wolkite university

college of computing and informatics

department of information technology

Project Title: Wolkite University Credit and Saving Management System

BY:-

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WOLKITE, ETHIOPIA

Approval Form

This is to confirm that the project report entitled **Web Based** Wolkite University Credit and Saving Management System

Submitted to **Wolkite University, College of Computing and Informatics Department of Information Technology** by: Lidet Wudma, Tsion Goshu, Mahlet Negewo is approved for submission.

Advisor Name	Signature	Date
Department Head Name	Signature	Date
Examiner 1 Name	Signature	Date
Examiner 2 Name	Signature	Date
Examiner 3 Name	Signature	Date

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INTRODUCTION

Technology is spreading its wings in almost every walk of human life activity. Now a day it is better if every activity is done using new technology in order to fulfill the need of human being, Organization, Enterprise etc. As today's world there are many organizations and each organizations need to be preferable, computable, work on faster way in order to satisfy users' interest etc. i.e. they should have facilitated their activities in computerized way.

Wolkite University employee's credit and saving union work association refers to an array of financial services, including loans and savings. University of Wolkite employee's credit and saving union work association is one of the largest and coordinated associations with many members mainly serving employees (at any level) of the Wolkite University.

Supporting wolkite university employees' credit and saving union work association with the information communication technology (ICT) is a major strategy to provide quality service to the office members. Credit and saving in manual very difficult to keep and manage a large number of information involve in the credit and saving union work association service system. The objective of this proposed system is to develop computerized credit and saving system to make the system easy and error free in which the users can access their data easily.

1.1. Background History of the Organization

Wolkite University is among the ten newly founded universities which established in the year 2004 E.C by the Ethiopian government. Wolkite University is located in Southern Nations Nationalities and Peoples Region specifically in Gurage. Wolkite university employee's credit and saving union work association refers to an array of financial services including loans and savings. Wolkite university employee's credit and saving union work association is one of the largest and coordinated associations with many members mainly serving employees (at any level) of the Wolkite university. The association was established in 2004 E.C as a mini saving and credit association with only 70 members and only one accountant. Dues of members were only 50 birr per month by the time as the association started. Later grown to be fully functional, coordinated with many workers working under it and serving vast amount of employees in the university. The association is ruled under administering committee which is consists of chairman, assistant chairman, and clerk and committee members. Now the association has five accountants to facilitate the work of the association

having a vision of serving all the society/employees of university. The association has now around 400 members who are employees of the university at different college and staffs. Now the capital of the association has risen to 10million. Any regular employee can be a member of the association if he/she is willing to contribute 25% of his/her salary. Headquarter of University of Wolkite employee's credit and saving union work association is located at the Wolkite University.

1.2. Statement of the Problem

Employee has been increasing all the time. This increasing number of Employees from time to time makes the paperwork hard to handle. This means we have to use more paper and this lead us to data complexity we might not found the data we need on time, waste more paper this is the main problem in the Credit and saving system. This implies that in the Employee registration office, storing data in paper is not suitable. According to the interview made with the manager, even if most of activities are done manually, there is semi automates activity that is recording customer's information simply in Microsoft office Excel. As an evidence for the existence of the problem in current system, one can observe the increasing number of comments about the lack of automating system made by unsatisfied customers. Obviously, the organization has got lots of business-related problems that can be solved by applying the computer system methodologies. Generally processing user information in the existing system takes excess time, costs and effort The Association is facing many problems in the current working environment from those we have tried to mention major once below.

- Lack of security of data: information access by others without privilege and Place of storage is not secure. This shows that the existing system data storage is not secure.
- The customer can't easily view his/her balance: because the current system is not automated it is manual so difficult to view his/her balance as well as other information.
- There is information redundancy.
- Difficulty to generate monthly transaction report due to Absence of reliable record keeping
- Members can't request details of his/her last transactions he has performed on his/her account. Consumes large volume of paper work

- It needs large space for storage of document
- Difficulty to trace information easily

To resolve the above listed problems and make the working more accurately and securely the system needs to be web based.

1.3. Objective of the Project

1.3.1. General Objective

The general objective of the project is to develop a Web based credit and saving system for Wolkite university Employee's union work Association.

1.3.2. Specific Objectives

The specific objectives of the project are the following:

- Analyzing existing system and Identifying the problem
- Gathering system and user requirements
- Analyzing Requirements for the development of proposed system
- Designing and implement the new system.
- Testing and deploying proposed system

1.4. Feasibility study

It is an analysis of the ability to complete a project successfully, taking into account legal, economical, technological, operational and other factors.

1.4.1. Operational feasibility

It is the measure of how well the solutions for problems will work in the association. The project will be beneficial because it satisfies the objectives when developed and used. And as well the new system brings an easy and user friendly working environment that helps the employees get services from anywhere as well as the association workers to handle tasks easily.

1.4.2. Economic feasibility

Economic feasibility is the analysis of a project's cost benefit analysis in an effort to determine whether or not it is logical and possible to complete. Our proposed project is economically feasible because it has less expensive when compared to the existing system, so the project helps in reducing the cost.

1.4.3 .Technical feasibility

It's a measure of whether the proposed system is user friendly and enables users to maintain when problems occur or not.

Our system is technically feasible due to the following reason:-

- ✓ Member can adapt the system easily.
- ✓ No need of much more skill
- ✓ Developed with in the latest technology.
- ✓ Users can maintain problems easily.

1.4.4. Legal feasibility

We need to make sure that the proposed project will meet all legal and ethical requirements of the project are applied. The system we are going to developed is not conflict with any government directives or cannot interfere with any political issue and with any cultural aspects. So our project is legally feasible

1.5. Scope and Limitation of the Project

1.5.1. Scopes of the project

The scope of this project focus on developing a Web based credit and saving system for Wolkite University Employee's credit and saving union work Association. Our proposed system will be deployed on the universities internet and will only give service to employees of the university. The proposed system will focus on saving and loan management.

1.5.2 Limitation of the project

- ✓ Our system excludes Transfer of money from customer account to another customer account.
- ✓ Performing Public service billing or payment cannot perform.
- ✓ mobile banking transaction also can not be applied.

1.6. Significance of the project

- ❖ Reduce the workload of employee.
- ❖ Files can store for long period of time.
- ❖ Reduce resource usage.
- ❖ Customer can search files easily.
- ❖ To give effective and efficient services to customers.

1.6.1. Target Beneficiary of the project

- ➢ For the association: For Wolkite University employee`s credit and saving union work association, it helps in reducing the manual work, Reduce the cost because of reduced. The number of employees, to make its service delivery process fast, to make its data accurate and secure. It also gains Competitive Advantages with other financial institutions due to the above improvements.
- ➢ For staffs of the association: - the system is important to access their associations data easily anywhere, reduce their work load and labor, reduce redundancy of work, to generate reports for managers and higher officials, it changes the manual storage mechanism in to computerized system and it makes them to be motivated for their job.
- ➢ For members.
    - Reduce the time and labor required to get services from the institution.
    - Reduce the error that made by the employees.
    - It enhances accuracy, speed, and security of services.
    - For their better satisfaction with fast services provided by the employees.
    - Know the knowledge how business transactions takes place
    - Helps us gain knowledge on web development in depth

1.7. Methodology of the Project

1.7.1. Data collection and gathering methodology

The project will use the following data collection methodologies

- **Interview**: The project team had interviewed Wolkite University credit and saving system and some peoples who live in the city to deeply understand the manual system and to develop the proposed system perfectly.
- **Observation:** The project team observed different things to get the overview of the existing system, understanding the overall work flow and how everything is handled in and its overall system.
- **Document analysis:** We use this method we try to discover written documents about the organizations structure, business rule, and to know all about the credit and saving system function and overall of their work in short and brief.

1.7.2. System Analysis and Design

We use Object oriented system analysis and design methodology because the software development methodology by building self-contained modules or objects. This methodology has the Following futures increased extensibility, proved quality, and managed complexity.

1.7.3. System Development Model

We use iterative model because in iterative model we can iterate back if error is occurring in one phase and we can return back to other phase to fix errors at any phase of the project life cycle.

1.7.4. Testing Methodology

- We use Unit Testing because testing individual components independently from one another. This testing method reduces the complexity of the overall test activities, easier to pinpoint and correct faults and allows parallelism in the testing activities.

1.7.5. Development Tools and Technologies

To develop his system, we follow the common project development Processes: Requirement elicitation, Analysis, Designing, Implementation, Verification and Maintenance.

1.7.5.1. Frontend Technologies

- ✓ Sublime and PHP storm: to write different codes for front end technology like HTML, Bootstrap, CSS and JavaScript.

1.7.5.2. Backend Technologies

- ✓ MYSQL: to store information.
- ✓ Apache server: to facilitate works as local server.

1.7.5.3. Documentation and Modeling Tools

- ✓ Microsoft word 2016: to prepare documentation.
- ✓ Microsoft PowerPoint: to prepare slide shows.
- ✓ Edraw max: to Design UML diagrams.

1.8. Document Organization

This project document deals all about Web based credit and saving system for Wolkite university Employee's union work Association. It has five chapters: introduction, existing system, proposed, analysis, design phase. The introduction part deals with the background for the project area and office, statement of the problem, scope, limitation, methodology in terms of data collection, system analysis and design, system development, testing as well as development tools and feasibility study of the project in terms of operational, technical and economic feasibility. The second chapter shows the user of existing system, major function, drawback in terms of performance, input/output, security as well as efficiency and business rule of the existing system. The third chapter shows discussions of the new proposed system detailed description of system functionalities in terms of functional and nonfunctional requirement in the case of nonfunctional requirement we included here user interface, hardware consideration, security issues, performance, error handling, quality and resource issue. The fourth chapter deeply deals system design with using a UML (Unified Modeling Language) diagrams like, Use case diagram, class diagram, Sequence diagram, activity diagrams, and state chart diagram thus diagram generally shows three system model mean functional, object and dynamic. The fifth chapter It shows the design goal in terms of performance, dependability, maintenance, end user and priority of design goal, and proposed architecture of the solution including subsystem decomposition, deployment diagram, detail class diagram, persistence model for tables mapping followed with the access control as well as package and algorithm design are included in this chapter.

CHAPTER TWO

2. DESCRIPTION OF THE EXISTING SYSTEM

Every activity inside the association is performed manually. New employee's registration, loan requests, any activity are also performed manually in a paper work and in Excel. The records are kept manually putting the records of members on subsidiary ledger in order to calculate individual members financial status this process may result errors and also loss of records and it also make it harder to keep track of every bit financial status of clients.

2.1. Introduction of Existing System

Saving and credit association perform its service delivery with manual methodology. When any customer gets register to become a member of the association, he/she uses paper form to finish a process and other performance of saving and crediting activities have been done using record book. Almost every activity inside the institution is performed manually.

The records are kept manually putting the records of members on subsidiary ledger in order to access individual's data and this process may result in errors and also loss of records. Therefore, these manual approaches of various activities from managing up to the core tasks of the association such as saving and crediting have been done in more time consuming and inefficient way.

2.2. Users of the Existing System

In the existing saving and association management system there is some users. Namely administrator, officer (manager and the chaser) and customer.

- Administrator: is a person Manage the whole activities that takes place in saving and credit association based on the rule.
- Accountant: A person who responsible for register, give book, give loan service to the customer and advice the customers how to the use loan service from the association and also generate report for the administrator.

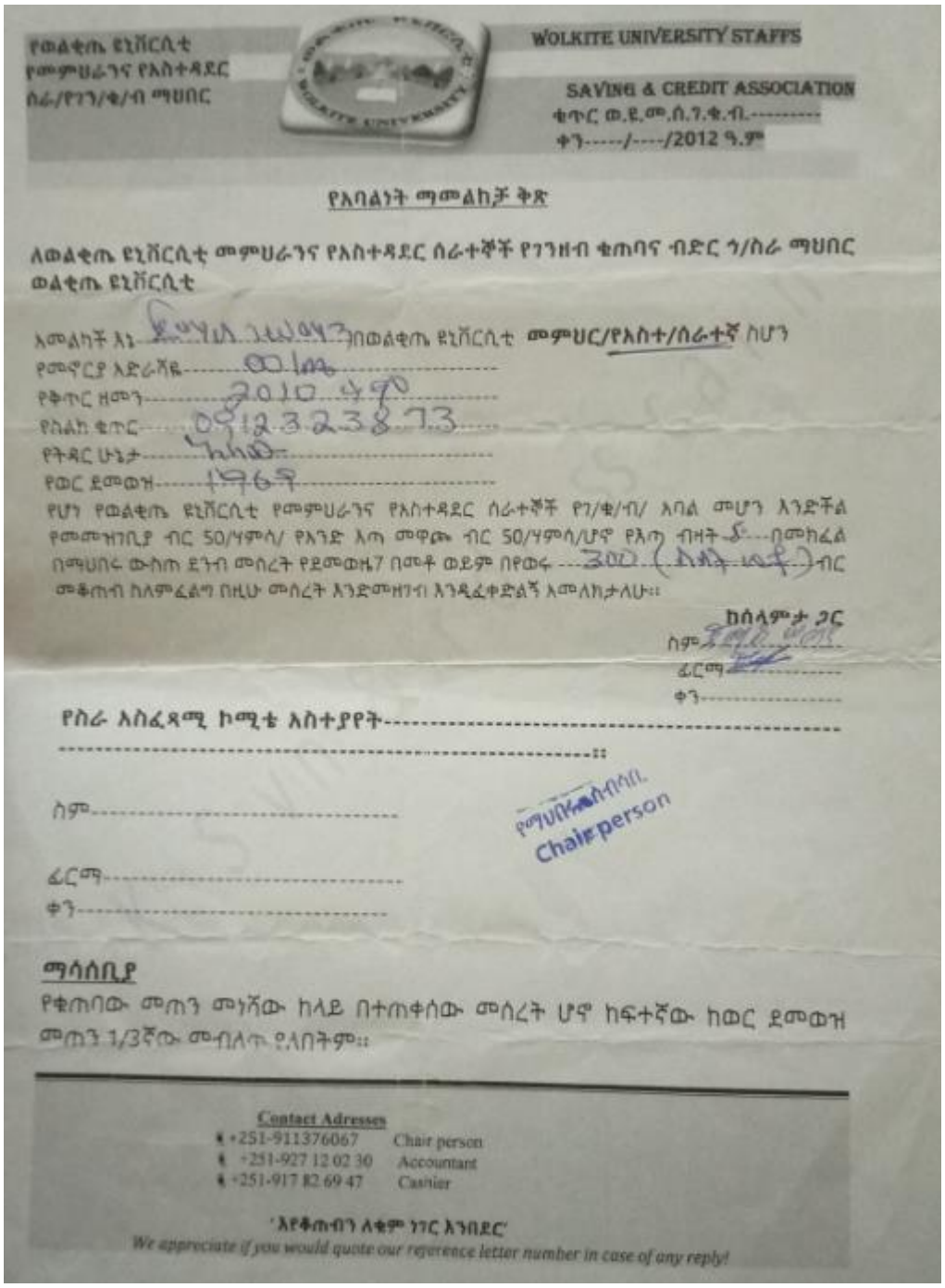
- Member: a person who takes a loan, saving money and other contribution that given by the association. The customer gets many services given by the association that related to saving and credit.

