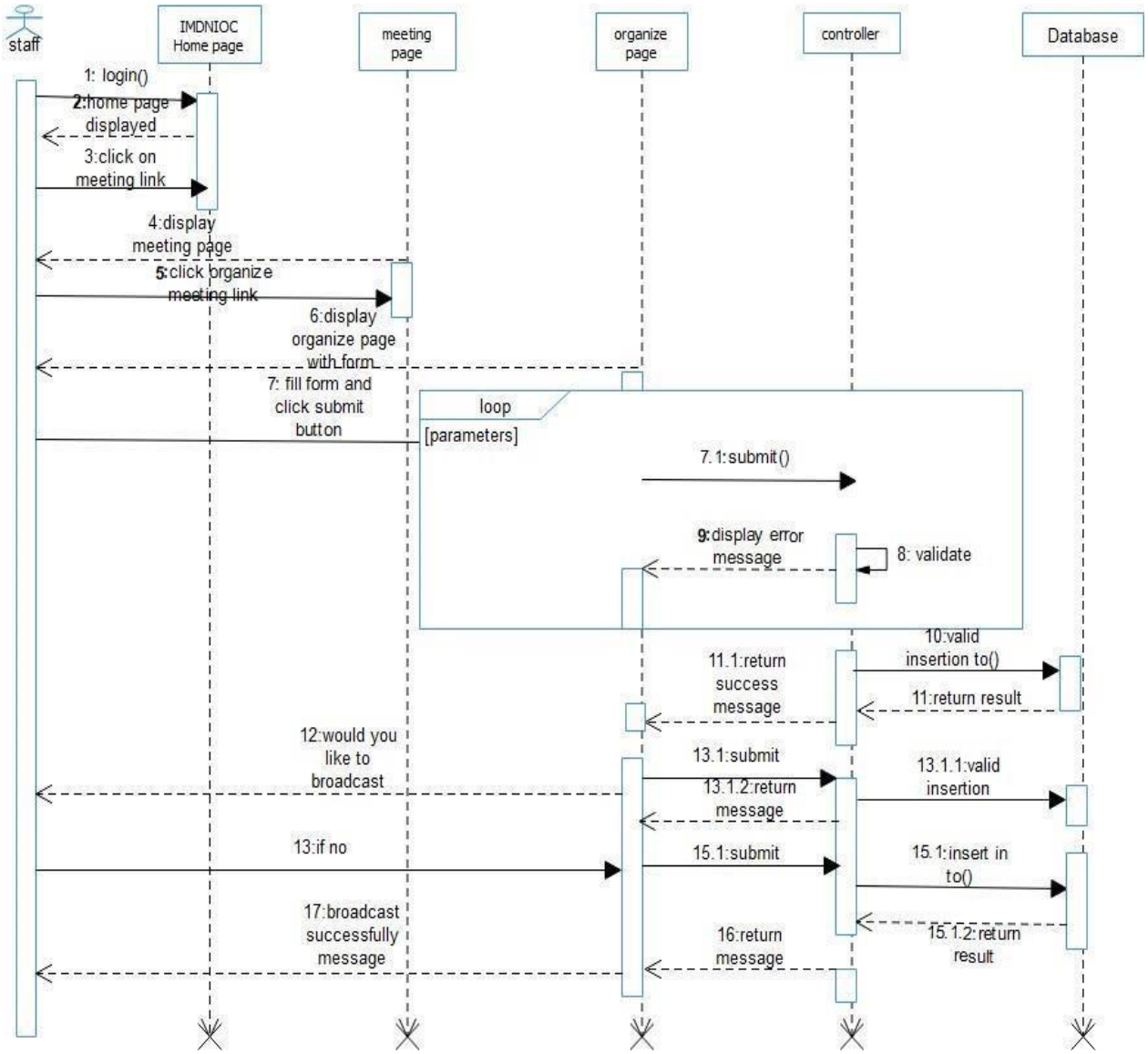



*Figure 4. 3 sequence diagram for organizing meeting*

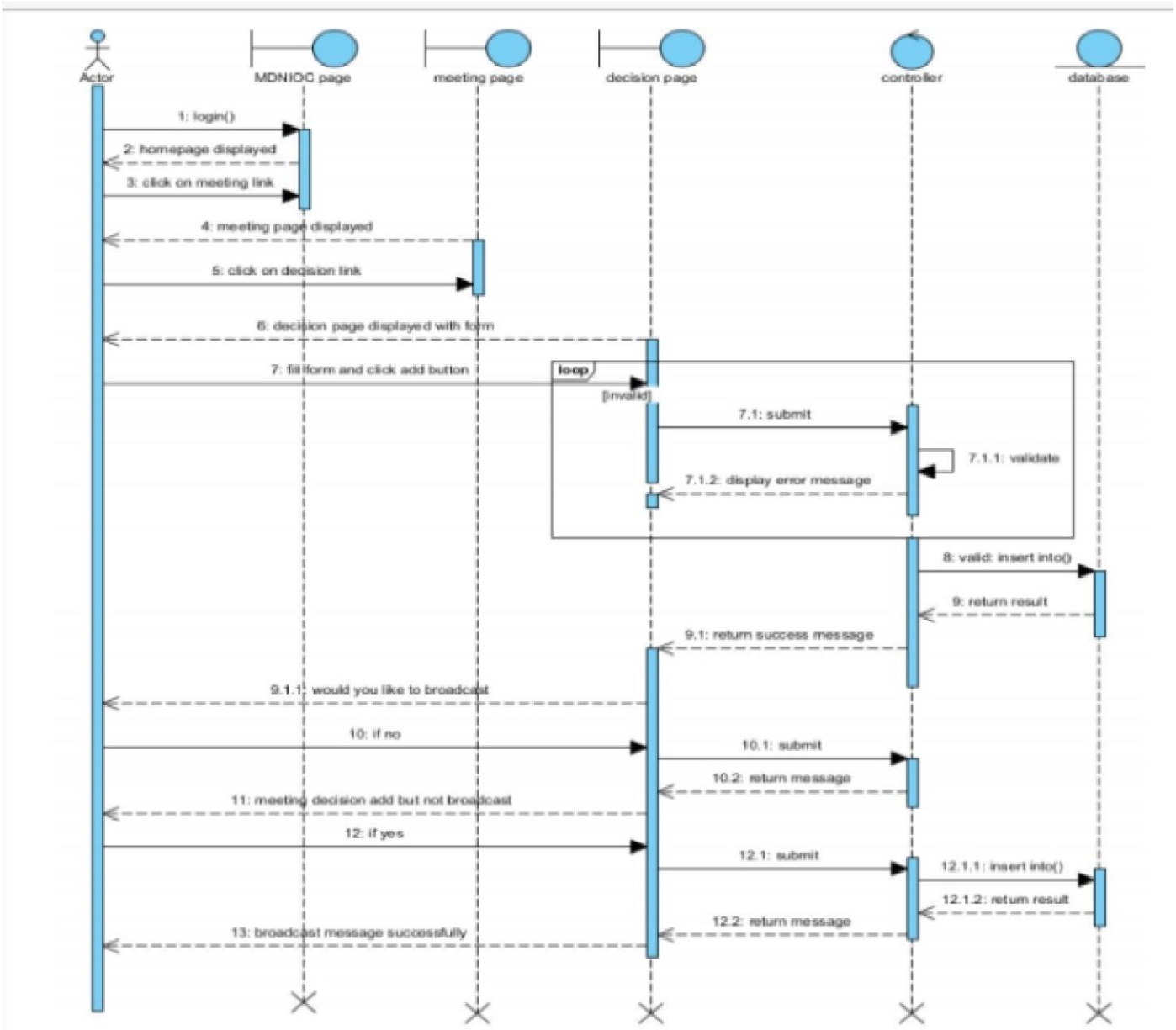



*Figure 4. 4 sequence diagram for add decision*

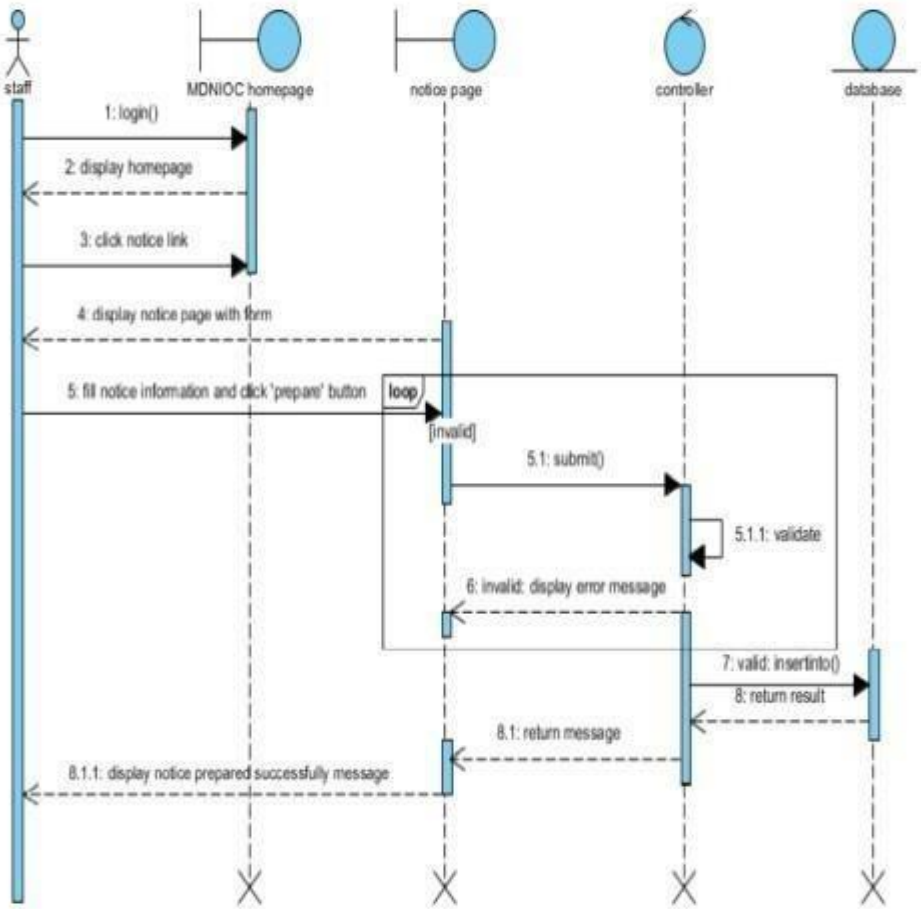



*Figure 4. 5 sequence diagram for prepare notice*

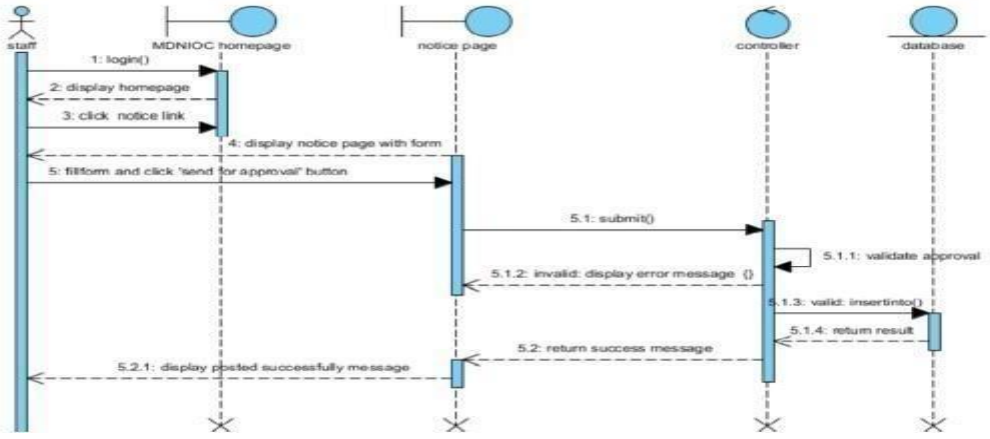



*Figure 4. 6 sequence diagram for post notice*

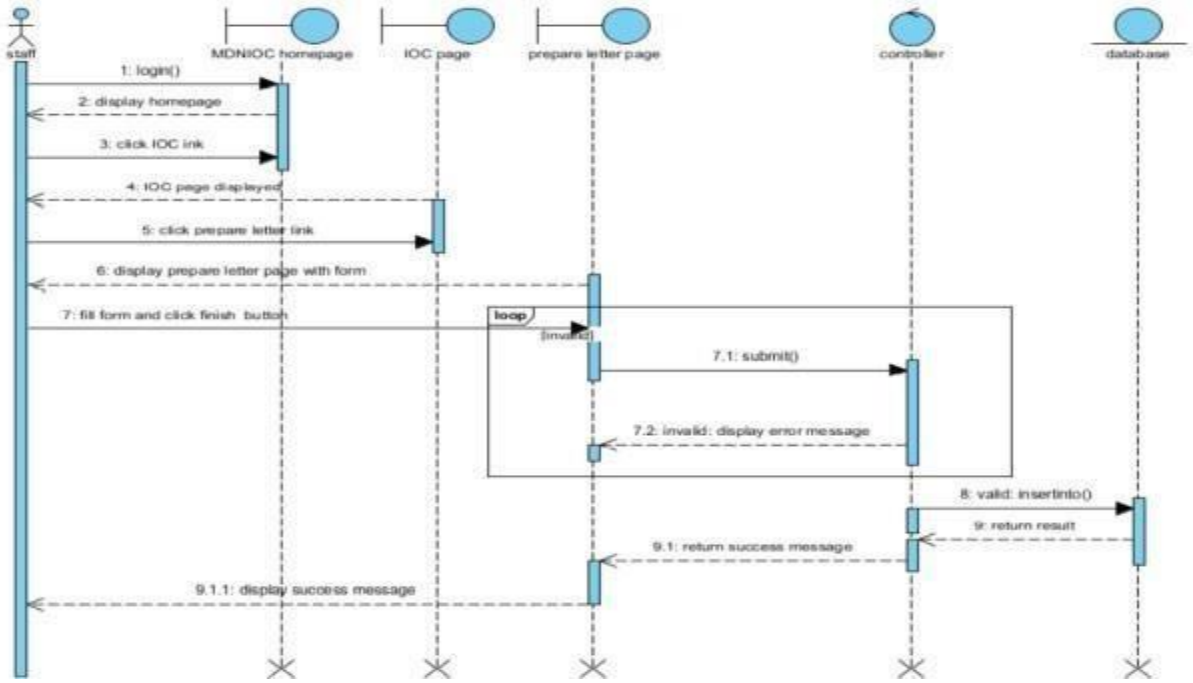



*Figure 4. 7 sequence diagram for prepare letter*