2.3. Major Functions of the Current System

In the existing system generating the overall report of the organization is done manually and also the association accepts feedback from customer only on the meeting date because of manual working. The accountant in the association registers customer and their information such as customer name, phone number, occupation, address. The customer saves money monthly according to his/her income by agreement with the association. There are forms available for customer to be filled by their information such as their name, address, and account number and so on, when they want to save or take loan money. To deposit in association the accountant gives customers saving and loan information to the finance then the finance withdraw money from his /her account finally deposited to the association account. To request for loan the customer must go to the HRM enters applicant, and then go to the association and asks for loan, the accountant in the association register the request and forwards it to the loan committee, according to the customer capacity to loan the loan committee approve or deny the request and forwards the response to the main committee, the main committee forwards it to the manager and the manager forward to accountant, the accountant gives loan money for the customer if the request is approved. The accountant calculates the saving and loan interest rate for the customer of the association. To request for withdraw the customer must go to the association, the accountant in the association register the request and forwards it to the manager and send back to accountant. In general, the existing system of wolkite university employee's saving and credit association is difficult to access and manage customers account because all the activity is done manually.

2.4. Existing System Forms and Reports

Here blow shown in the form1: It shows wolkite university employee's sending request to be member in the association.



የወልቂጤ ዩኒቨርሲቲ
የሙያህራንና የአስተዳደር
ሰራ/የገን/ቁ/ብ ማህበር

WOLKITE UNIVERSITY STAFFS
SAVING & CREDIT ASSOCIATION
ቁጥር ወ.ዩ.መ.ሰ.ገ.ቁ.ብ.---------
ቀን-----/----/2012 ዓ.ም

የአባልነት ማመልከቻ ቅጽ

ለወልቂጤ ዩኒቨርሲቲ መምህራንና የአስተዳደር ሰራተኞች የገንዘብ ቁጠባና ብድር ጎ/ስራ ማህበር
ወልቂጤ ዩኒቨርሲቲ

እመልካች እኔ ---------ከወልቂጤ ዩኒቨርሲቲ መምህር/የአስተ/ሰራተኛ ስሆን
የመኖርያ አድራሻዬ-----00 ከተማ-----
የቅጥር ዘመን-----2010 ዓ.ም-----
የስልክ ቁጥር-----0912323873-----
የትዳር ሁኔታ-----ያገባሁ-----
የወር ደመወዝ-----1969-----
የሆነ የወልቂጤ ዩኒቨርሲቲ የመምህራንና የአስተዳደር ሰራተኞች የገ/ቁ/ብ/ አባል መሆን እንድችል የመመዝገቢያ ብር 50/ሃምሳ/ የእንድ እጣ መዋጮ ብር 50/ሃምሳ/ሆኖ የእጣ ብዛት 6 በመክፈል በማህበሩ ውስጠ ደንብ መሰረት የደመወዜ7 በመቶ ወይም በየወሩ ---300 (ሶስት መቶ)ብር መቆጠብ ስለምፈልግ በዚሁ መሰረት እንድመዘገብ እንዲፈቀድልኝ እመለከታለሁ።

ከሰላምታ ጋር
ስም---------
ፊርማ---------
ቀን---------

የስራ አስፈጻሚ ኮሚቴ አስተያየት----------
---------::

ስም---------

የማህበሩ ሰብሳቢ
Chairperson

ፊርማ---------
ቀን---------

ማሳሰቢያ

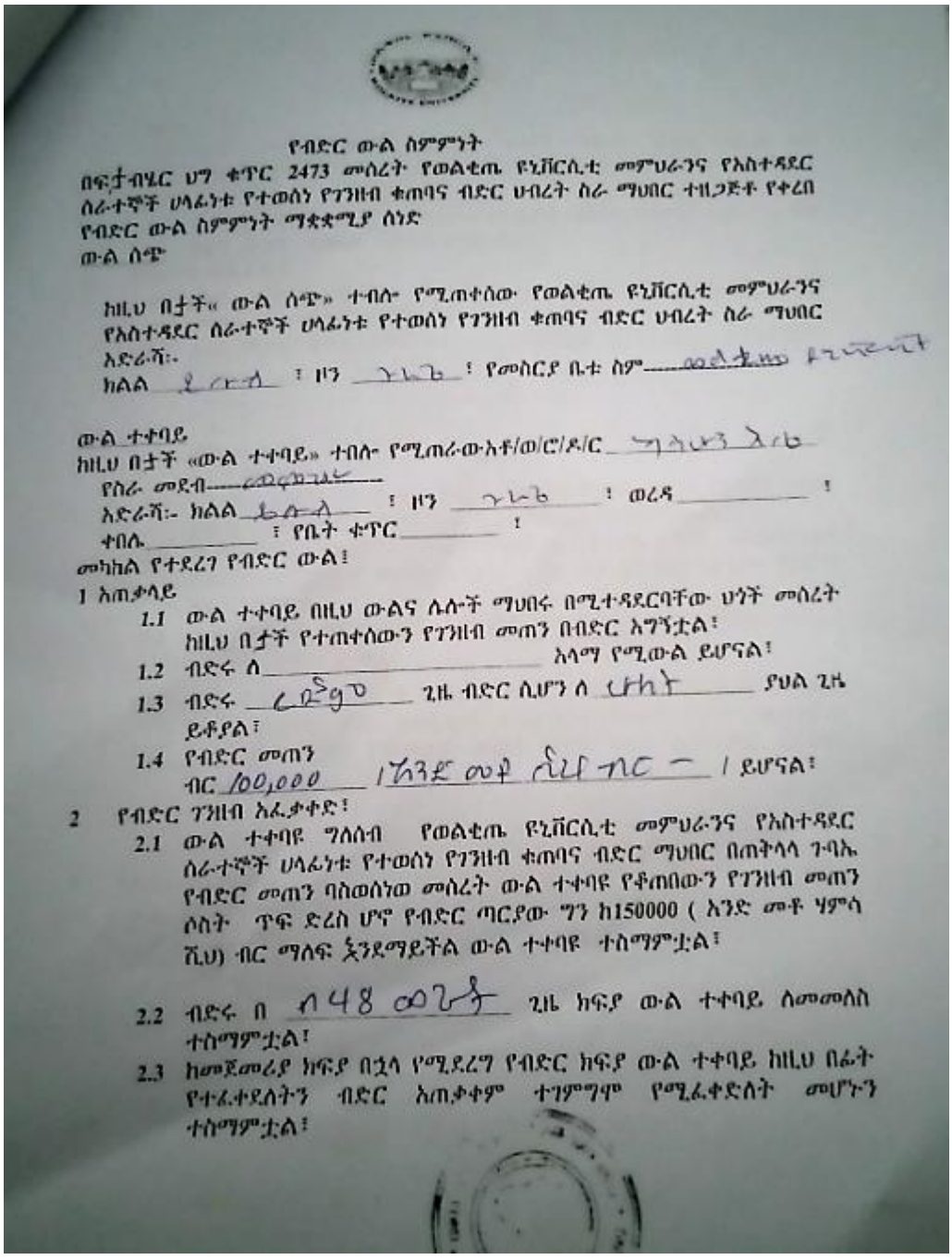
የቁጠባው መጠን መነሻው ከላይ በተጠቀሰው መሰረት ሆኖ ከፍተኛው ከወር ደመወዝ መጠን 1/3ኛው መብለጥ የለበትም።

Contact Adresses
- +251-911376067 Chair person
- +251-927 12 02 30 Accountant
- +251-917 82 69 47 Cashier

'እየቆጠብን ለቁም ነገር እንበደር'
We appreciate if you would quote our reference letter number in case of any reply!

Form 1: members request form

Here blow shown in the form2: It shows employee's loan offer agreement to loan money from the association.



የብድር ውል ስምምነት

በፍታብሄር ህግ ቁጥር 2473 መሰረት የወልቂጤ ዩኒቨርሲቲ መምህራንና የአስተዳደር ሰራተኞች ሀላፊነቱ የተወሰነ የገንዘብ ቁጠባና ብድር ህብረት ስራ ማህበር ተዘጋጅቶ የቀረበ የብድር ውል ስምምነት ማቋቋሚያ ሰነድ

ውል ሰጭ

ከዚህ በታች« ውል ሰጭ» ተብሎ የሚጠቀሰው የወልቂጤ ዩኒቨርሲቲ መምህራንና የአስተዳደር ሰራተኞች ሀላፊነቱ የተወሰነ የገንዘብ ቁጠባና ብድር ህብረት ስራ ማህበር

አድራሻ፡-

ክልል ደቡብ ፡ ዞን ጉራጌ ፡ የመስርያ ቤቱ ስም መለቂጤ ዩኒቨርሲቲ

ውል ተቀባይ

ከዚህ በታች «ውል ተቀባይ» ተብሎ የሚጠራው አቶ/ወ/ሮ/ዶ/ር ግሳሁን እሸቱ

የስራ መደብ ረዳት ፕሮፌሰር

አድራሻ፡- ክልል ደቡብ ፡ ዞን ጉራጌ ፡ ወረዳ _____ ፡

ቀበሌ _____ ፡ የቤት ቁጥር _____ ፡

መካከል የተደረገ የብድር ውል፡

1 አጠቃላይ

1.1 ውል ተቀባይ በዚህ ውልና ሌሎች ማህበሩ በሚተዳደርባቸው ህጎች መሰረት ከዚህ በታች የተጠቀሰውን የገንዘብ መጠን በብድር አግኝቷል፡

1.2 ብድሩ ለ _____ አላማ የሚውል ይሆናል፡

1.3 ብድሩ ረጅም ጊዜ ብድር ሲሆን ለ ሀምሳት _____ ያህል ጊዜ ይቆያል፡

1.4 የብድር መጠን ብር 100,000 (አንድ መቶ ሺህ ብር) ይሆናል፡

2 የብድር ገንዘብ አፈቃቀድ፡

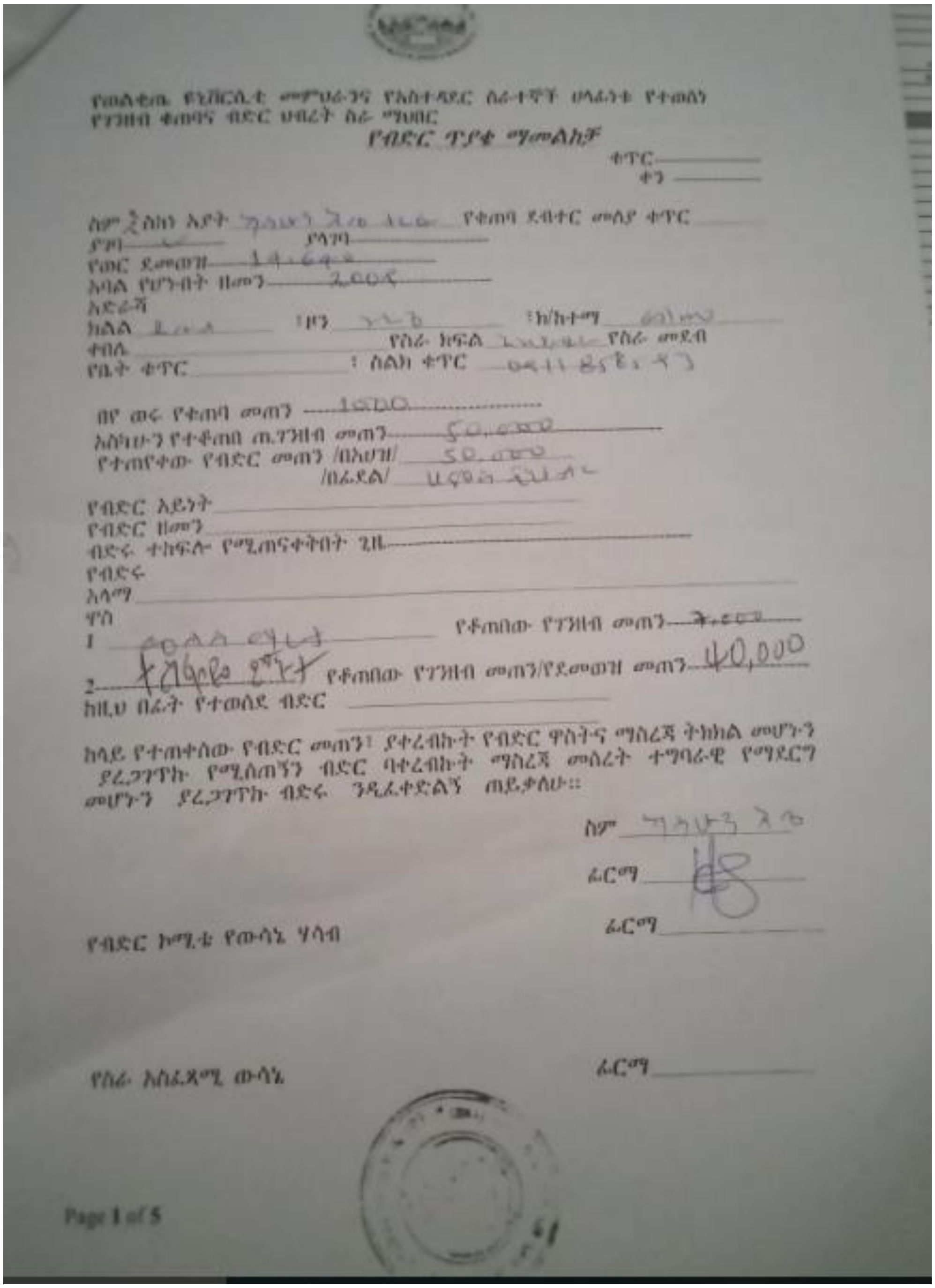
2.1 ውል ተቀባዩ ግለሰብ የወልቂጤ ዩኒቨርሲቲ መምህራንና የአስተዳደር ሰራተኞች ሀላፊነቱ የተወሰነ የገንዘብ ቁጠባና ብድር ማህበር በጠቅላላ ጉባኤ የብድር መጠን ባስወሰነው መሰረት ውል ተቀባዩ የቆጠበውን የገንዘብ መጠን ሶስት ጥፍ ድረስ ሆኖ የብድር ጣርያው ግን ከ150000 (አንድ መቶ ሃምሳ ሺህ) ብር ማለፍ እንደማይችል ውል ተቀባዩ ተስማምቷል፡

2.2 ብድሩ በ ሰላሳ ወራት ጊዜ ክፍያ ውል ተቀባይ ስመመለስ ተስማምቷል፡

2.3 ከመጀመሪያ ክፍያ በኋላ የሚደረግ የብድር ክፍያ ውል ተቀባይ ከዚህ በፊት የተፈቀደለትን ብድር አጠቃቀም ተገምግሞ የሚፈቀድለት መሆኑን ተስማምቷል፡

Form 1: members loan agreement form

Here blow shown in the form3: It shows members loan request to loan money from the association.



የወልቂጤ ዩኒቨርሲቲ መምህራንና የአስተዳደር ሰራተኞች ህላዌነቱ የተወሰነ
የገንዘብ ቁጠባና ብድር ህብረት ስራ ማህበር

የብድር ጥያቄ ማመልከቻ

ቁጥር ______
ቀን ______

ስም እስከ አያት ______ የቁጠባ ደብተር መለያ ቁጥር ______
ፆታ ______ ያገባ ______
የወር ደመወዝ ______
አባል የሆኑበት ዘመን ______
አድራሻ
ክልል ______ ፡ዞን ______ ፡ክ/ከተማ ______
ቀበሌ ______ የስራ ክፍል ______ የስራ መደብ
የቤት ቁጥር ______ ፡ ስልክ ቁጥር ______

በየ ወሩ የቁጠባ መጠን ......1000......
እስካሁን የተቆጠበ ጠ.ገንዘብ መጠን ____50,000____
የተጠየቀው የብድር መጠን /በአሀዝ/ ____50,000____
/በፊደል/ ______

የብድር አይነት ______
የብድር ዘመን ______
ብድሩ ተከፍሎ የሚጠናቀቅበት ጊዜ ______
የብድሩ
አላማ ______
ዋስ
1 ______ የቆጠበው የገንዘብ መጠን ______
2 ______ የቆጠበው የገንዘብ መጠን/የደመወዝ መጠን ____40,000____
ከዚህ በፊት የተወሰደ ብድር ______

ከላይ የተጠቀሰው የብድር መጠን፣ ያቀረብኩት የብድር ዋስትና ማስረጃ ትክክል መሆኑን ያረጋገጥኩ የሚሰጠኝን ብድር ባቀረብኩት ማስረጃ መሰረት ተግባራዊ የማደርግ መሆኑን ያረጋገጥኩ ብድሩ እንዲፈቀድልኝ ጠይቃለሁ።

ስም ______
ፊርማ ______
ፊርማ ______

የብድር ኮሚቴ የውሳኔ ሃሳብ

የስራ አስፈጻሚ ውሳኔ ፊርማ ______

Page 1 of 5

Form 1: members loan request form

2.5. Drawback of the Existing System

2.5.1 Performance

- ✓ The response time for performing every process is very slow.
- ✓ Documents are stored physically this increases the space complexity.
- ✓ There is always delay time in information search and retrieval.

2.5.2 Input output:

Input:

- ❖ The input information can be unreadable.
- ❖ Data is not accurate error may occur.
- ❖ It takes time to fill the information.
- ❖ Data redundancy occurs.

Output:

- ❖ The report is not timely to its subsequent use.
- ❖ Output may irrelevant information.

Economic:

The system may cost a lot of paper to prepare the form and in order to finish the Process many employees is needed and those employee need payment this leads Unnecessary expenditure.

2.5.3 Security and Control:

The existing system is a manual system which means all the process which performed in the finance office take place in paper which is not easy to secure and also one customer may be registered more than once this will cause hardship in security and control.

2.5.4 Efficiency:

The existing system face wastage of resource like paper, man power, time, low efficiency of speed because of the paper work. This wastage of resource makes the system inefficient.

2.6. Business Rules of the Existing System

BR1. The member must register and should be member of the association

BR2. The member must have active bank account.

BR3. If the member wants to borrow money from the association depends on three times his/her save that association this means assume for example deposit money he/she save is let say variable DM and the constant 3 then the formula he/she loan money from the association is let say L therefore L=DM*3.

BR4. During the member credit from the association must pfresentation guarantor (it should be people).

BR5. The member must pay loan with in specified time and amount.

BR6. When member want to resign the association the system checks either have debit in association or not. If it has debit impossible to resign the membership**.**

BR7. Every member in the association the maximum specified amount loan is 150,000 ETB.

CHAPTER THREE

3. PROPOSED SYSTEM

The project entitled is for automating Wolkite university credit and saving association system. The main aim of this project is to automate the existing system and it will solve the problems that are exists in the manual system. We are going to design a web-based system that address the existing system problems. Therefore, this project is best alternative for credit and saving office to turn their saving and credit system. The system stores the records of members in organized, simply accessible, easily controllable and modifiable form.

3.1. Functional requirements

The following functionality is recognized as being the back bone of the system because by itself it forms, at most basic level, an automated saving and credit association management system.

FR 1: Register new customer

Description: The system must allow the accountant to register the new customer who wants get member of the association with fulfilling the requirement like pay money for registration from bank account.

Ranking: Essential

FR 2: Importing customer information

Description: The system must allow to import customer information from data base.

Ranking: Essential

FR 3:Create account

Description:The system must allow administrator create account to the employee's.

Ranking: Essential

FR 4:Send notification

Discription: The system must allows to send notification with page.

Ranking: Essential

FR 5: Reply comment

Description: The system must allows reply comment for accountant.

Ranking: Essential

FR 6: Deposit money

Description: The system must allows deposit money for members.

Ranking: Essential

FR 7: Registers loan money

Description: The system must allow Accountant registers loan money.

Ranking: Essential

FR 8: Send request loan

Description: The system must allows request loan for members.

Ranking: Essential

FR 9: Give comment

Description: The system must allow giving comment the customer.

Ranking: Essential

FR 10: View balance

Description: The system must allow to view account balance to the customer.

Ranking: Essential

FR 11:View members

Description: The system must allow to view members information for adiministrator and manager.

Ranking: Essential

FR 12: View report

Description: The system must allow to view report for manager.

Ranking: Essential

FR 13: View notification

Description: The system allows to view notification for manager.

Ranking: Essential

FR 14: View comment

Description: The system allows to view comment for accountant.

Ranking: Essential

FR 15: View reply comment

Description: The system would be able to view reply comment to the customer.

Ranking: Essential

FR 16: Announces meeting date

Description: The system must allow the manager to announces meeting date to the employee.

Ranking: optional

FR17:Update account

Description: The system must allow the administrator to update account of users.

Ranking: Essential

FR18:Deactive account

Description: The system must allow the administrator to deactive account of users.

Ranking: Essential

FR19: Calculate interest rate

Description: The System must allow to calculate interest rate for loan and deposit money.

Ranking: Essential

FR20: Approve loan request

Description: The system must allows to Approve loan request for accountant.

Ranking: Essential

FR21: Withdraw money

Description: The system must allows withdraw money for members.

Ranking: Essential

FR22: Pay loan

Description: The system must allows pay loan for members.

Ranking: Essential

FR23: Generate report

Description: The system must be generating financial reports such balance sheet and creditor as well as debtor statement.

Ranking: Essential

3.2. Non-functional requirement

3.2.1. User Interface Human Factors

This works as an interface between the user and the system by properly guiding the user how to use it and perform operations. The system is so user friendly, the customer uses without any further digging. Any sort of training is not required for using the system. It is important that the system is easy to learn.

3.2.2. Hardware Consideration

The system should run on desktop and personal computer with a dedicated server to contain the database and other server components.

3.2.3. Security Issue

This system provides an access to privilege to an authorized user by giving account for each and users can only access information and perform any operation through their privilege with session-controlled and password encryption algorithm so we use base_64 encoder encryption algorithm.

3.2.4. Performance consideration

Performance requirements are concerned with quantifiable attributes of the system such as System should quickly respond for user request that is system must immediately display the needed service along with their allocation details after he/she insert needed information to view.

3.2.5. Error Handling and Validation

Our system handles the errors in a very efficient manner. It can tolerate to wrong inputs and prompts the users to correct the inputs. It gives notifications as and when required, guiding the users to properly utilize it. So, we client-side validation technique like java script.

3.2.6. Quality Issue

Information in database should be as much as possible correct and updated.

3.2.7. Resource Issues

The system should provide help for the user for how to use the system and support different pdf with related to the system.

3.2.8 Physical Environment

The system deploys in server computer which support window operating system and the client computer access it from the server and can use it. In the physical environmental factors, to protect the server from overheat and other natural disasters like rain, the server should keep in well-equipped and ventilated rooms for better protection.

3.2.9 Backup and Recovery

When failures happen, the system must be recoverable. One of the major ways to recover the data stored on the server during unexpected server failure is using distributed database which increase reliability and availability means that choose to distribute data over local servers instead of a central database.

3.2.10 Documentation

Since we develop user manual documentation the user which use the system cannot face any difficulty concerning how to use the system. The user guide will aid users who work on the system to have a detailed and clear understanding of the system steps and functionalities.

The developed system has full documentation if some failure occurred the maintainer can easily maintain the system using the documentation.

CHAPTER FOUR

4. SYSTEM ANALYSIS

This Chapter explains the system analysis by designing use case diagrams, use case description for each use case identified in the use case diagram, object model class diagram, sequence diagram, activity diagram and state chart diagram.

4.1. System Model

In the system model, we analyze three models: functional model, deals with our system functionality and we describe by using use case diagram. Object model describe, the structure of our system. The object model described by the UML class diagram. Dynamic models, deal with the internal behavior of the system. We express this model by the sequence, state chart and activity diagrams.

4.1.1. Use Case Model

In the use case model first, we identify the use cases from scenario or functional requirement as well as identify the Actors based on which is initiate the use of the system and which is more reactionary so, we construct the use case diagram. Our proposed system has the following actors and their own task.

1.Administrator

- Create Account
- Update account
- Deactive Account
- View members

2.Manager

- view report
- View members

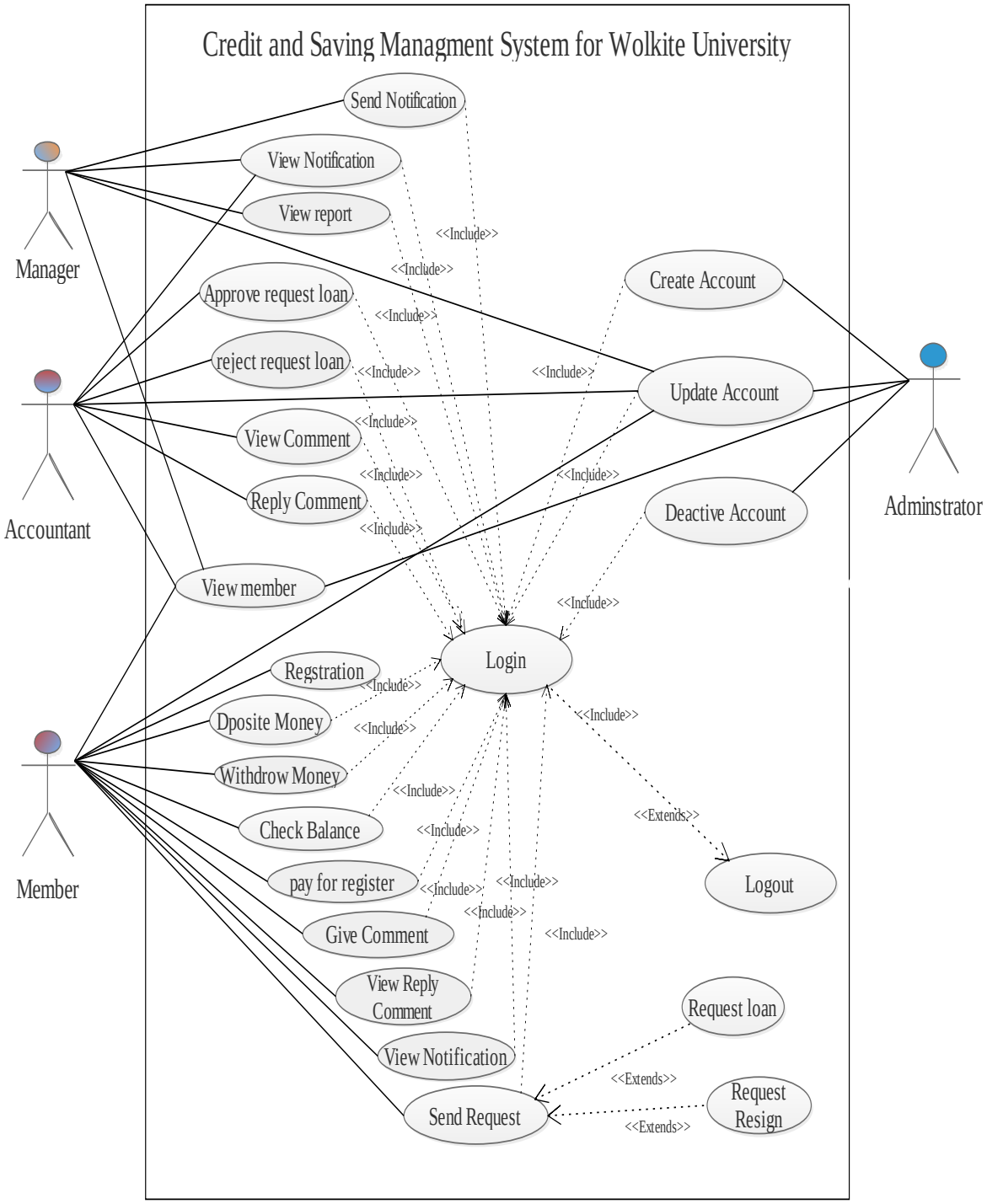
3.Accountant

- Approve or reject loan request
- View members
- View and reply comment
- Register new members

4.Member

- Deposit money
- Withdraw money
- Request loan
- Pay loan
- Check balance
- Give comment
- View replay comment
- View member
- View notification
- Request resigns
- Pay for registration

4.1.1.1. Use Case Diagram


Credit and Saving Managment System for Wolkite University
Send Notification
View Notification
View report
Manager
Approve request loan
reject request loan
View Comment
Reply Comment
Accountant
View member
Create Account
Update Account
Deactive Account
Adminstrator
Login
Regstration
Dposite Money
Withdrow Money
Check Balance
pay for register
Give Comment
View Reply Comment
View Notification
Send Request
Member
Logout
Request loan
Request Resign
<<Include>>
<<Extends>>

4.1.1.2. Use Case Description

The following consecutive tables show the use case description for each of the use cases that has Identified in the above use case diagram. Each table contains the use case name, the actor which Initiates and interacts with the use case, description of the use case and typical course of events that show the interaction between the actor and the use case which enable the team too easily Show the functions of the proposed system.

Table 4.1 Use case description for login

Use case name	**Login**	
Actors	Member, Accountant, Manager, Administrator	
Precondition	All users must know correct user name and password.	
Use case description	All actors have login account to enter the system.	
	User Action	**System Response**
Basic course of action	1. User opens the home page. 2. Click login link. 4. Enter user name and password 5. Clicks on login button	3. Login form displayed. 6. Validate as well as verify data entry. 7. User's page displayed Use case end.
Alternative course of action	Step 1-5 remain the same. 6. The user did not type the correct username and password. 7. The system displays the corresponding error and enter correct user name and password message.	
Post Conditions	The user is logged in the system and provided with privileges for actions according to their roles.	