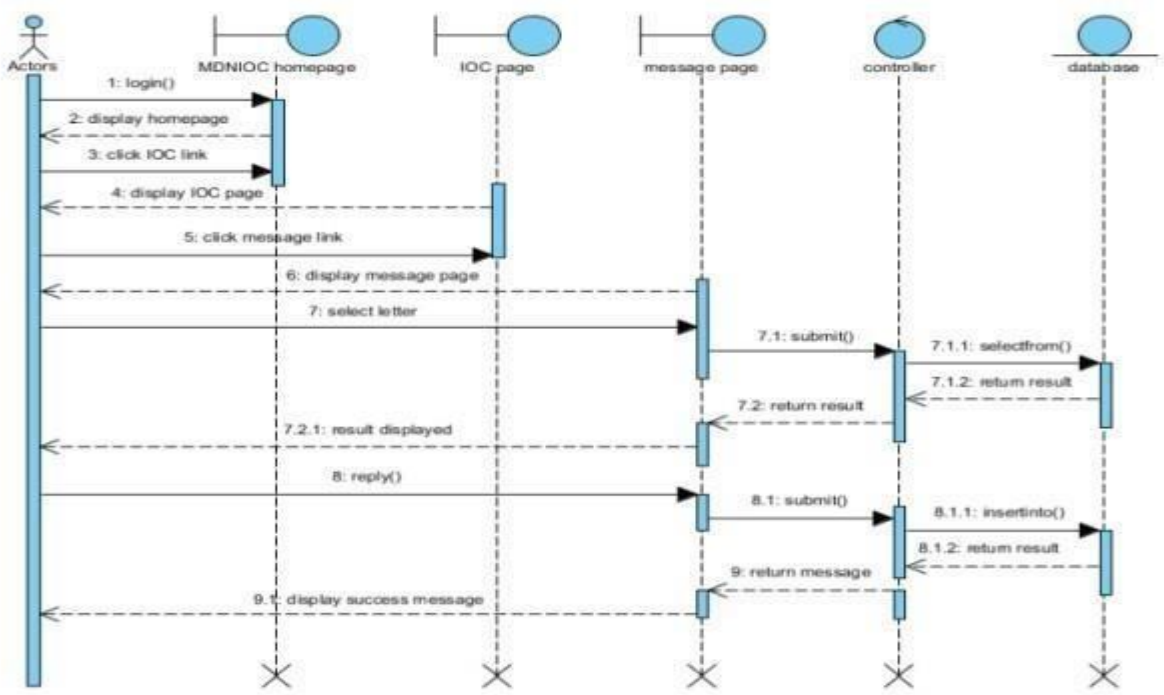



*Figure 4. 8 sequence diagram for view letter*

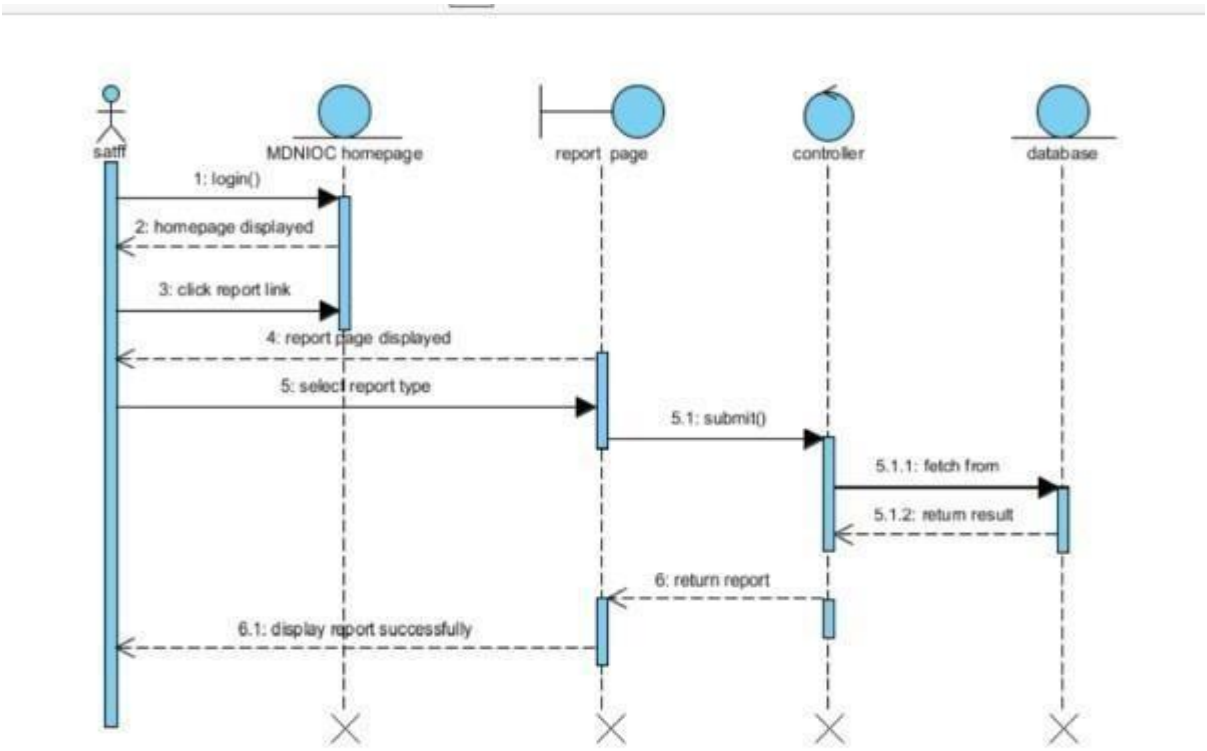



*Figure 4. 9 sequence diagram for generate report*

## 4.9. Activity Diagram

Activity diagram is an important behavior in UML diagram to describe the dynamic aspects of the system. It is essentially an advanced version of flow chart that modeling the flow from chart that modeling the flow from one activity to another activity.