Table 4-1 Use Case Description for Register customer

Use Case Name	Register customer
Actor	Members

Precondition	Member pay for registration	
	User action	**System response**
Basic course of Action	1. members opens the home page. 2. Click sign up link then new click member link. 4. Fill the form and then clicks on register button.	3. Display registration form. 5. Validate data entry. 6. Successfully registered. Use case end.
Alternative course of action	Step 1-4 remain the same 5. The user did not type correct input data. and not found in the WKU database . 6.the system displays the corresponding please fill & you are not found wku message.	
Post Conditions	Successfully registered for new customer.	

Table 4-2 Use Case Description for Create account

Use Case Name	Create account	
Actor	Administrator	
Precondition	Administrator must login to the system	
	User action	**System response**
Basic course of Action	1.Administrator opens the home page. 2. Click on view member link then click create account link . 4. fill the form and then click create button.	3. Create account form displa yed. 5. Validate data entry. 6. Display successfully create account message. Use case end.
Alternative course of action	Step 1-4 remain the same 5. The user did not type correct input data. 6.the system displays please fill message.	
Post Conditions	The Account is successfully created.	

Table 4-3 Use Case Description for Update account

Use Case Name	Update account	
Actor	Administrator, member, manager, accountant	
Precondition	administrator , member, manager, accountant must login to the system	
	User action	**System response**
Basic course of Action	1.users open the home page 2.view member. 3. Click on update link. 5.Change the information that you want to update.and click update button.	4. Display account filled form. 6. Validate data entered. 7. Display successfully Updated message. Use case end.
Alternative course of action	Step 1-5 remain the same 6. The user didn't type correct input data. 7.the system displays the corresponding error message.	
Post Conditions	succssfull massage displayed.	

Table 4-4 Use Case Description for give comment

Use Case Name	Give comment	
Actor	Member	
Precondition	member must login to the system	
	User action	**System response**
Basic course of Action	1.Open home page. 2. Click on Give commentlink. 4. Fill the form and then	3. Display Give comment form. 5. check the validity of input data. 6. Display successfully message. Use case end

	Clicks submit.	
Alternative course of action	Step 1-4 remain the same 5. The user leaving fields. 6.the system displays the corresponding fill message.	
Post Conditions	Successful message display .	

Table 4-5 Use Case Description for View comment

Use Case Name	View comment	
Actor	Accountant	
Precondition	accountant must login to the system	
	User action	**System response**
Basic course of Action	1.Open the home page. 2.Click view comment link. 4.view the comment Use case end	3. Display the comment.
Alternative course of action	Step 1-2 remain the same 3. If there is no commented data. 4.the system displays comment not found message.	
Post Conditions	succssfull massage displayed.	

Table 4-6 Use Case Description for Send notification

Use Case Name	Send notification	
Actor	Adminstrator, Accountant	
Precondition	Adminstrator must login to the system	
	User action	**System response**
Basic course of Action	1.Open home page. 2. Click send notification link. 4. Fill the form and then Clicks submit.	3. Display notification form. 5. Check the validity of input data. 6. Display successfully message. Use case end
Alternative course of action	Step 1-4 remain the same 5. The user leaving fields. 6.the system displays the corresponding fill message.	
Post Conditions	Successful message display .	

Table 4-7 Use Case Description for View notification

Use Case Name	View notification	
Actor	Customer	
Precondition	Customer must login to the system	
	User action	**System response**
Basic course of Action	1.Open the page. 2.Click view notification link. 4.View the notification Use case end	3. Display the notification.
Alternative course of action	Step 1-2 remain the same 3. If there is no notification data. 4.The member can not view the notification.	
Post Conditions	Successfully notification viewed.	

Table 4-8 Use Case Description for View report

Use Case Name	View report	
Actor	manager	
Precondition	manager must login to the system	
	User action	**System response**
Basic course of Action	1. Open the page. 2. Click view report link. 4.View the report Use case end	3. Display the report.
Alternative course of action	Step 1-2 remain the same. 3.If there is no reported data. 4. The manager can not view the notification.	
Post Conditions	Successfully report viewed.	

Table 4-9 Use Case Description for Deactivate account

Use Case Name	Deactivate account	
Actor	Administrator	
Precondition	Administrator must login to the system	
	User action	**System response**
Basic course of Action	1.Open the home page 2.Click deactivate account link. 3.View the activated account information. 4.Click deactive button.	5.The system deactivate the selected member. 6. Display successfully deactive message. Use case end.
Alternative course of action	Step 1-4 remain the same 3. If the information is does not found. 4.The system displays not found message.	
Post Conditions	Successfully Deactivated.	

Table 4-10 Use Case Description for withdraw money

Use Case Name	withdraw money	
Actor	Member	
Precondition	member must login to the system	
	User action	**System response**
Basic course of Action	1. the member open home page. 2. The member clicks withdraw link 4. The member enters the amount of money and then click on send button.	3.the system displays withdraw form and ask amount of money to withdraw 5.The system checks balance from the customer account have or not 6.The system will display successfully withdraw message use case end
Alternative course of action	Step1-4 remains the same 5. If the user asks amount greater than existing balance 6. The system display insufficient money message.	
Post Conditions	Balance will be withdrawn or decreased from customer account	

Table 4-11 Use Case Description for Deposit money

Use Case Name	Deposit money	
Actor	Member	
Precondition	member must login to the system	
	User action	**System response**
Basic course of Action	1. Open home page. 2.The member click deposit option link 4.The member select deposit option and enters the data in	3. The system will display the form. 5. The system checks all the input and will display successfully message.

	to the form and then click deposit button	Use case end
Alternative course of action	Step1-4 remains the same 5.If the form is not filled correctly or leaf 6. The system display error message	
Post Conditions	balance will be deposited successfully	

Table 4-12 Use Case Description for Deposit money

Use Case Name	Request resign	
Actor	Member	
Precondition	member must login to the system	
	User action	**System response**
Basic course of Action	1. Open home page. 2.The member click request resign link 4.The member enters the data in to the form and then click resign button	3. The system will display the request resign form. 5. The system checks all the input and will display successfully message. Use case end
Alternative course of action	Step1-4 remains the same 5.If the form is not filled correctly 6. The system display error message	
Post Conditions	balance will be deposited successfully	

4.1.1.3 Use Case Scenario

Name of scenarios: Create Account

Description: It creates account for users and give them access to use the system.

Actors: Mr. Tamirat.

Pre-condition: Administrator must be registered on the database.

Basic Flows:

1) Mr. Tamirat opens the page

2) Mr. Tamirat licks view member link then click create account Button

3) The system displays create Account form .

4) Mr. Tamirat fills the form and click create button.

5) The system checks the validity of the entered data . if it is correct, account is created

End of use case

Alternative Flow:

4.1) If Mr. Tamirat click create
button by leaving some fields, the system will display error message “Fill the form”.

Name of scenarios: Login

Description: It enables users to log into the system and it gives them access to use the application.

Actors: Mr. Abel.

Pre-condition: Mr. Abel must have an account.

Basic Flows:

1) Mr. Abel opens the system

2) The System desplay login page

3) Mr. Abel fills user name and password

4) Mr. Abel clicks login button

5) if it is correct then verifed from databse then
the System enables him to access the next page

End of use case

Alternative Flow:

4.1)If Mr. Abel doesn't fill the form, the system will display "Fill username or password."

4.2)If not found on database, the system will display "username &/or password incorrect".

Name of scenarios: Request loan

Description: The Ms.Tsion send request to the accountant to get loan.

Actors: Ms.Tsion.

Pre-condition: Ms.Tsion must be login to the system.

Basic Flows:

1) Ms.Tsion open home page

2) Ms.Tsion clicks Request loan Button

3) The system displays Request loan form .

4) Ms.Tsion fills the form and click .

5) The system checks the validity of the entered data . if it is correct, succesful.

End of use case

Alternative Flow:

4.1) If Ms.Tsion send by leaving some fields or fill
incorrect, the system will display error message "Fill the form".

Name of scenarios: Register member

Description: The Ms.Lidet register to get serves from the assosiation.

Actors: Ms.Lidet

Pre-condition: Ms.Lidet full fill some criteria that related to registeration .

Basic Flows:

1) Ms.Lidet opens the page

2) Ms.Lidet clicks the sign-up link then click new member link.

3) The system displays registration form .

4) Ms.Lidet fills the form and click register button.

5) The system checks the validity of the entered data . if it is correct, succesful. Alternative Flow:

4.1 The Ms.Lidet left some field and not found in the WKU database

Name of scenarios: Give comment

Description: The Ms.Mahlet give comment to accountant.

Actors: Ms.Mahlet

Pre-condition: Ms.Mahlet must be login to the system.

Basic Flows:

1) Ms.Mahlet opens the page

2) Ms.Mahlet clicks the give comment link.

3) The system displays comment form .

4) Ms.Mahlet fills the form and click submit button.

5) The system checks the validity of the entered data . if it is correct, display succesful massage.

End of use case

Alternative Flow:

4.1) If Ms.Mahlet send by leaving fields, the system will display error message "Fill the form".

Name of scenarios: View notification

Description: the Mr.Solomon view notification send from the accountant.

Actors: Mr.Solomon.

Pre-condition: Mr.Solomon must be login to the system.

Basic Flows:

1) Mr.Solomon opens the page

2) Mr.Solomon clicks the view notification link.

3) The system displays notification then he views the notification if it is there. unless not found message display.

Alternative Flow:

4.1) If Mr.Solomon press view notification linkt on if it is not found the system will display not found message

End of use case

Name of scenarios: Deposit money

Description: The Mr.Kebede deposit money in the association account.

Actors: Mr.Kebede.

Pre-condition: Mr.Kebede must be login to the system.

Basic Flows:

1) Mr.Kebede open page

2) Mr.Kebede clicks deposit money link

3) The system displays deposit money form .

4) Mr.Kebede fills the form and click deposit botton.

5) The system checks the validity of the entered data . if it is correct, succesful.

End of use case

Alternative Flow:

4.1) if Mr. Kebede press deposit button by leaving some fields, the system will display error message

"Fill the form".

4.2. Object model

4.2.1. Class Diagram

We used class diagram to describe the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

For designing of Class diagram, we have used Unified Modeling Language (UML). The group applies it for both general conceptual modeling of the systematic of the application, and for detailed modeling translating the models into programming code. The classes in a class diagram represent both the main objects, interactions in the application and the classes to be programmed.

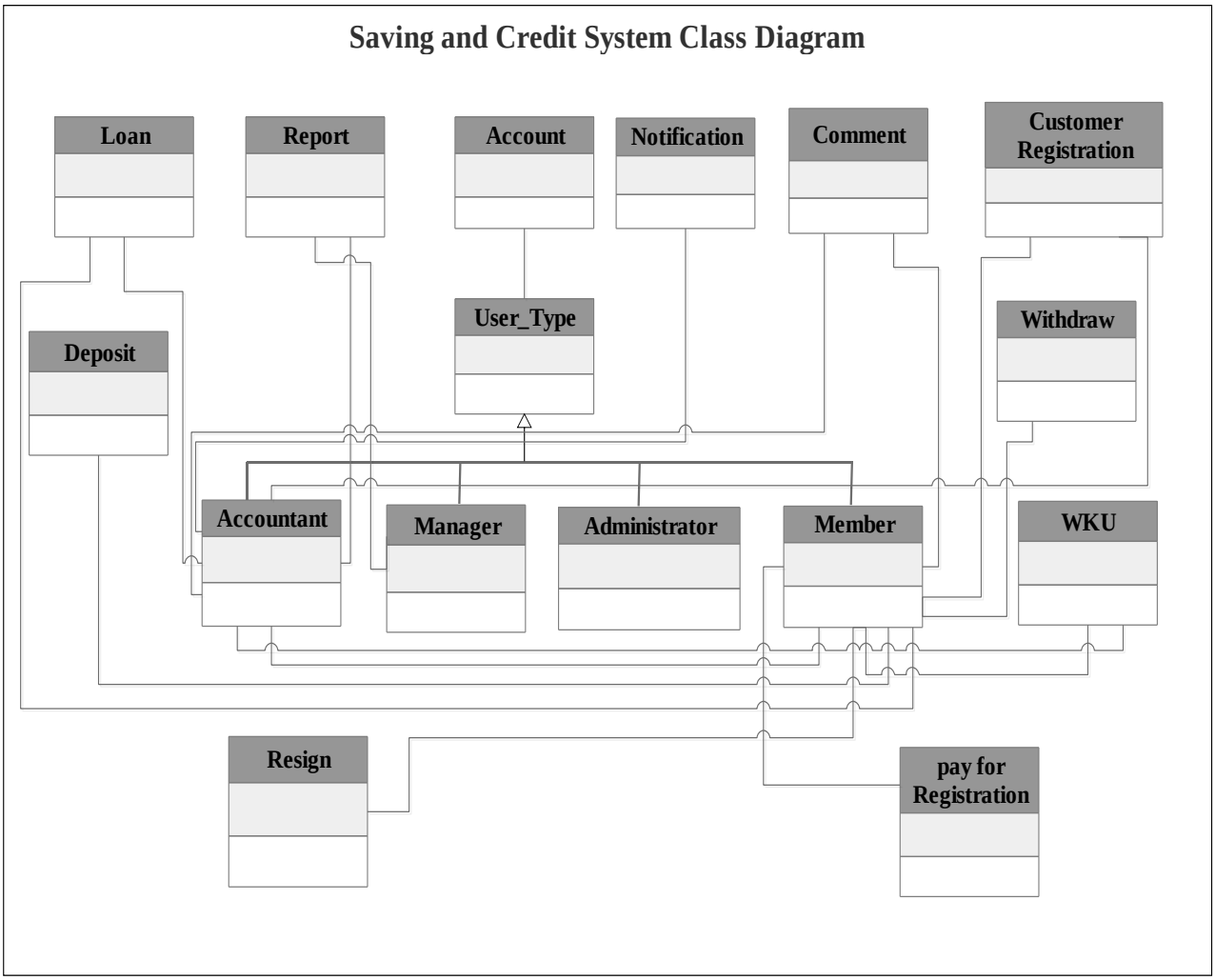


Figure 4-1 Class diagram

4.2.2. Data Dictionary

Table 4-13 Data Dictionary for administrator

Primary key	Field name	Caption	Data type	Field size	Constraint
Pk	ID	ID	Varchar	15	NOT NULL
	Fname	First Name	Varchar	20	NOT NULL
	Lname	Last Name	Varchar	20	NOT NULL
	Age	Age	Integer	2	NOT NULL
	Sex	Sex	Varchar	7	NOT NULL
	Ph.no	Phone	Varchar	10	NOT NULL

		number			

Table 4-14 Data Dictionary for manager

Primary key	Field name	Caption	Data type	Field size	Constraint
Pk	ID	ID	Varchar	15	NOT NULL
	Fname	First Name	Varchar	20	NOT NULL
	Lname	Last Name	Varchar	20	NOT NULL
	Age	Age	Integer	2	NOT NULL
	Sex	Sex	Varchar	7	NOT NULL
	Ph.no	Phone number	Varchar	10	NOT NULL

Table 4-15 Data Dictionary for Accountant

Primary key	Field name	Caption	Data type	Field size	Constraint
Pk	ID	ID	Varchar	15	NOT NULL
	Fname	First Name	Varchar	20	NOT NULL
	Lname	Last Name	Varchar	20	NOT NULL
	Age	Age	Integer	2	NOT NULL
	Sex	Sex	Varchar	7	NOT NULL
	Ph.no	Phone number	Varchar	10	NOT NULL

Table 4-16 Data Dictionary for member

Primary key	Field name	Caption	Data type	Field size	Constraint
Pk	ID	ID	Varchar	15	NOT NULL
	Fname	First Name	Varchar	20	NOT NULL
	Lname	Last Name	Varchar	20	NOT NULL
	Age	Age	Integer	2	NOT NULL

	Sex	Sex	Varchar	10	NOT NULL
	Salary	Salary	int	5	NOT NULL
	Email	Email	Varchar	30	NOT NULL
	Ph.no	Phone number	Varchar	10	NOT NULL
	Work type	Work type	Varchar	20	NOT NULL

Table 4-17 Data Dictionary for notification

Primary key	Field name	Caption	Data type	Field size	Constraint
P	Not_ID	Notification_ID	Varchar	15	NOT NULL
	Description	Description	Varchar	300	NOT NULL
	Date	Date	Date	10	NOT NULL

Table 4-18 Data Dictionary for Generate Report

Primary key	Field name	Caption	Data type	Field size	Constraint
P	Rep_ID	Report_ID	Varchar	15	NOT NULL
	Description	Description	Varchar	300	NOT NULL
	Date	Date	Date	10	NOT NULL

Table 4-19 Data Dictionary for Comment

Primary key	Field name	Caption	Data type	Field size	Constraint
P	Com_ID	Comment _ID	Varchar	15	NOT NULL
	Description	Description	Varchar	300	NOT NULL
	Date	Date	Date	10	NOT NULL

Table 4-20 Data Dictionary for Request Loan

Primary key	Field name	Caption	Data type	Field size	Constraint
P	ReqL_ID	RequestLoan	Varchar	15	NOT NULL

		_ID			
	Description	Description	Varchar	300	NOT NULL
	Date	Date	Date	10	NOT NULL

4.3. Dynamic Model

After the static behavior of the system is analyzed, its behavior with respect to time and external changes needs to be examined.

4.3.1 Sequence Diagram

Showing the sequence of interactions among objects participating in the use case. The following are some sequence diagram in our system.

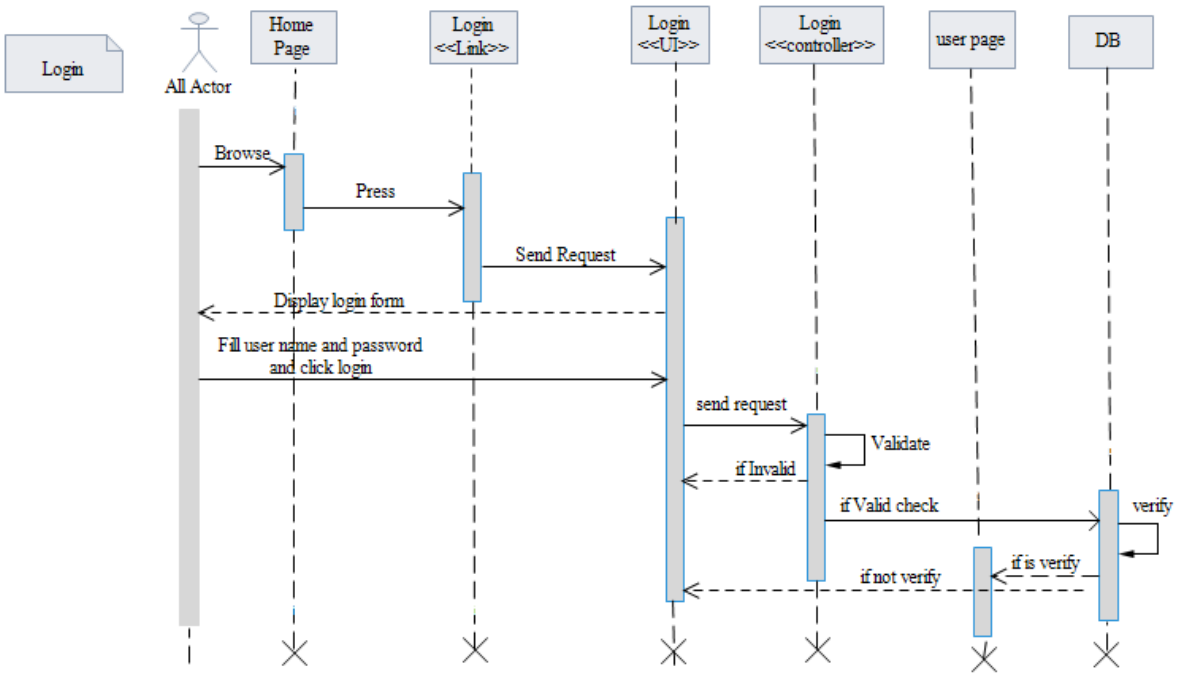


Figure 4-2 Sequence diagram for login

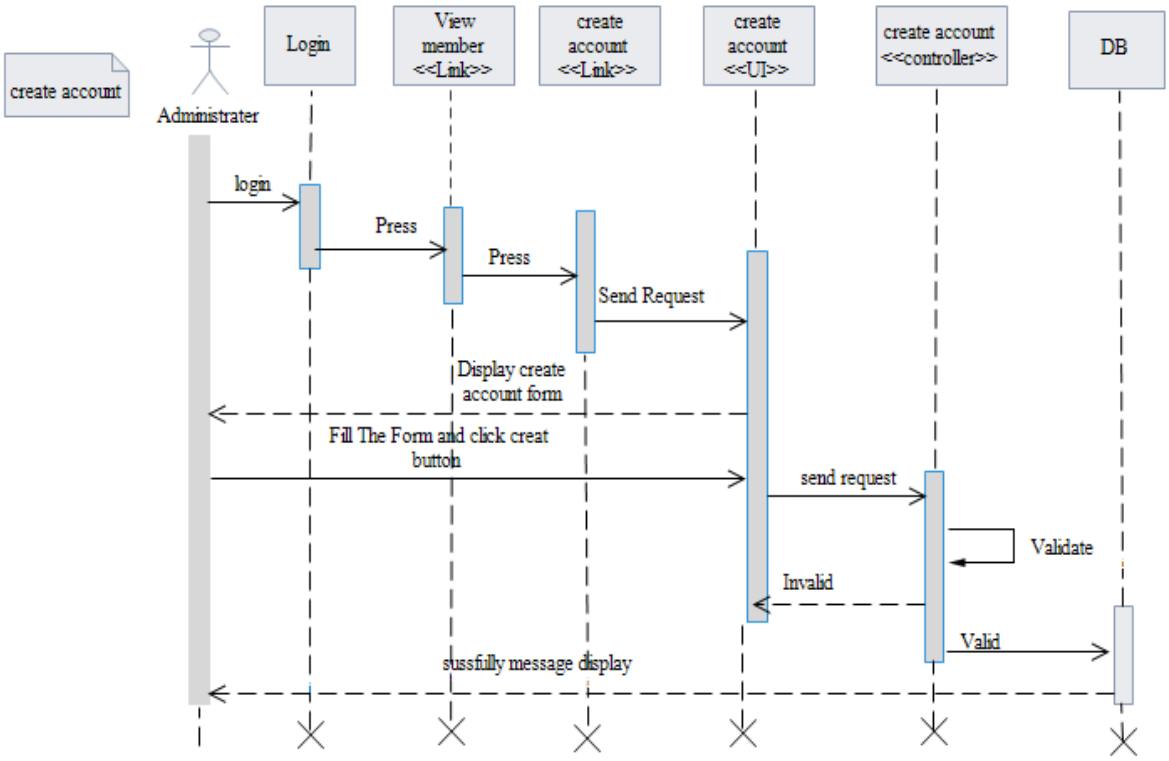


Figure 4-3 Sequence diagram for Create Account

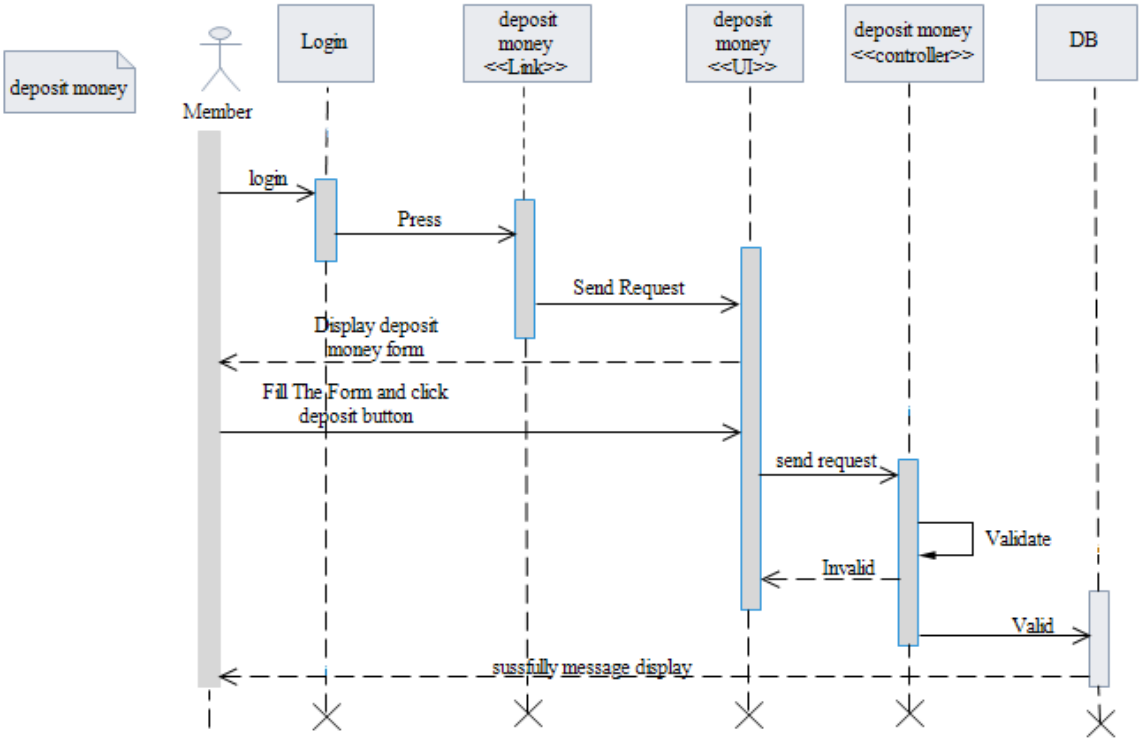


Figure 4-4 Sequence diagram for Deposit Money

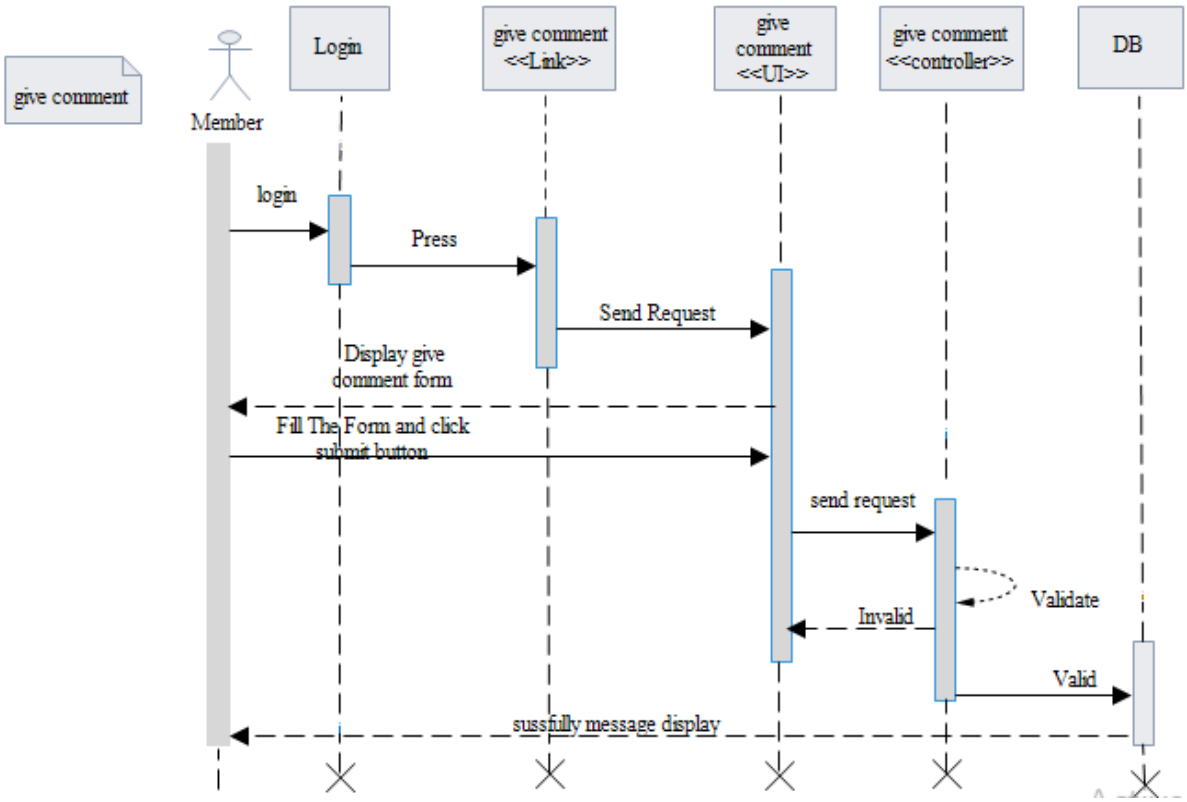


Figure 4-5 Sequence diagram for Give comment

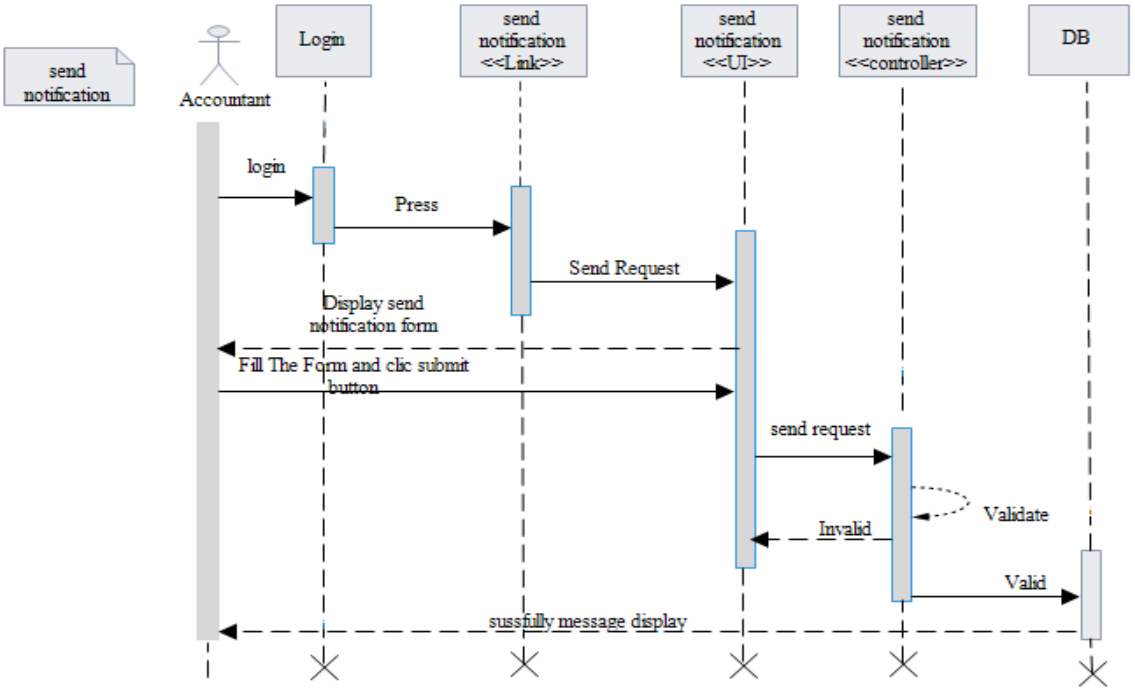


Figure 4-6 Sequence diagram for Send Notification