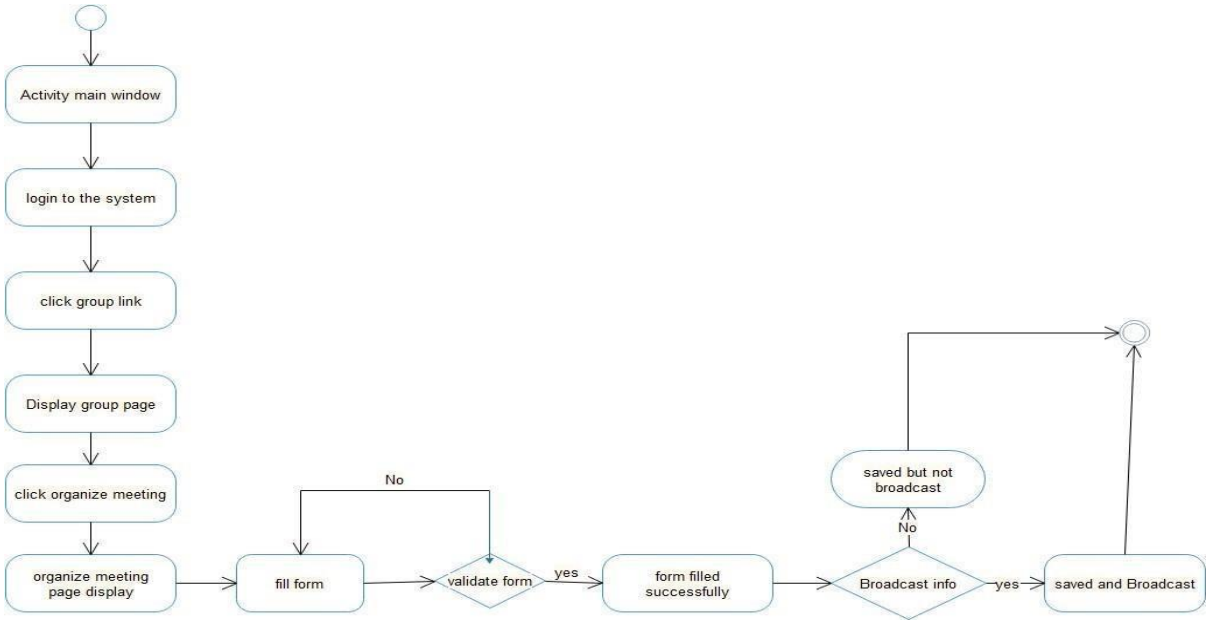



*Figure 4. 10 activity diagram for organizing a meeting*

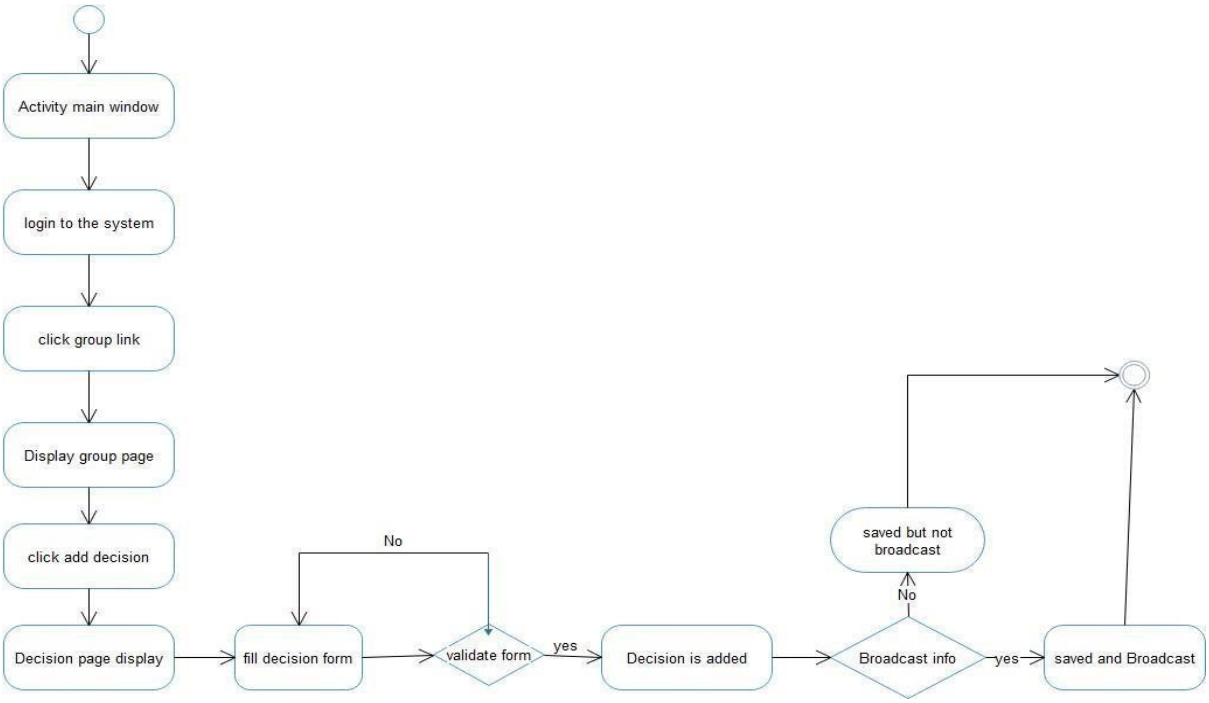



*Figure 4. 11 activity diagram for add decision*

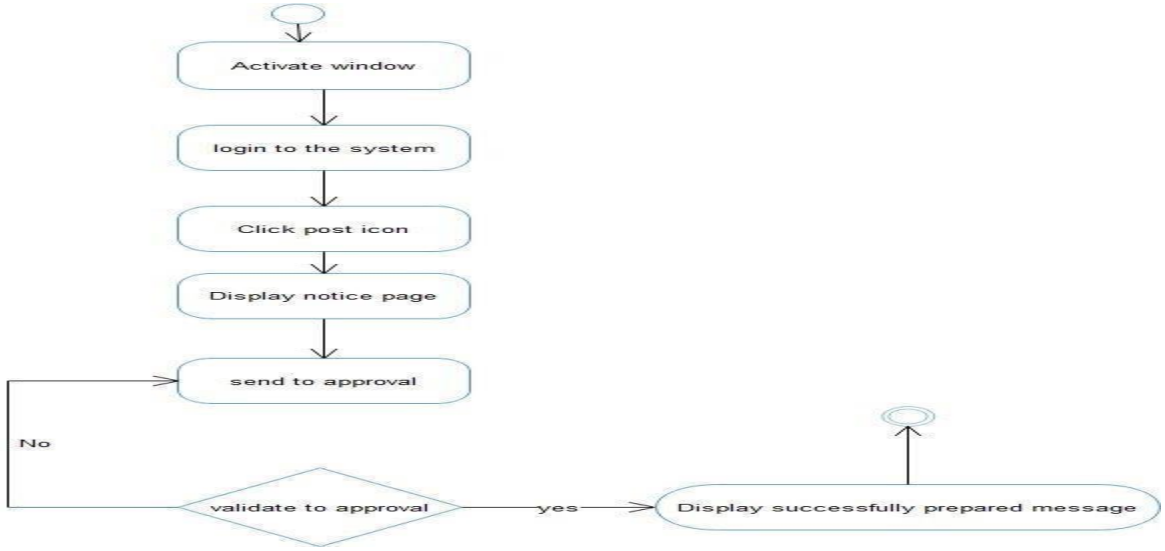



*Figure 4. 12 activity diagram for prepare notice*

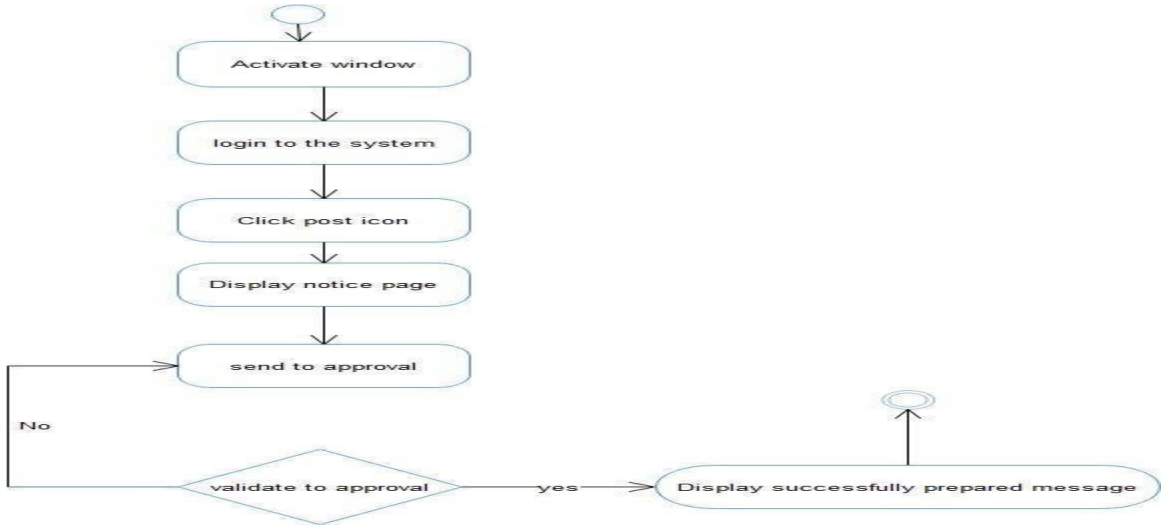



*Figure 4. 13 activity diagram for post notice*

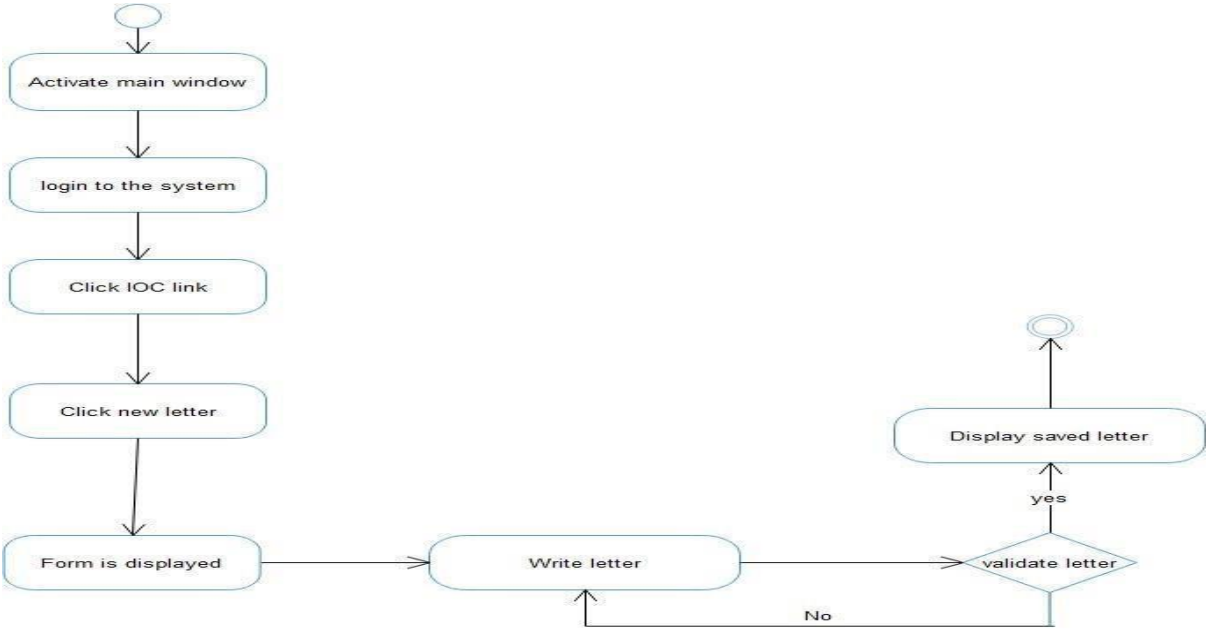



*Figure 4. 14 activity diagram for prepare letter*

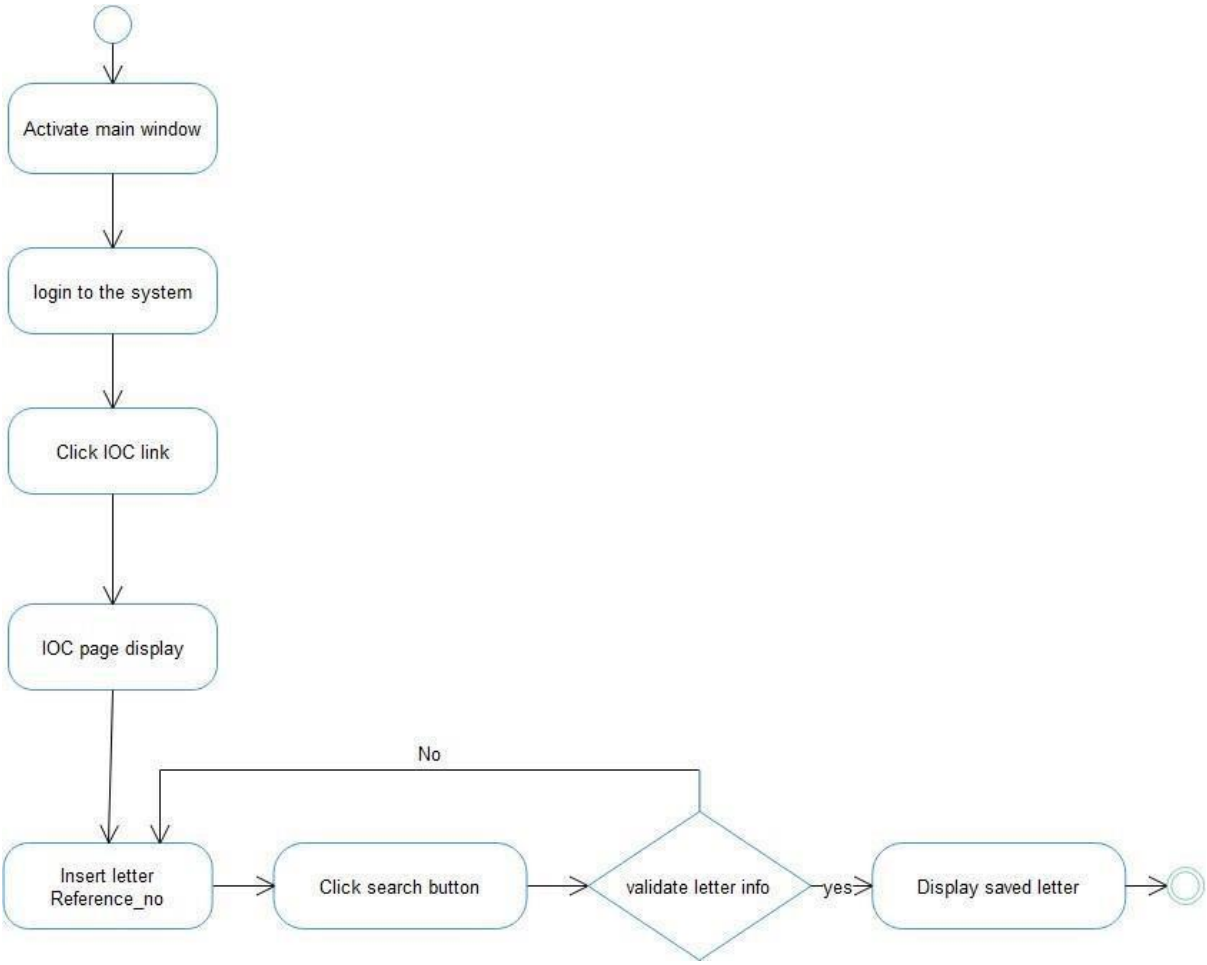



*Figure 4. 15 activity diagram for search letter*

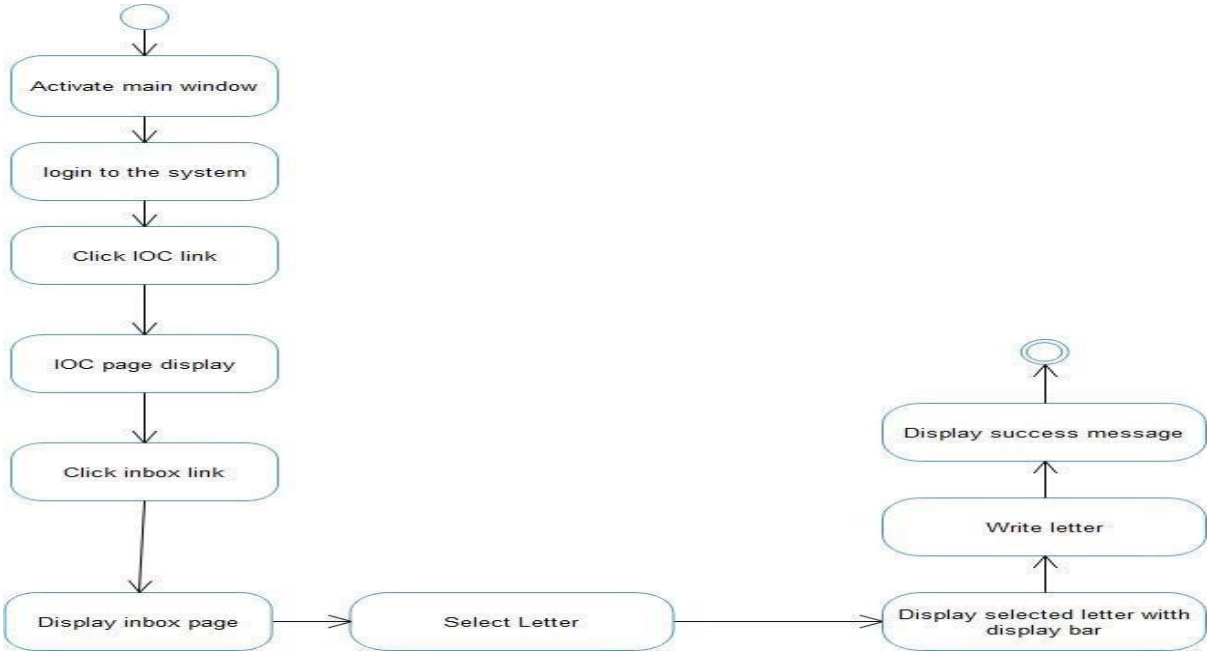



*Figure 4. 16activity diagram for view letter*

## 4.10.State chart diagram

A state chart diagram shows the behaviour of class in response to external stimuli. Specifically a state chart diagram describes the behavior of a single object in response to a serious of events in a system. In our system we have listed some state chart diagrams that can be covered during user interact with the system.

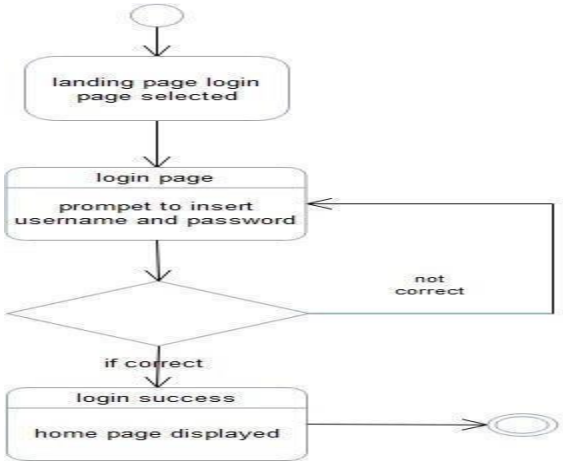



*Figure 4. 17 Login state chart diagram*

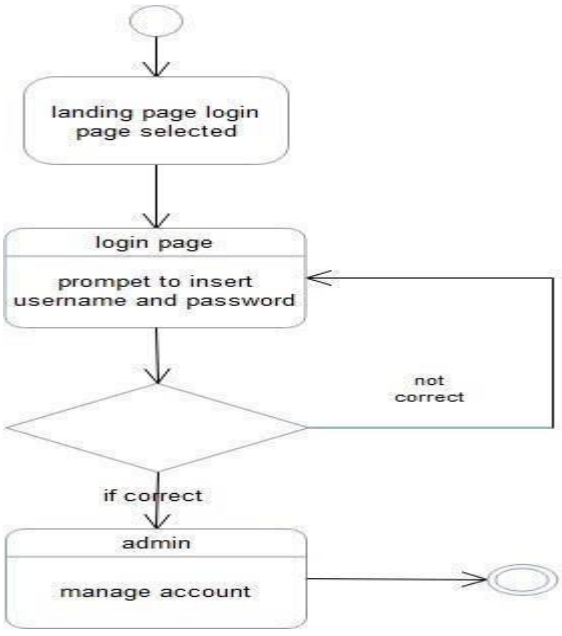



*Figure 4. 18 Admin state chart diagram*

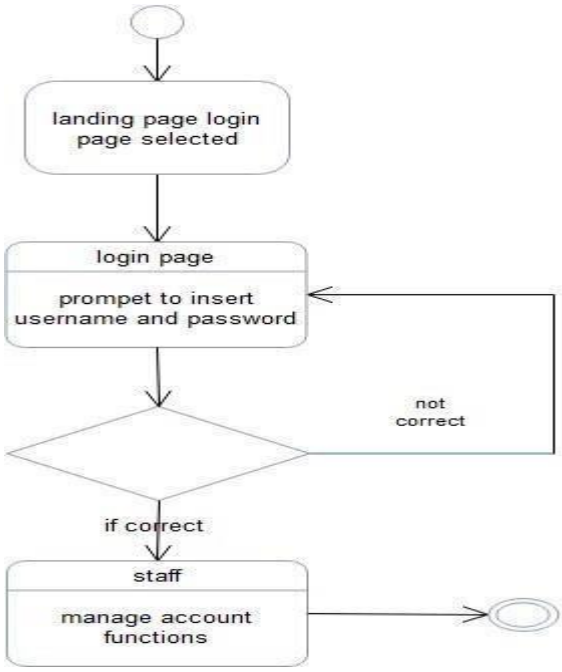



*Figure 4. 19 staff state chart diagram*

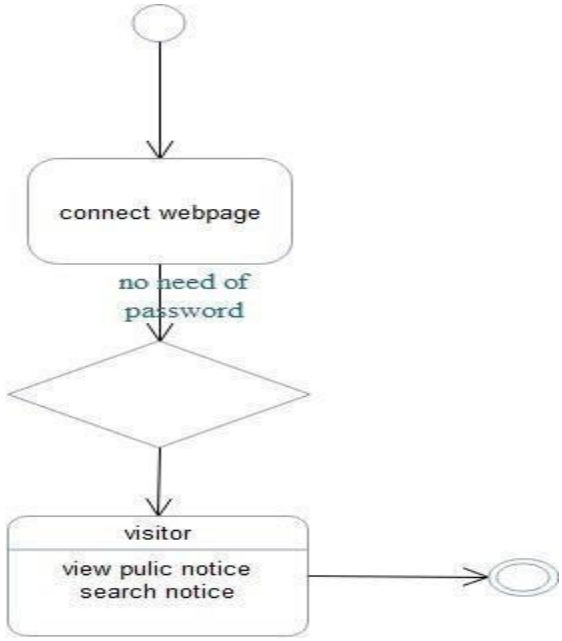



*Figure 4. 20 Visitor state chart diagram*

# CHAPTER FIVE

## 5.1 SYSTEM DESIGN

### 5.1.1 Introduction

The system design describes the final details of a system such as architecture, components, modules, interfaces and data for a system to satisfy specified requirements before it is implemented. Systems design could see it as the application of systems theory to product development. During the design process decisions are taken to meet the gathered requirements, decisions that are then applied to the system are described in detail in this chapter. The system design could be seen as the application of system theory to product