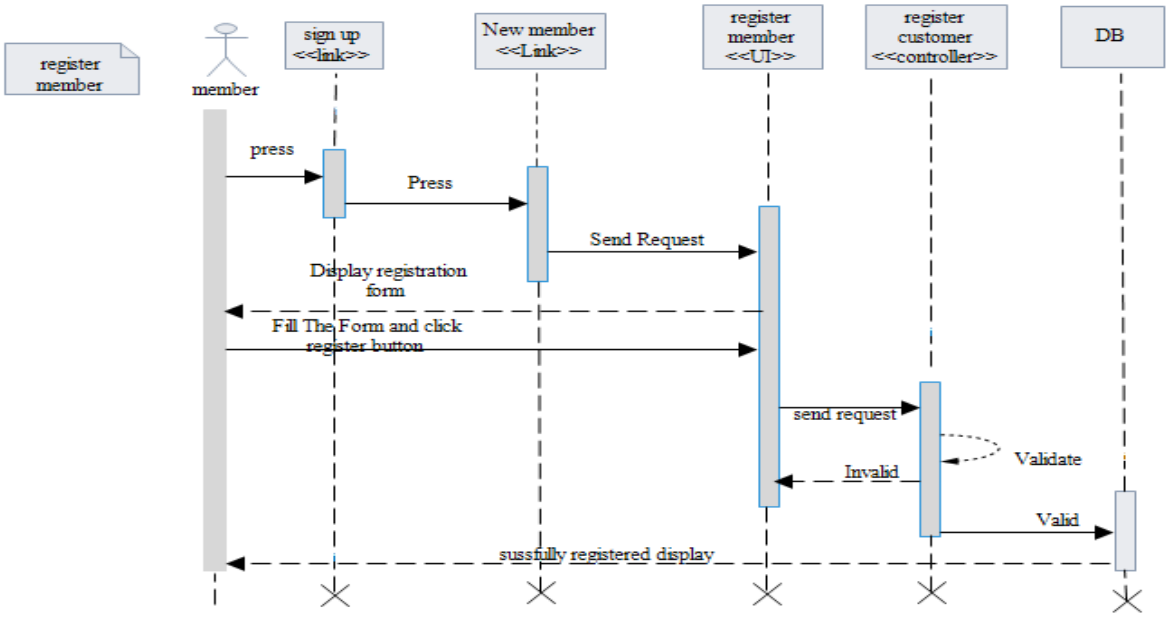


Figure 4-7 Sequence diagram for Register member

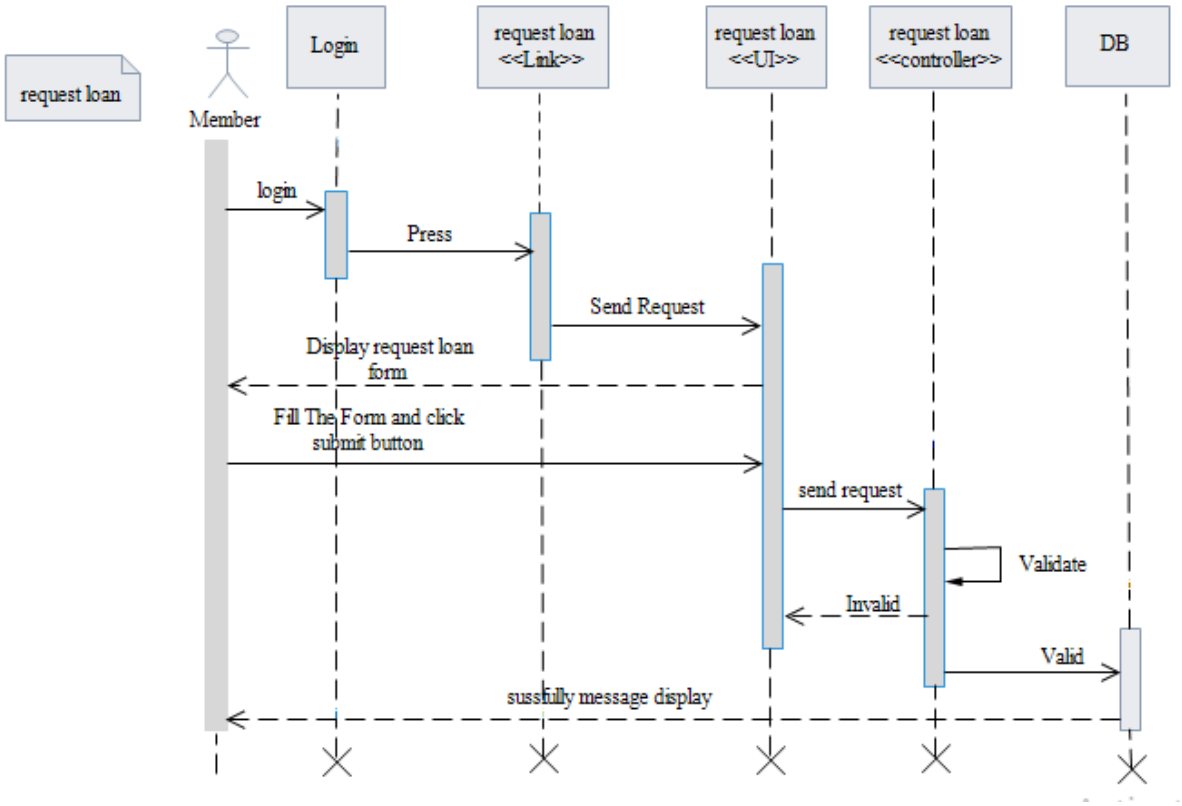


Figure 4-8 Sequence diagram for Request Loan

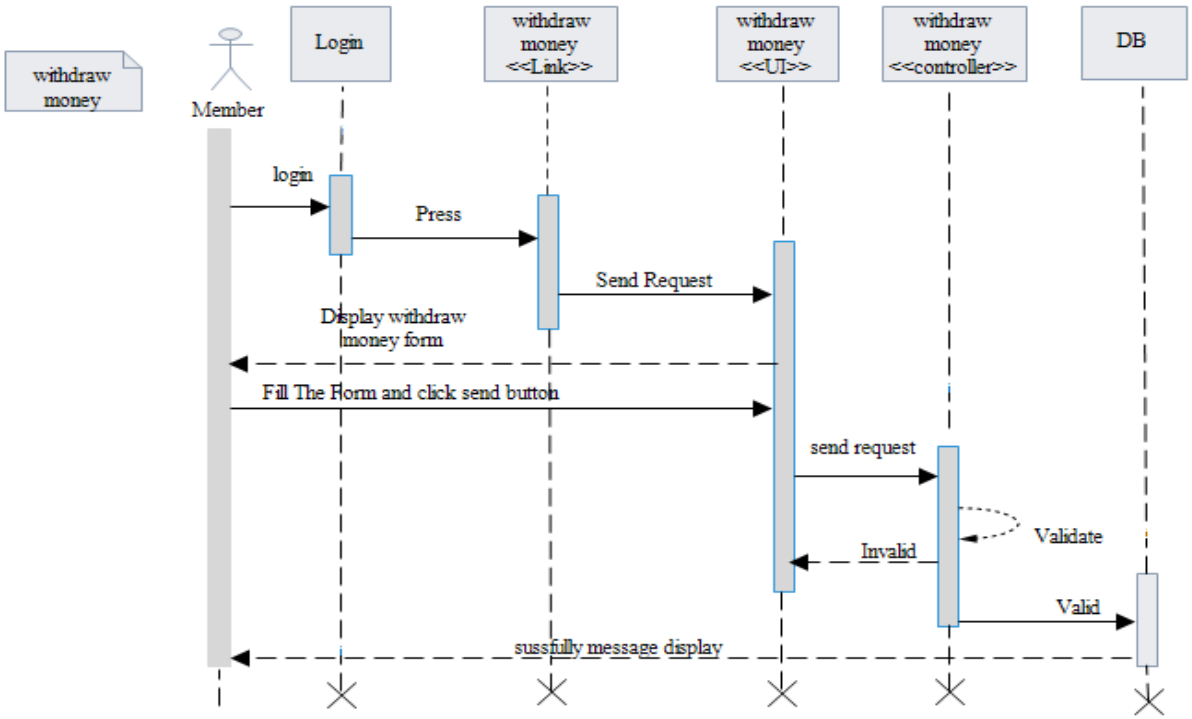


Figure 4-9 Sequence diagram for Withdraw Money

4.3.2 State chart Diagram

UML state diagrams depicts the various states that an object may be in and the transitions between those states. A state represents a stage in the behavior pattern of an object, and like UML activity diagrams it is possible to have initial states and final states.

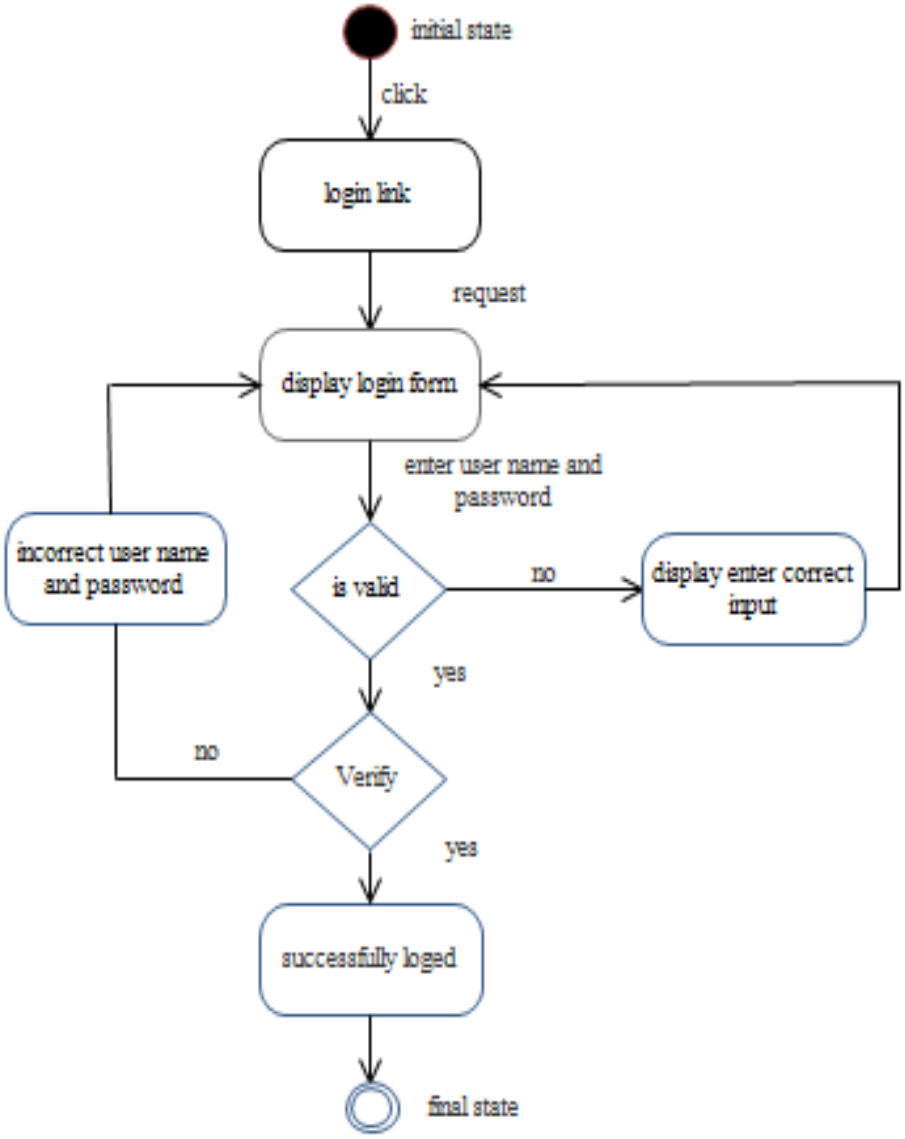


Figure 4.18 State chart diagram for login

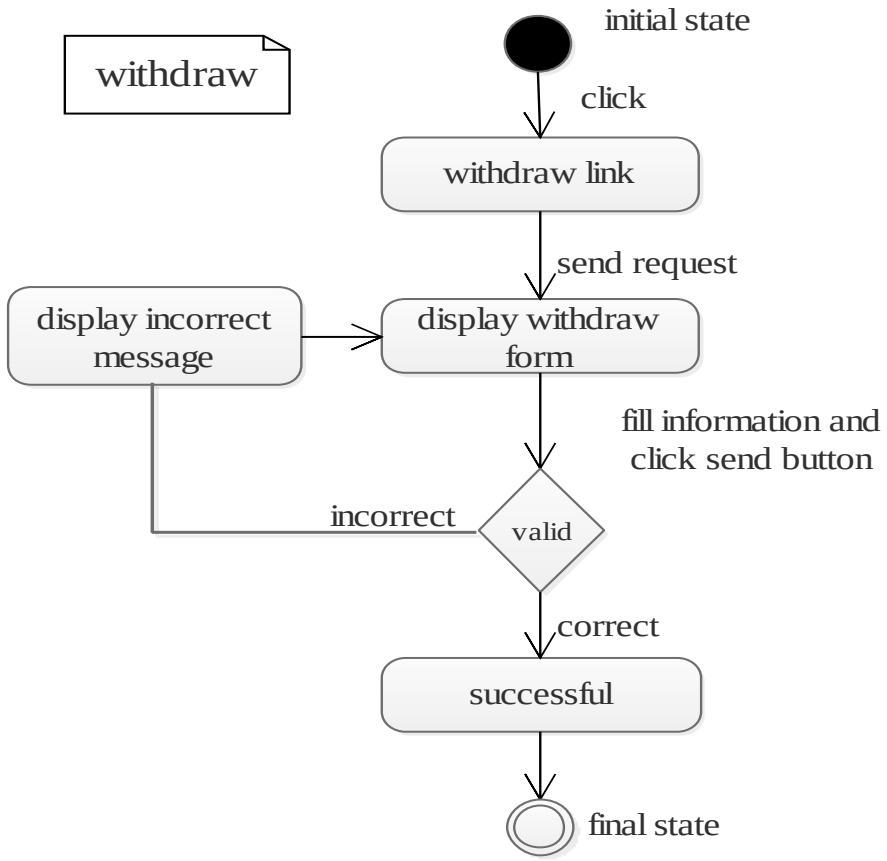


Figure 4-10 State chart diagram for Withdraw Money

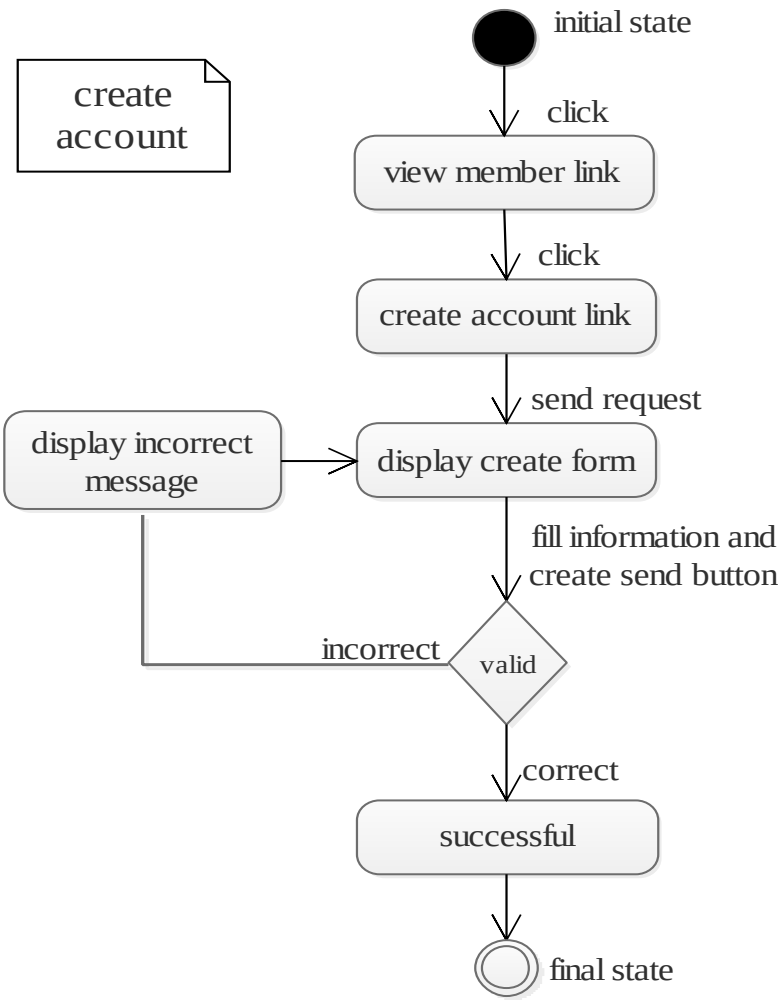


Figure 4-11 State chart diagram for Create Account

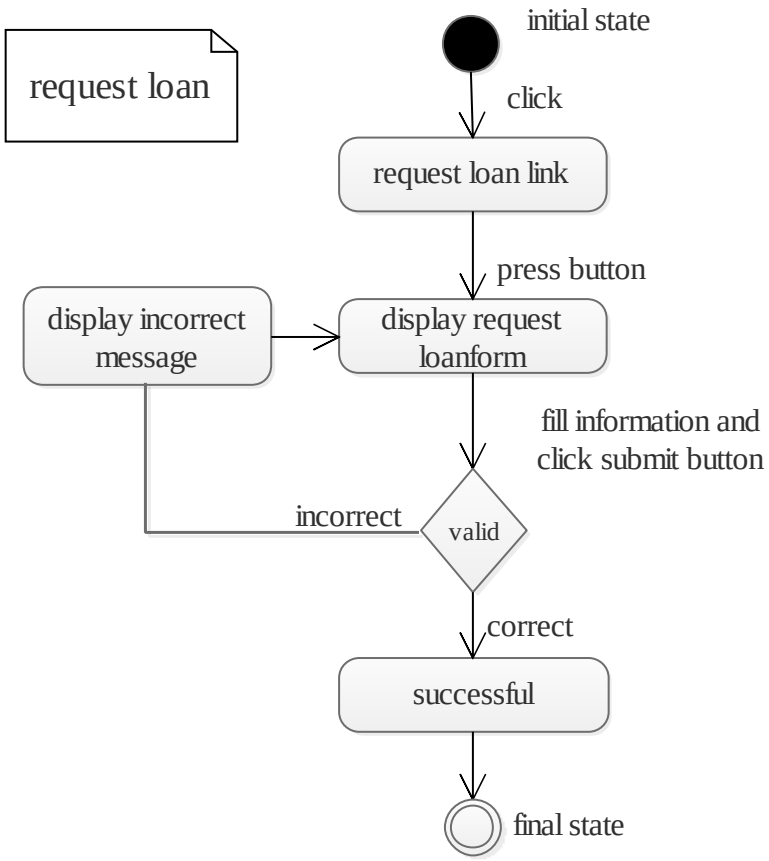


Figure 4-12 State chart diagram for Request Loan

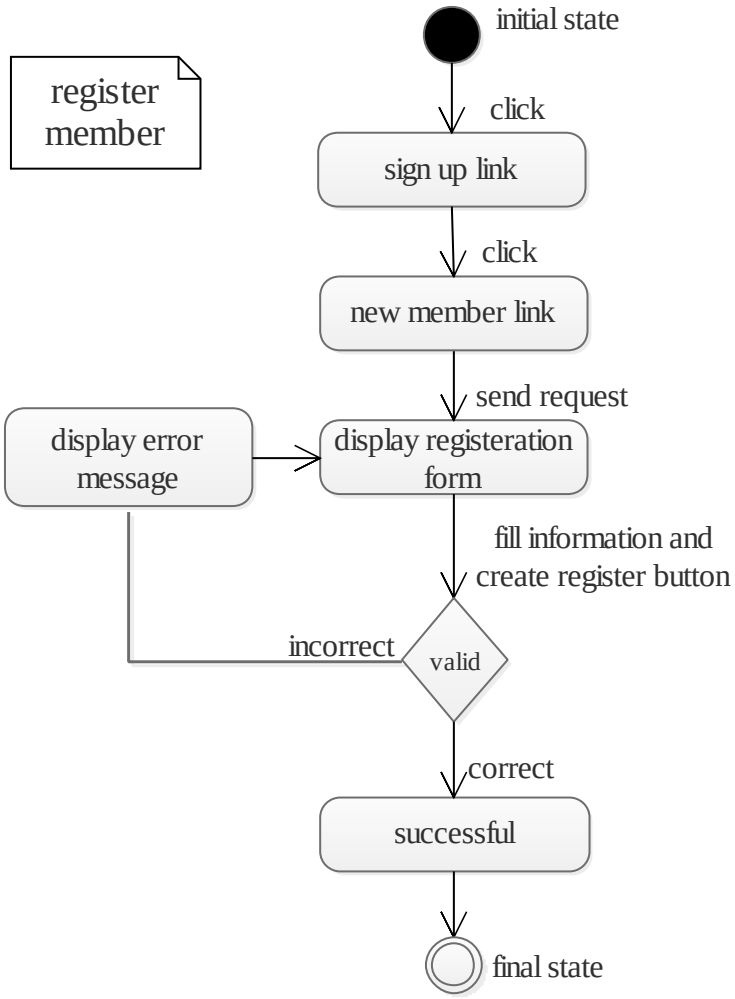


Figure 4-13 State chart diagram for Register Customer

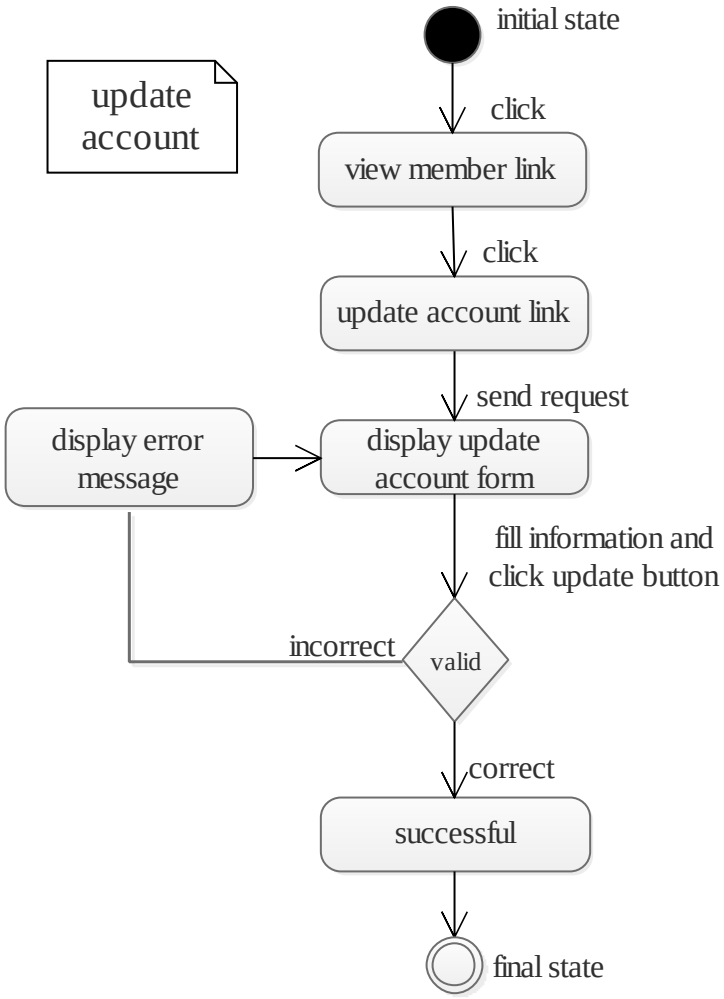


Figure 4-14 State chart diagram for Update Account

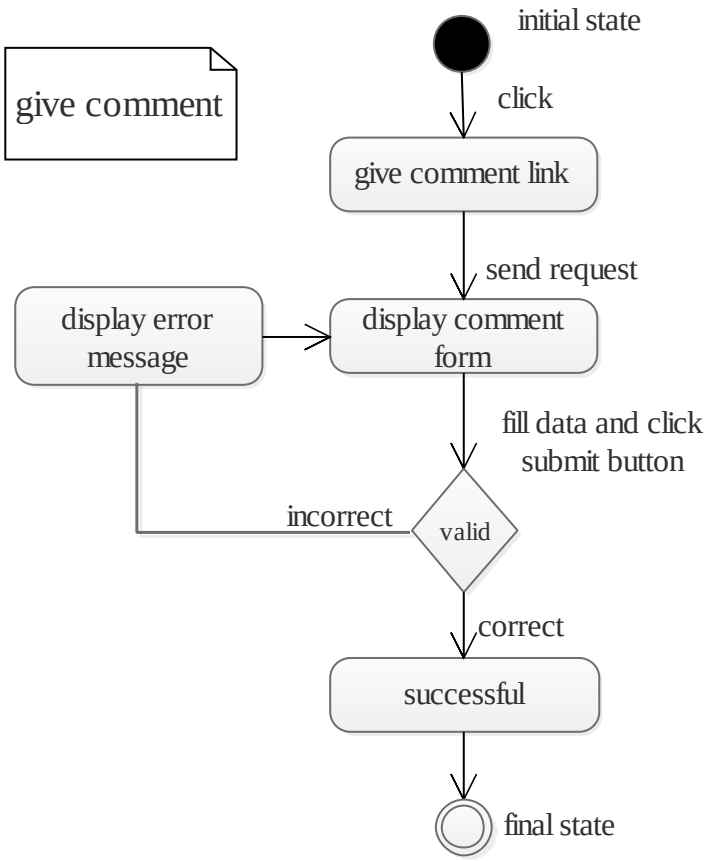


Figure 4-15 State chart diagram for Give Comment

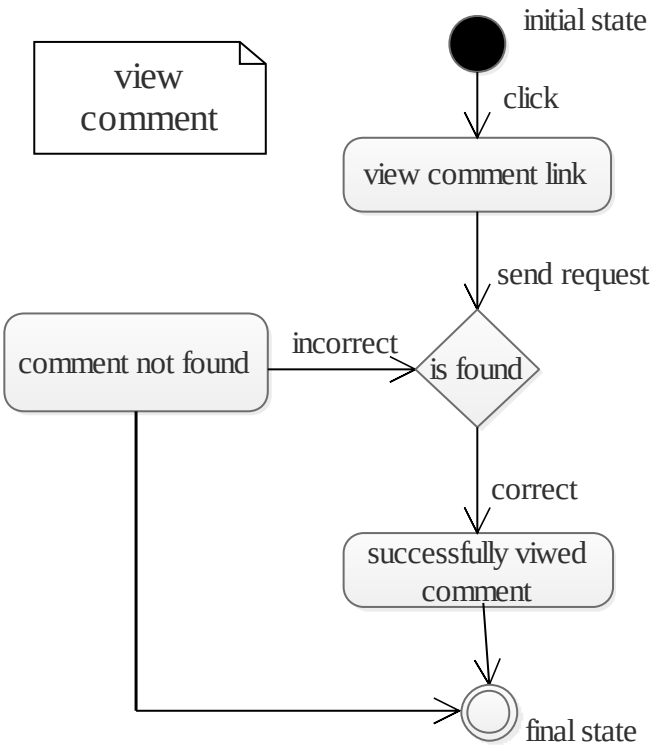


Figure 4-16 State chart diagram for View Comment

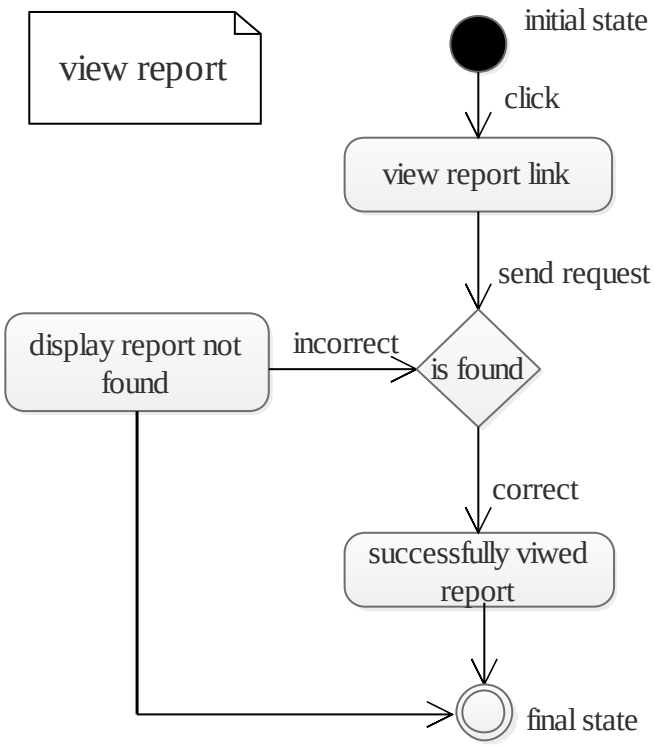


Figure 4-17 State chart diagram for View Report

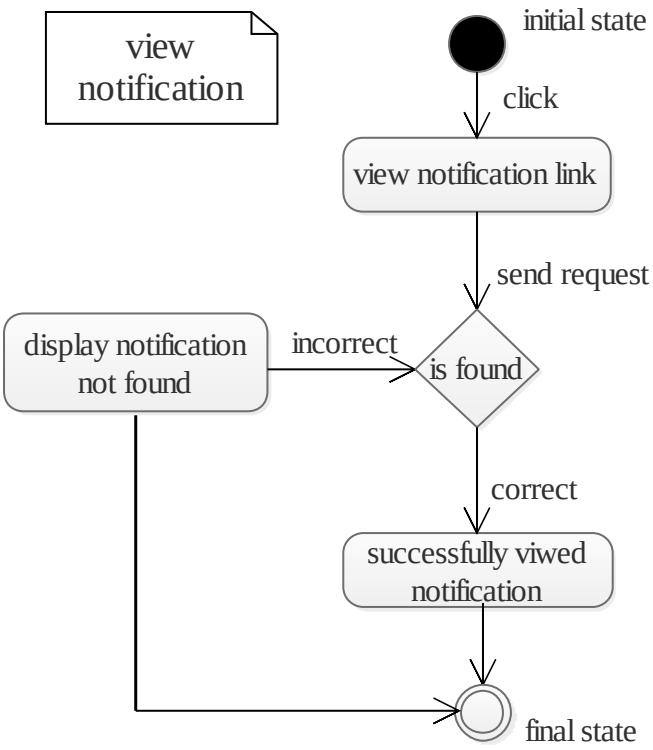


Figure 4-18 State chart diagram for View Notification

4.3.3. Activity Diagram

Activity diagram is another important diagram in UML to describe dynamic aspects of the system. Activity diagram is basically a flow chart to represent the flow from one activity to another activity. The activity can be described as an operation of the system.