development. There is some overlap with the disciplines of system analysis and system architecture. Additionally, it summarizes the technologies that we use in the system. The highlevel description contained in this chapter provides the framework to allow the development of the design criteria and documents that define the technical and domain standards in detail

## 5.2.DESIGN GOAL

Design goal are design work of what on feature going to implement.the design goals are derived from nonfunctional requirements. The Design Goals specify the qualities of the system that should be achieved and addressed during the design of the system mention of design goal:

### 5.2.1.Dependability

Our system is handling sensitive data of the university, high emphasis given with regards to security. The proposed system should achieve the following dependability characteristics:

- Security:the system should be secured .
- Reliability:the information provided by the system is as reliable as it is presented on the web page interface, and this is maintained by the persistent database.
- Robustness:Since the system is a web-based system that mainly uses a menu driven access there would not be an input problem by the user side.

### 5.2.2. Performance and portability

The system has fast speed when any user is contact to access it in order to do privileged thing, also it has good responsiveness and stability.This leads to user satisfaction in our system because they will not annoy and get bothered when using our system rather they will do what they want

### 5.2.3. Maintainability

The system in time of failurity or need modification the system needs to be maintained. To be maintainable the system should meet the following maintenance criteria.

Modifiability: - If in the system, some functionality requires to be modified, this modification must be done specifically to that function or page without affecting the overall system organization.

Extensibility: - If it is needed to add new functionality to the system, this must be achieved by only making a separate page and integrate this page with the existing system

## 5.3. Current System Architecture

Currently no any system architecture found in our university related IMDNIOC The current system separetly perform the function but there is no system stands for these purpose do together. So hence there is no Existing software architecture that will be considered. As a result, we only describe the software architecture of the newly proposed system.

## 5.4. Proposed System Architecture

The proposed system is expected to replace the existing manual system with an automated system. The architecture used for the system is a 3 tier Client/Server Architecture where a client can use Internet browsers to access the integrated meeting digital notice and interoffice communication (MDNIOC) within the network using the Internet. A 3-tier architecture is a type of software architecture that is composed of three “tiers” or “layers” of logical computing. They are often used in applications as a specific type of client-server system. 3tier architectures provide many benefits for production and development environments by modular the user interface, business logic, and data storage layers.

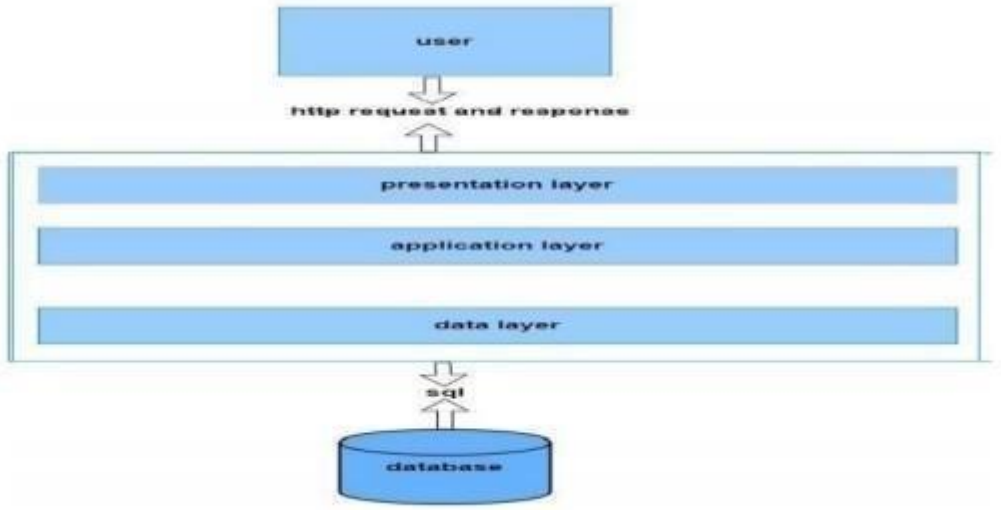
The presentation tier: the topmost level of the application and is responsible for the display and collection of user data. It translates tasks and results in something the user can understand. The presentation tier is the front end layer in the 3-tier system and consists of the user interface. This user interface is often a graphical one accessible through a web browser or web-based application and which displays content and information useful to an end-user.

The middle tier (web/application server): is responsible for taking requests for the client’s presentation tier, performing some type of business logic or process, and returning the results to the client for presentation. The controller logic processes client requests such as requests to

view placement or to retrieve data from the database. Business rules enforced by business logic dictate how clients can and cannot access application data and how applications to process data.

The data layer is responsible to store and retrieve information from the database. Only the application tier should be allowed to request information from this tier. The data tier maintains the application's data such as user data, placement data, etc. It stores these data in a relational database management system (RDBMS).

WKU MDNIOC SYSTEM




These tiers play specific roles in processing the data flows and control flows involved in usage activities.

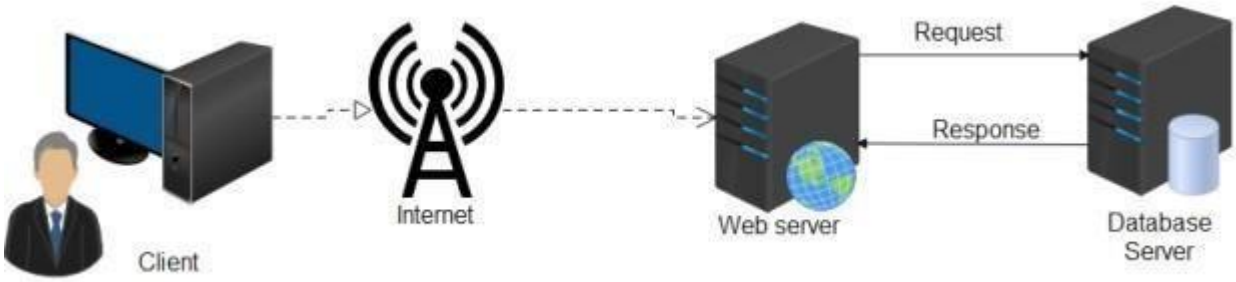



*Figure 5. 1 data layer architecture*

5.5.Subsystem Decomposition and Description

Subsystem decomposition is the process of separating a module into a standalone module in and of itself. It makes the system easy to understand, design, develop and maintain. The major subsystems of integrated WKU MDNIOC system are login, create an account, inactive account,

organize a meeting, attend the meeting, add decision, prepare the notice, post notice, view notices, search notice, prepare letter, send a letter, view letter, search letter, view notification, generate report.

And they are described as follows:

Login: Perform authentication of the user to interact with the system. Administrators and staff ➢

Administrator login

- ➢ staff login Create an account: this allows the system admin to create accounts for another system user.
- ➢ staff Inactive account: this is used to inactive/ stop from accessing the system which is done by the system admin.

Organize meeting: this is used to organize the meeting before the time of the meeting like,

- ➢ setting meeting time
- ➢ setting agendas
- ➢ add members of the meeting
- ➢ invite guest Attend a meeting: this is helpful to attend the meeting even if the user is anywhere.

Add decision: allow the secretary to add the meeting decision.

View decision: allow the system users to view the meeting decision on which they had agreed. Prepare notice: allow the system user to prepare a notice to post.

Post notice: allow the system user to post the prepared notice. But, this is only if the notice is approved by the higher hierarchy.

View notice: allow the system user to view the notice posted. Search notice: allow the system user to search notices with its title.

Prepare letter: allow the system user to prepare a letter to send to other Wanted offices.

Send a letter: allow the system used to send the prepared letter to send to the wanted offices.

View letter: allow the system user to view the sent letter from other offices.

Search letter: allow the system user to search the letters with its reference numbers.

View notification: allow the system user to view notifications which may be one of:

- meeting notification
- notice notification and
- letter notification

Generate report: allow the authenticated system user to generate reports of:

- meeting report
- notice report and
- letter report

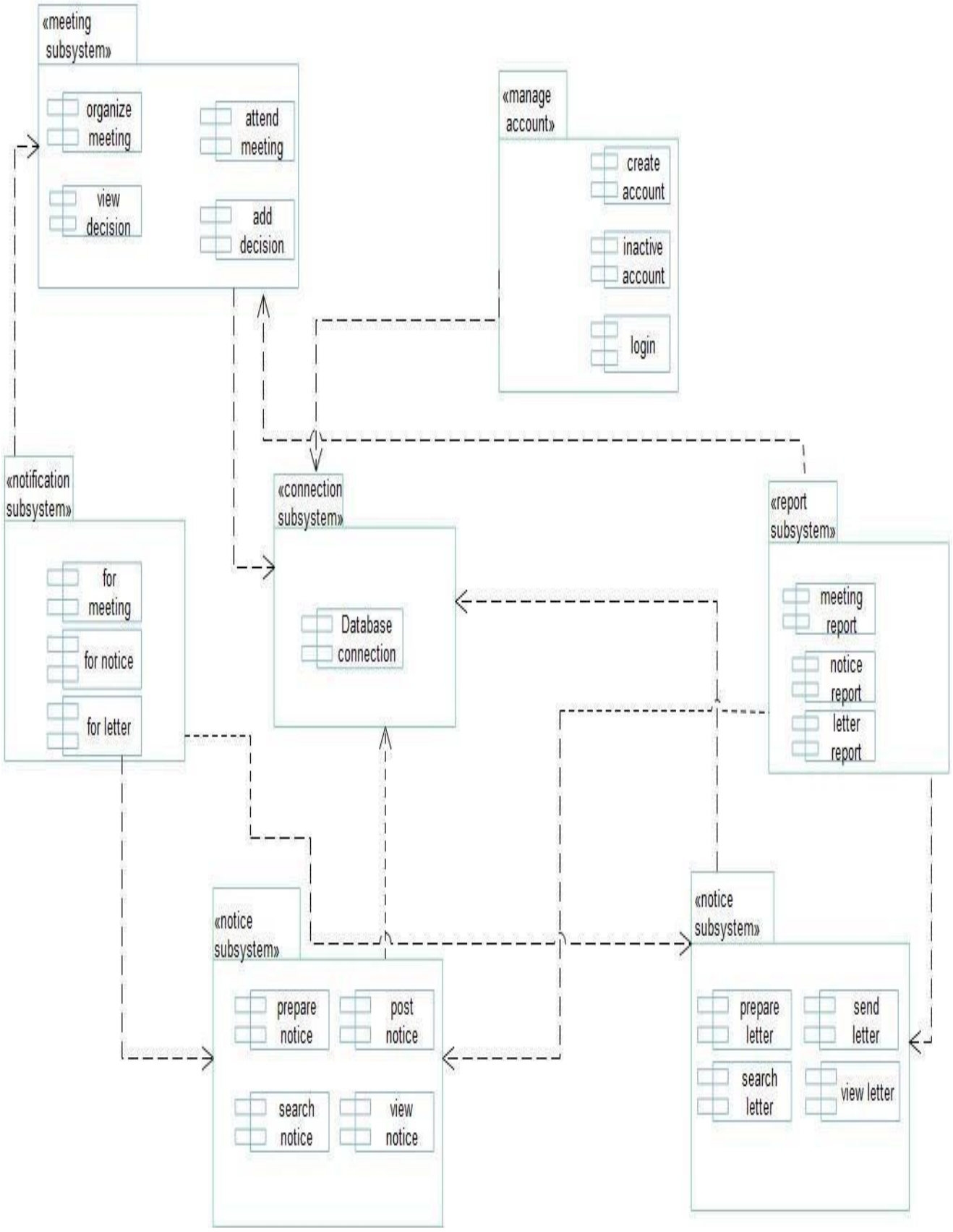



*Figure 5. 2 Subsystem Decomposition diagram of MDNIOC system*

5.5.1. Hardware/Software Mapping

Deployment diagram depicts a static view of the run-time configuration of processing nodes and the components that run on those nodes. In other words, deployment diagrams show the hardware for your system, the software that is installed on that hardware, and the middleware used to connect the disparate machines to one another.Deployment diagram created for applications that are deployed to several machines. It also shows how the software and the hardware components work together. Deployment diagram used to show the hardware of the system, the software that is installed in the hardware and also the middleware that is used to connect the disparate machines to one and other.

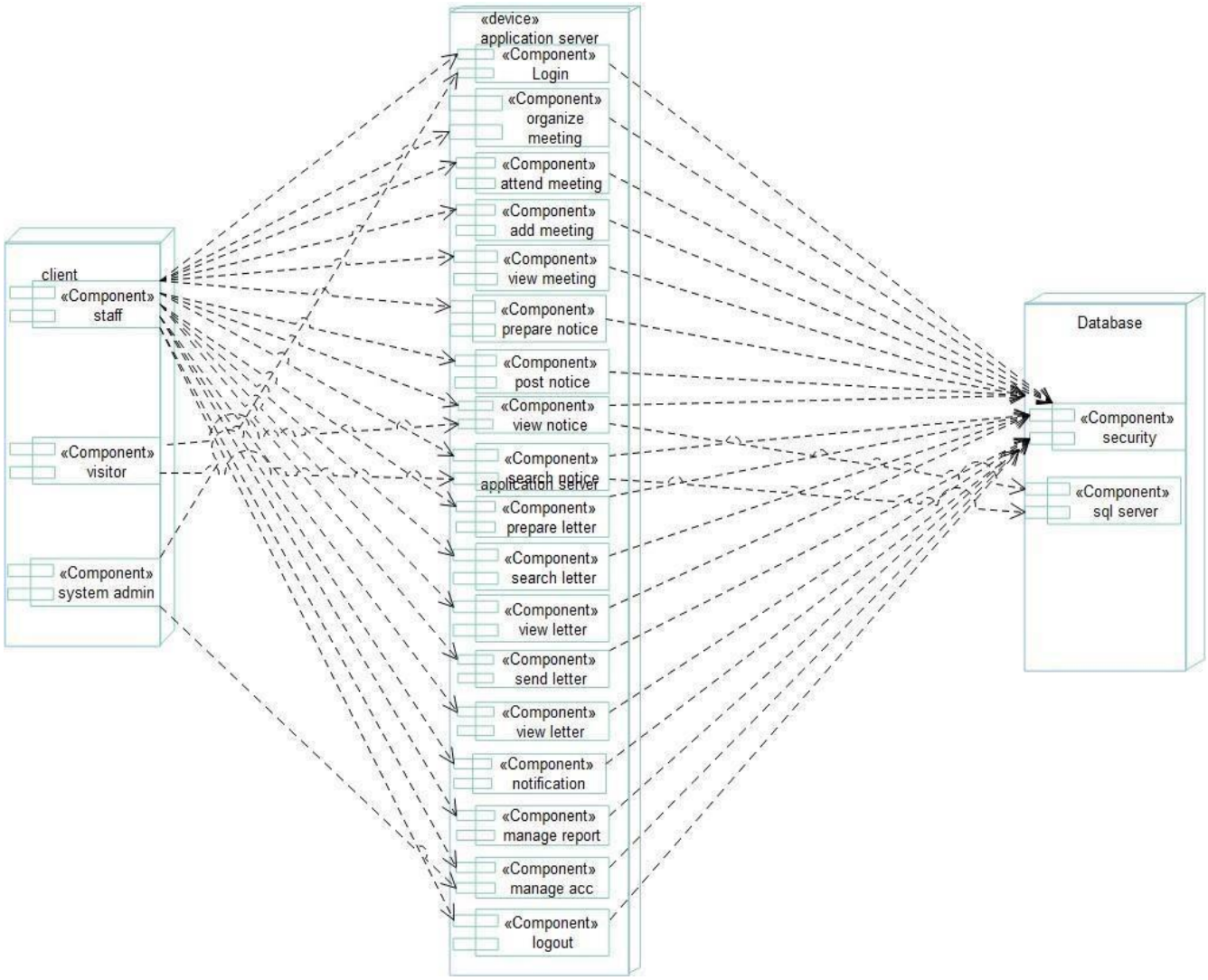


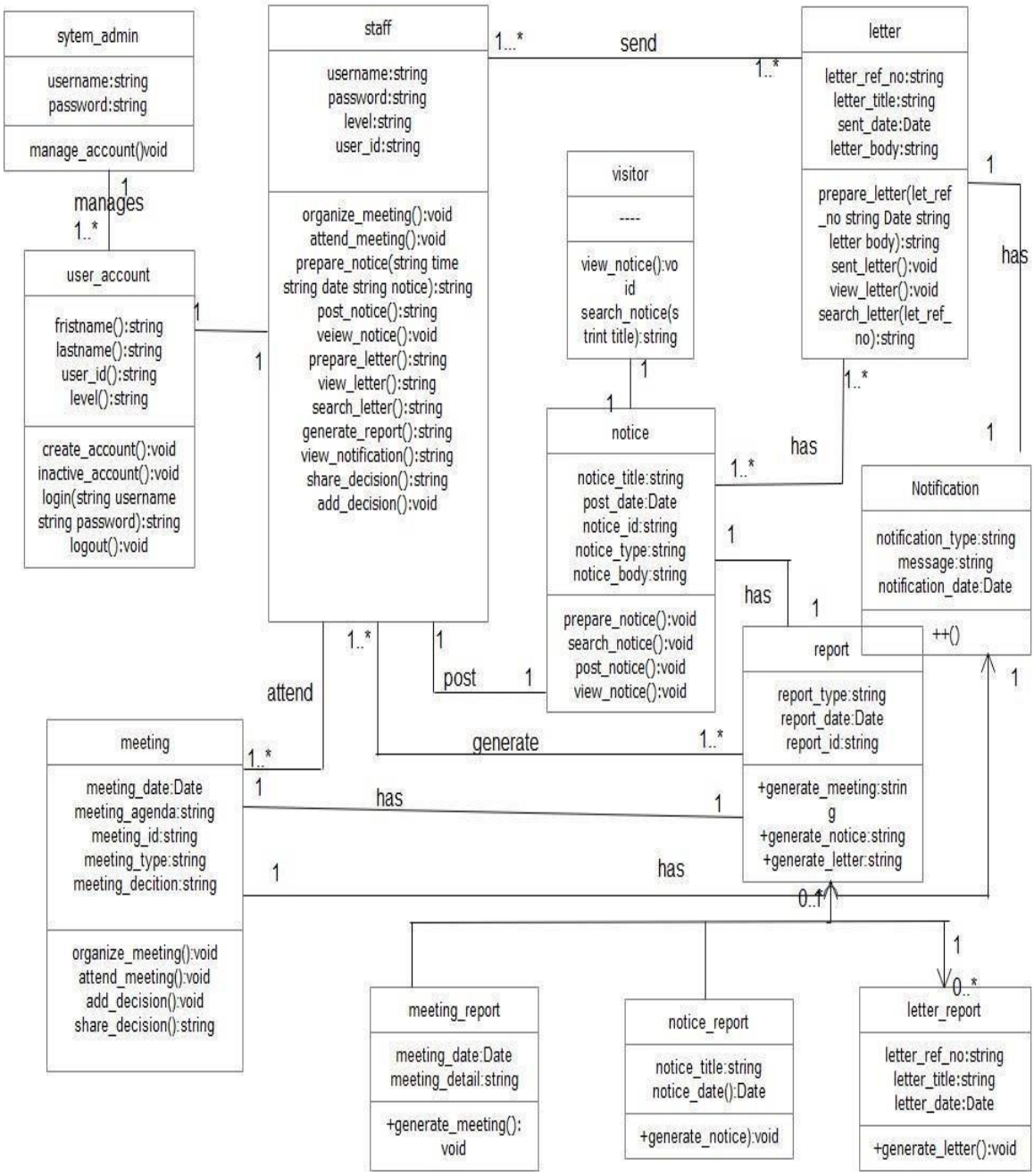

*Figure 5. 3 above shows the deployment diagram of our system.*

### 5.5.2. Detailed Class Diagram

In object oriented system Analysis, Real world concepts are modeled into objects. Conceptual modeling hereby allows us to model these concepts which later involve in to a full-fledged class models. A class is a set of objects that share a common structure and a common behavior (the same attributes, operations, relationships and semantics).A class is an abstraction of real world items. When these items exist in the real world they are instance of the class and are referred to as objects and an object can be any person, place, and concepts or user interfaces. Classes are represented by rectangles with three sections. These are:

- The top section is the name of the class.
- The middle section contains the attributes which store information about an item
- The bottom section contains the methods that show what are done on object or class

*Table 5. 1 Detailed class diagram*




## 5.5.3. Persistent Data Management

This modeling used to depict the design of the database. The persistent classes are used to store the most important and permanent information about the system. In persistent modeling, the team member will perform the following activities.

➢ Identifying entities.

- Identifying keys.
- The methods of classes.
- Data type and size.
- The relation between tables of the database


*Figure 5. 4 persistence diagram*

## 5.5.4. Access Control and Security

In our system only authenticated user can access our system other than to visit public notice and only permitted user can use our system. Access control and security specifies what the user can access or what cannot perform by some users. This access control is verified by user_name and password. System administrator represents an authenticated user. The proposed system follows multi user system. In multi user system, different actors have access to different functionality and data.

| Actors | operations | | | |
|---|---|---|---|---|
| | Account | Information | evaluation | Result |
| System admin | Create accout Inactive account | user_name and password | approve | Manage account |
| staff | --- | user_name and password | | access account |
| visitor | --- | --- | --- | Get information |

5.6. Packages

The package diagram describes the decomposition of subsystems into packages and the file organization of the code. This includes an overview of each package, its dependencies with other packages, and its expected usage. In the previous section, we were trying to define the subsystems of our system, in this part we are going to describe the dependency of each subsystem to another subsystem which is found in the same package.

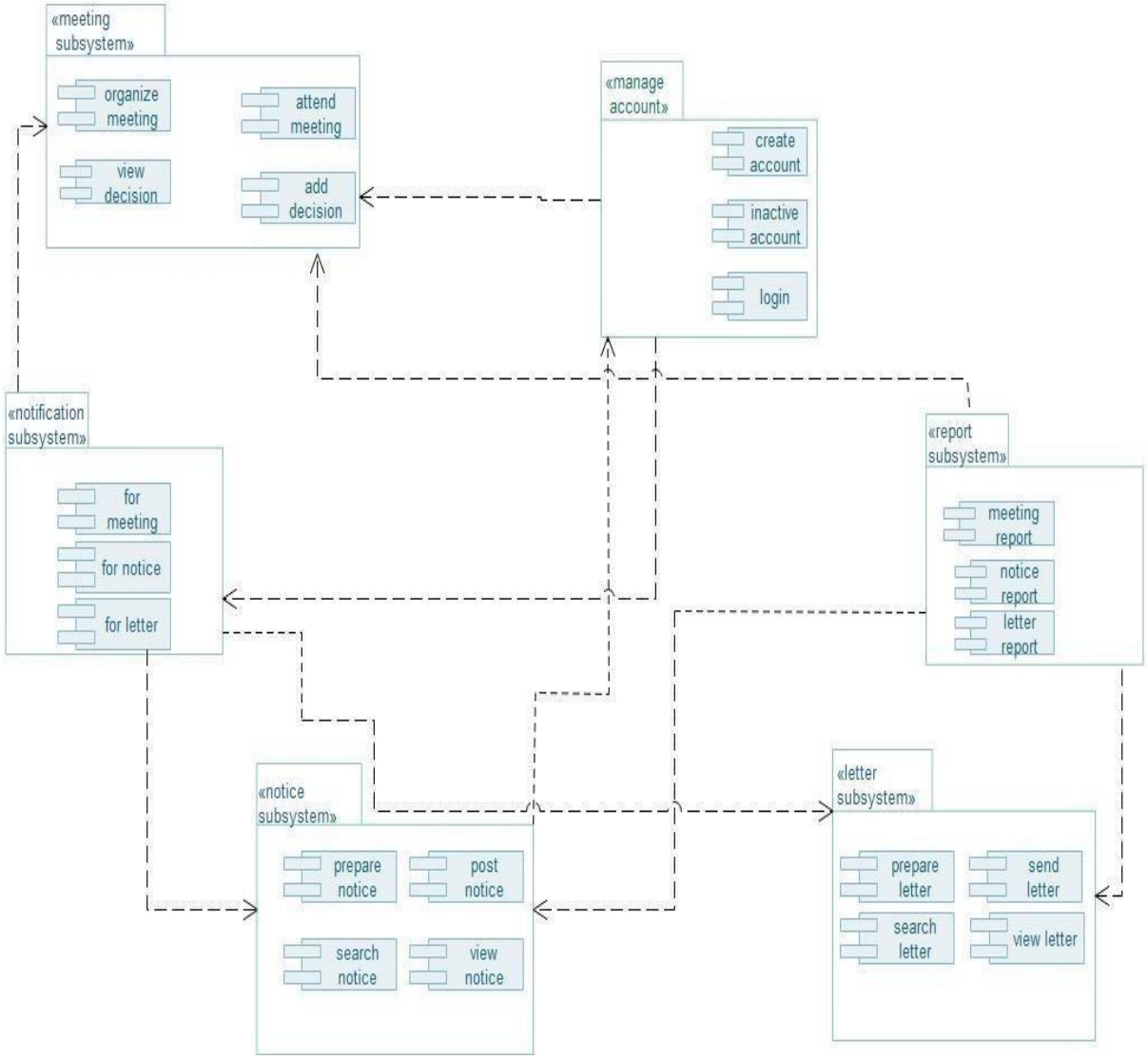



*Figure 5. 5 package diagram*

## 5.7. Algorithm Design

It defines the algorithm required for each element of the architectural design to accomplish its tasks.

Algorithm we used in IMDNIOC:

Login

Inputs: User name and Password

Description: used to access any IMDNIOC page

Begin

Connect to database

Access account table

Select username, password from account table

IF username and password are equivalent to select a given user account

Display home page of user with user Id selected

End if Else

if

Display Error message: wrong user name and password. Please fill the correct one. End

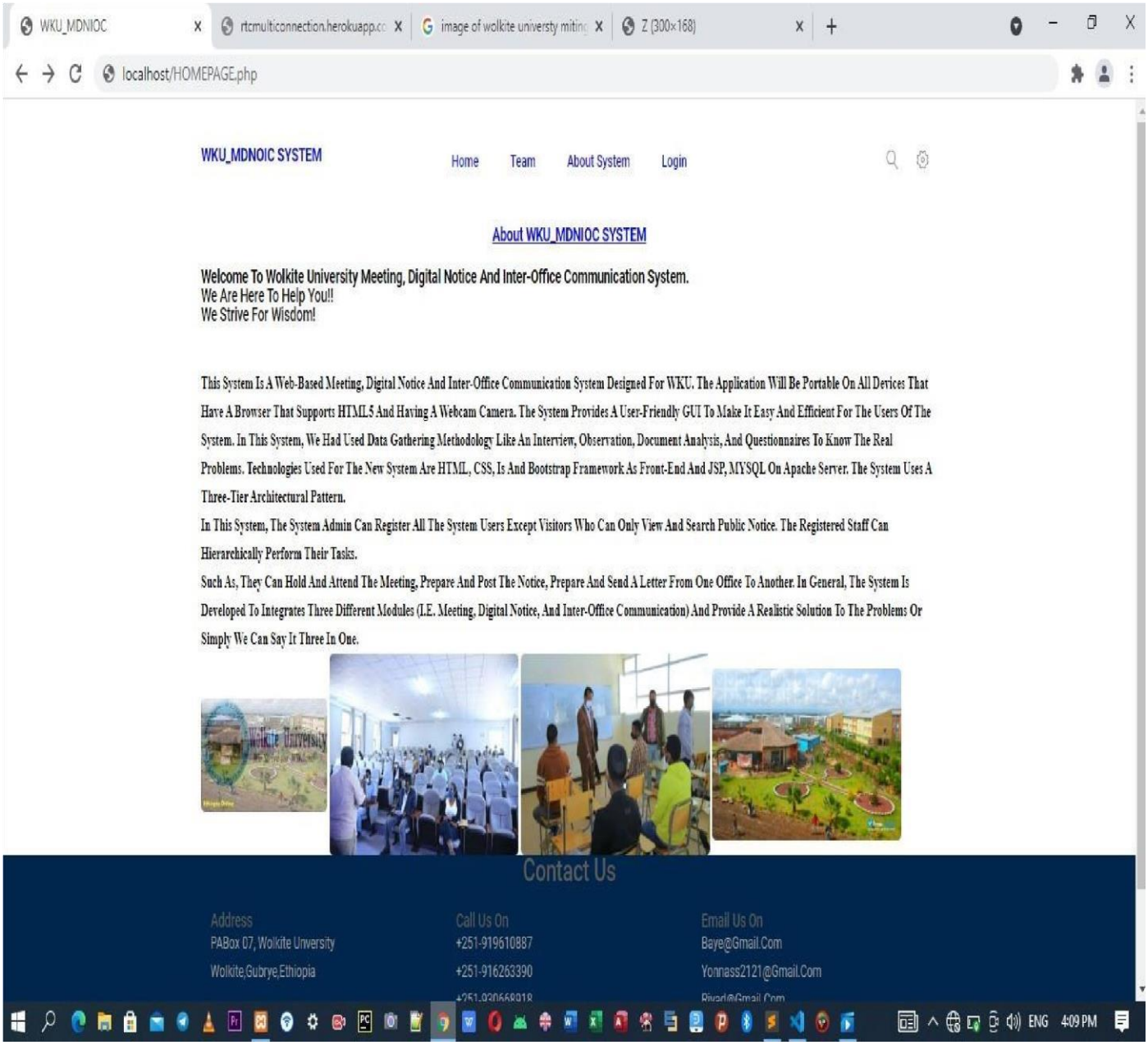
else if

END

5.8. User Interface Design

User interface (UI) design is the process of making interfaces in software or computerized devices with a focus on looks or style. Designers aim to create designs users will find easy to use and pleasurable. it is the access points where users interact with designs. Those are our project user interface design partially:

Welcome page/public notice This is the page that the Public Notice can be posted it is open for all visitors. On this page, we can search and view different types of public notice. User interface for home page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rtcmulticonnection.herokuapp.cc
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Z (300×168)
localhost/HOMEPAGE.php
WKU_MDNOIC SYSTEM
Home
Team
About System
Login
About WKU_MDNIOC SYSTEM
Welcome To Wolkite University Meeting, Digital Notice And Inter-Office Communication System.
We Are Here To Help You!!
We Strive For Wisdom!
This System Is A Web-Based Meeting, Digital Notice And Inter-Office Communication System Designed For WKU. The Application Will Be Portable On All Devices That Have A Browser That Supports HTML5 And Having A Webcam Camera. The System Provides A User-Friendly GUI To Make It Easy And Efficient For The Users Of The System. In This System, We Had Used Data Gathering Methodology Like An Interview, Observation, Document Analysis, And Questionnaires To Know The Real Problems. Technologies Used For The New System Are HTML, CSS, Is And Bootstrap Framework As Front-End And JSP, MYSQL On Apache Server. The System Uses A Three-Tier Architectural Pattern.
In This System, The System Admin Can Register All The System Users Except Visitors Who Can Only View And Search Public Notice. The Registered Staff Can Hierarchically Perform Their Tasks.
Such As, They Can Hold And Attend The Meeting, Prepare And Post The Notice, Prepare And Send A Letter From One Office To Another. In General, The System Is Developed To Integrates Three Different Modules (I.E. Meeting, Digital Notice, And Inter-Office Communication) And Provide A Realistic Solution To The Problems Or Simply We Can Say It Three In One.
Contact Us
Address
PABox 07, Wolkite University
Wolkite,Gubrye,Ethiopia
Call Us On
+251-919610887
+251-916263390
Email Us On
Baye@Gmail.Com
Yonnass2121@Gmail.Com
ENG
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# CHAPTER SIX

## 6. IMPLEMENTATION AND TESTING

The implementation phase is where you **install** the DBMS on the required hardware, optimize the database to run best on that hardware and software platform, and create the database and load the data. Set up the users and security. Implement the backup regime.

Implementation refers to the coding of the all documents gathered starting from requirement analysis to Design phase. All documents, business logic, information gathered are designed into the code so that the system will be implemented for the user to be used for the purpose it developed. The deliverable of the implementation phase (the project) is the operational system that will enter the operation and support stage of the system's life cycle. Here is the sample code for each module which is operated in a very different manner from the proposed new system. A proper implementation is essential to provide a reliable system to meet the requirements of the system.

### 6.1. Implementation of the Database

system implemented with MYSQL database to manage which assists all operations performed in the database insert update and view data which is stored in the database.

system implemented with MYSQL database because it can be deployed and run on

Any operating system like window, Linux and others. MYSQL database is easy, fast and Can be used for any type of data whether relational or simple, large or small data

Our system contain one database and ten table each table Contain its primary key and some of the table contain foreign key that means some of the Table related each other's.

### 6.2.Implementation of the Class Diagram

in domain modeling class diagrams, an implements relationship represents a class that implements the operations in a java interface.

We implement database tables of our system based on the class diagram that we have design and use mysql for the database implementation. The system which we implemented involves in a central database that accessing and stores run on a local server or host computer.

The database application on the client side handles the screen input output processing and the back end on the server side handles data processing.

6.3. Configuration of the Application Server

The application server system has network access to the database server host. The Role Manager software is accessible by the application server system.

system configured by Xampp server because Xampp is simple and lightweight Apache distribution it is extremely easy to create a local web server for testing and deployment purposes. Our system configured properly the operations start and shutdown, Organize folders and files, server to work on the same machine,the server to work on from remote machine and separation of different database works with other browsers.

6.4 Configuration of Application Security

Application Security configuration refers to security measures that are implemented when building and installing computers and network devices in order to reduce unnecessary cyber vulnerabilities.

We use JQUERY for implement validation our system validate all the input by returning error message and suggesting to try again when invalid input occur. We use PHP md5 for implement encryption our system encrypt username and password when the system administrator create a user account, when the user change their password the system encrypt the password or when the user forget their password the system encrypt the password . We use PHP mail for implement forget password by using email our system support forget password that means user can forget password using their own real application email and our system send the link to users of the system their own email. Our system implements session for prevent unwanted access of the system.

## 6.5 Implementation of User Interface

User interface design is a a process that tries to determine what a user might want from a system and then provides the means to make that happen. user interface is user interactive and consistent which gives users a more positive experience, enables users to carry out tasks more quickly and efficiently, improves usability and learnability of the system.

## 6.6. Testing

Testing is Process of checking up the system how can it handle problem and perform the functions needed appropriately. purpose of testing, features what we are tested is case testing, unit tasting, integration testing acceptance testing what we use testing tools and environments to test the system and discus about testing procedures.

### 6.6.1. Test Case

Here we have designed a test case for some of our interfaces.

Test case for login

**Table 6. 1 test case for login**

| |
|---|
| Test Case #:1.1<br><br>Test case Name: Login<br><br>System: Login<br><br>Designed by: all members<br><br>Executed by: All user<br><br>Short Description: Test the login Accessibility or check Authorized person |
| Pre-conditions:- The user has a valid User Name and Password |

| |
|---|
| The user has accessed the page by entering the correct User Name and Password.<br><br>Post condition:-The user can access the main page. |

Test Case for forget password

**Table 6. 2 test case for forget password**

| |
|---|
| Test Case #:1.2<br><br>Test case Name: forget Password<br><br>System: Password<br><br>Designed: all members<br><br>Executed by: users<br><br>Short Description: real user gmail and password<br><br>Pre-condition:-The user has database email and real email before To recovery password.<br><br>Post-conditions:-User email is store in database. |

6.6.2. Testing Tools and Environment

Selection of tools is totally based on the project requirements & commercial or free tools (Open Source Tools) you are interested. Off Course, free Testing Tools may have some limitation in the features list of the product, so it's totally based on what are you looking for & is that your requirement fulfill in free version or go for paid Software Testing Tools. The tools are divided into different categories as follows:

- Test Management tool

- Functional Testing Tools
- Load Testing Tools

6.6.3 Unit Testing

Verification (A set of operations that the software correctly implemented a particular function) on the smallest element of the program i.e. the modules are tested alone in order to discover any error in the code.

6.6.4. System Testing

It is the final step of testing. In this system tested the entire system as a whole with all forms, code, modules. In this we tested all the functionalities in the System. All errors in the forms, functions, modules have been tested. Finally, System testing ensures that the entire integrated software system meets the desired requirements. It tests a configuration to ensure known and predictable results

6.6.5 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 WKU IMDNIOC system is a web based application each and every access is depend 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.

Patterned the interaction between separate functionality which performs the exact tasks.

Estimate the functionality of subsystem after combination all separate functionality and Identify the in-dependency of each sub-system with other subsystem.

6.6.6 Acceptance Testing

Commonly known as the beginning and the ending test, the completed system (or a major portion of it) is released to a selected group of users for testing in the real world. In this project virtual user has tested for the desired specification.

# CHAPTER SEVEN

## 7.1 CONCLUSION AND RECOMMENDATION

The outcome of this project solve problems that addresses on meeting, information exchange and digital notice service, then all the service provider was more beneficiary and satisfied because it helps to save resources like time, money, power and increase efficiency and effectiveness. So, it results in excellent out come to the system.

In general the project (system) that the team developed will benefit the enterprise by changing its business range from manual to online integrated system forms. The overall benefits of the system to the enterprise are provide sufficient security, Minimize the time required to perform task by getting order to be served, Attract more service providers and staff to the enterprise to get reliable and sufficient service provided by time, Reducing human power and cost that are spent on the manual system for notice.

As a system developing team the group member we have acquired more knowledge and experience about the different phases of the software development life-cycle. As software developers, the team has worked together and assessed risks, and minimizes them.

In summary, our project demonstrates that in a large, multi-centre residency program,

stakeholders have frequent and recurring need for up-to-date program information, that this information is poorly disseminated by traditional means, that significant material and personnel costs are involved in assembling, updating, and distributing this information, and that a residency program website can be developed using local resources to meet program information needs at reduced overall costs and without requiring significant computer expertise. To our knowledge, no residency program has previously reported on using the Internet as a tool for virtually all administrative communication.

## 7.2. RECOMMANDATION

Integrated WKU MDNIOC system is web-based system that ingrates three different system which include meeting, digital notice inter-office communication to overcame the problems and easily to access the system as once .in our future work, we will develop a full MDNIOC system with additional functionalities like learning-teaching affairs, communicating it with other university software and make dynamic system which support multi-language.

## 8. REFRANCES

-Hong Kong University (HKU) Convene Paperless Meeting

-Web-based Notification Management System with Android Application. authors are

Mr. Lalit S. Jadhav, Mr. Sanket S. Jagushte, Mr. Tejas R. Mhade, Mr. Mangesh K.Gosavi UG Student for Department Of Computer Engineering at Rajendra Mane College of Engineering & Technology, Ambav, Mumbai University.

-Ethiopia wolkite university collage of computing and informatics,computer science department staff and students[2013].

-wolkite university websites.

# 9. APPENDICES

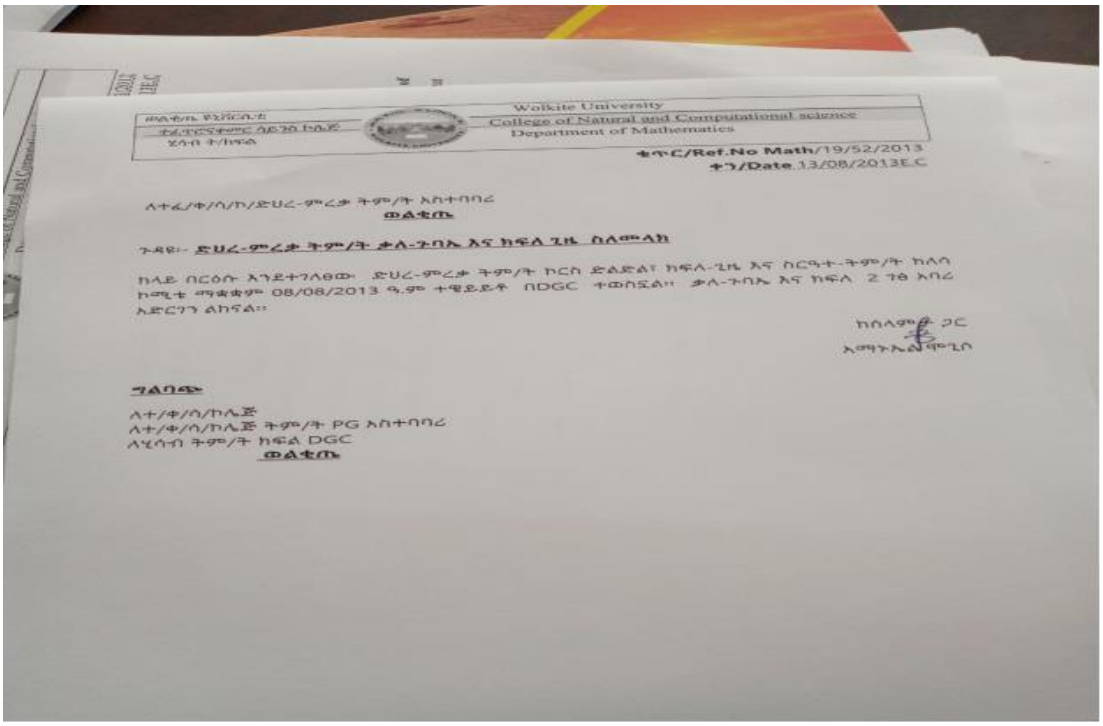
## 9.1. APPENDIX i:-Interview and questionnaires

**Interview: -** To gather complete and appropriate information for the proposed project our team had taken interviews from some system stakeholders like the president, registrar director, college dean, school dean, department head, lectures, and another concerning body.

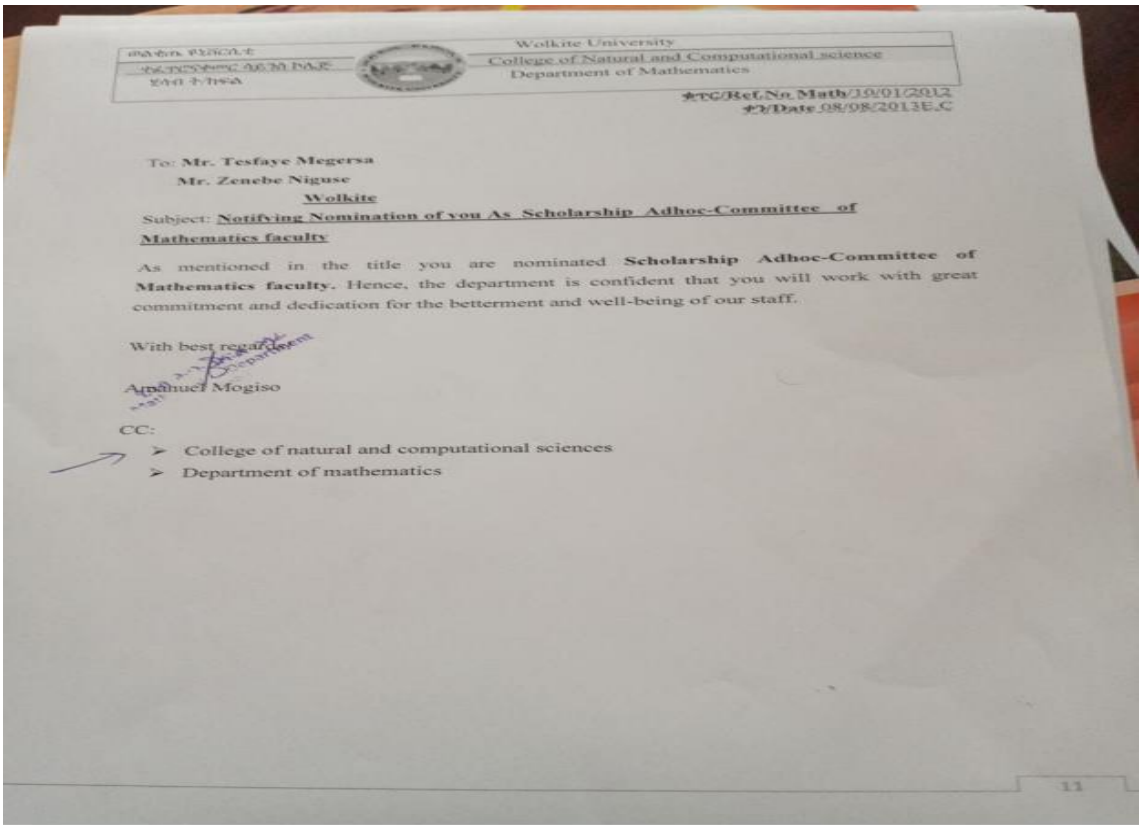
## 9.2. APPENDIX ii:-Existing system form and reports

The existed system use manual method for attach notice and use technology like zoom,Skype,google for meeting purpose but not in organized manner.

**Documents used in meeting:-use manual method for posting notice.**



document prototype for letter paper :personal letter



Wolkite University
College of Natural and Computational science
Department of Mathematics

★TC/Ref.No Math/10/01/2012
★Date 08/08/2013E.C

To: Mr. Tesfaye Megersa
Mr. Zenebe Niguse
Wolkite

Subject: Notifying Nomination of you As Scholarship Adhoc-Committee of Mathematics faculty

As mentioned in the title you are nominated **Scholarship Adhoc-Committee of Mathematics faculty**. Hence, the department is confident that you will work with great commitment and dedication for the betterment and well-being of our staff.

With best regards

Amanuel Mogiso

CC:
- College of natural and computational sciences
- Department of mathematics

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9.3. APPENDIX iii:-Sample source code

Login source code

```
<?php

  session_start() ;

  include ('../../../../install/db.php');?>

<?php

 if (isset($_POST['submit'])) {

    $type=$_POST['type'];
```

```
$username=$_POST['username'];

$passwd=$_POST['Password'];

$_SESSION['username']=$username;

$_SESSION['type']=$type;

$sql="SELECT * FROM user WHERE position='$type' && uname='$username' && password='$passwd'

&& status='active'";

$result = $con->query($sql);

//$row = $result->fetch_assoc();

if ($result->num_rows > 0) {

if ($type=='Admin')

{ header("location: ../../../Admin/index.php");

}

if ($type=='Head') {

header("location: ../../../Head/index.php");

}

if ($type=='Staff') {
```

```
                header("location: ../../../Staff/index.php");

            }

             while($row = $result->fetch_assoc()) {

              $_SESSION['subtype']=$row['subtype'];

              $_SESSION['position']=$row['position'];

              $_SESSION['bigType']=$row['type'];

              $_SESSION['email']=$row['email'];

             }

             }

            else{

echo "your username or password is incorrect..!<a href='../index.php'>back to login_page</>";

             }

           }?>
```