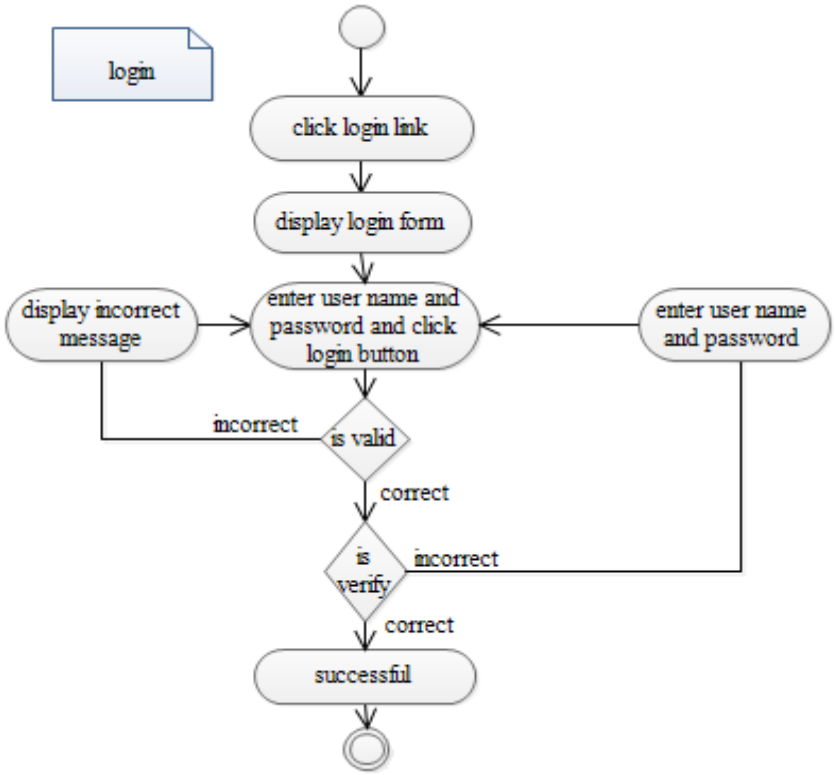


Figure 4-19 Activity diagram for Login

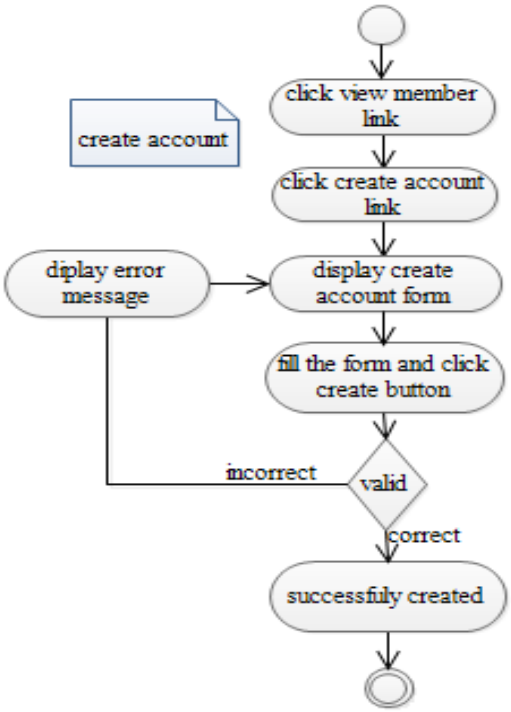


Figure 4-20 Activity diagram for Create Account

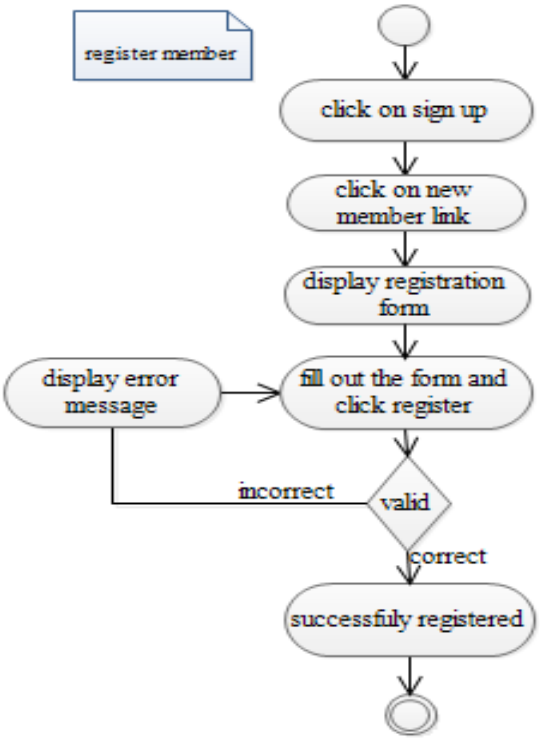


Figure 4-21 Activity diagram for Register Customer

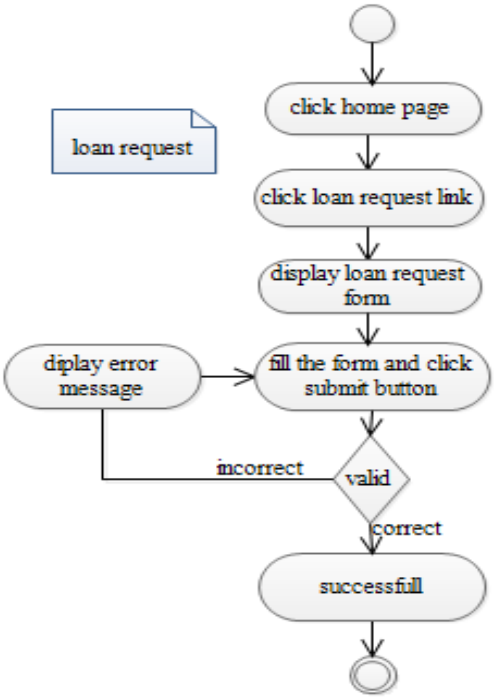


Figure 4-22 Activity diagram for Request Loan

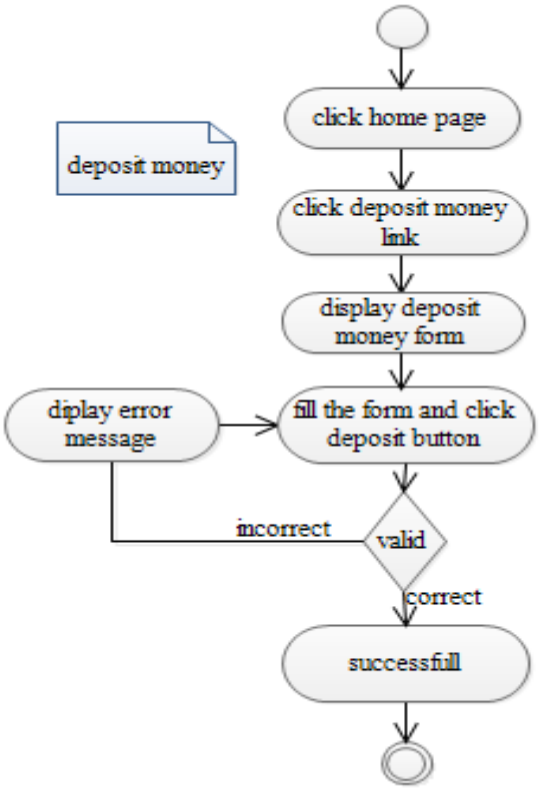


Figure 4-23 Activity diagram for Deposit Money

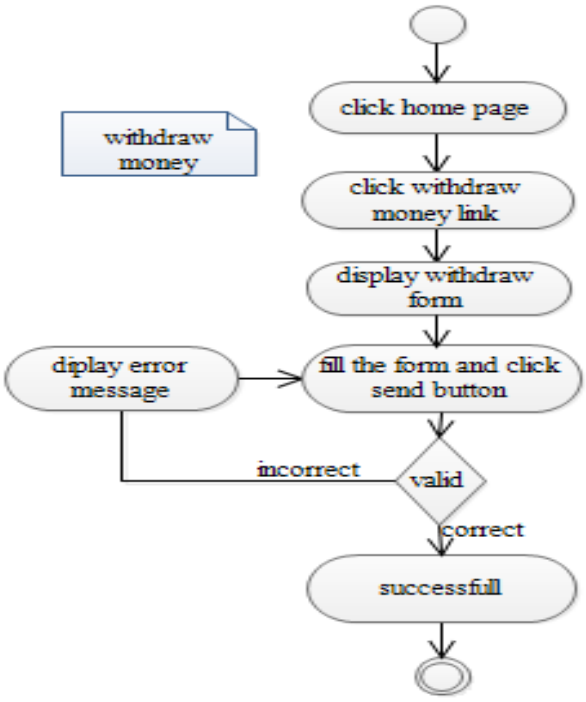


Figure 4-24 Activity diagram for Withdraw Money

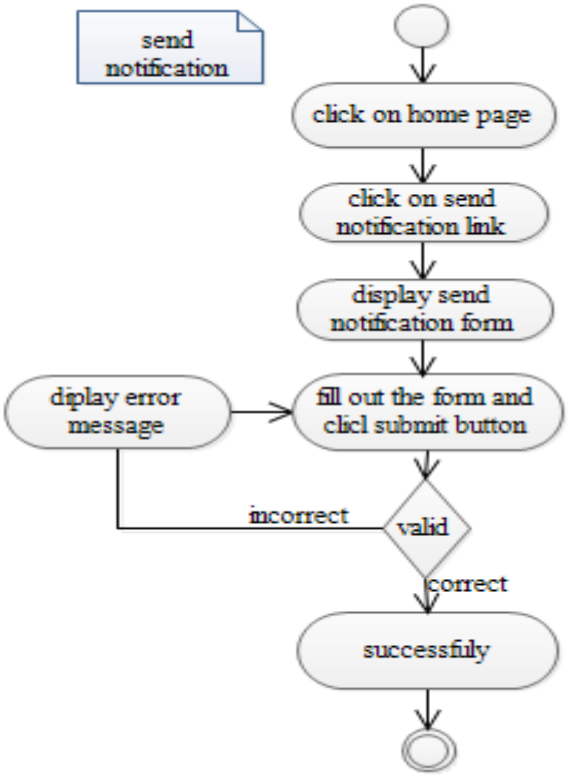


Figure 4-25 Activity diagram for Send Notification

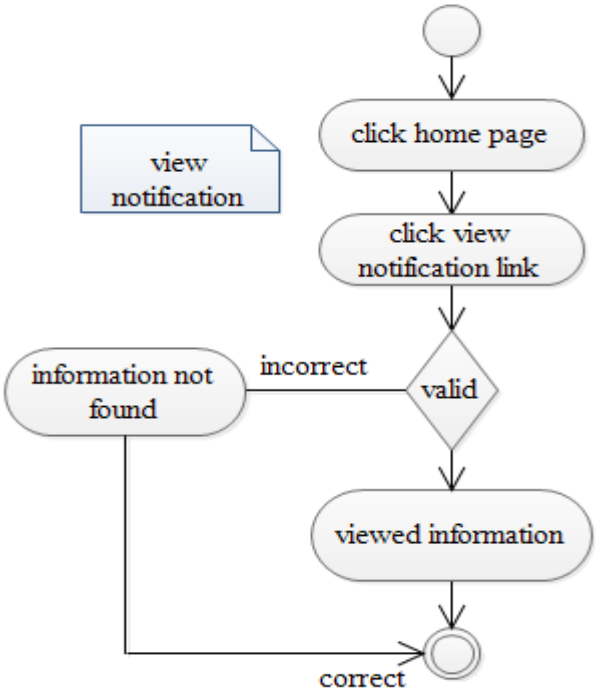


Figure 4-26 Activity diagram for View Notification

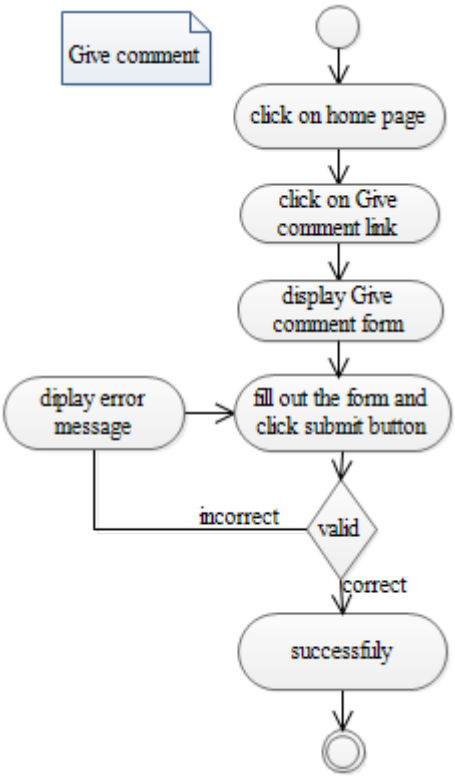


Figure 4-27 Activity diagram for Give Comment

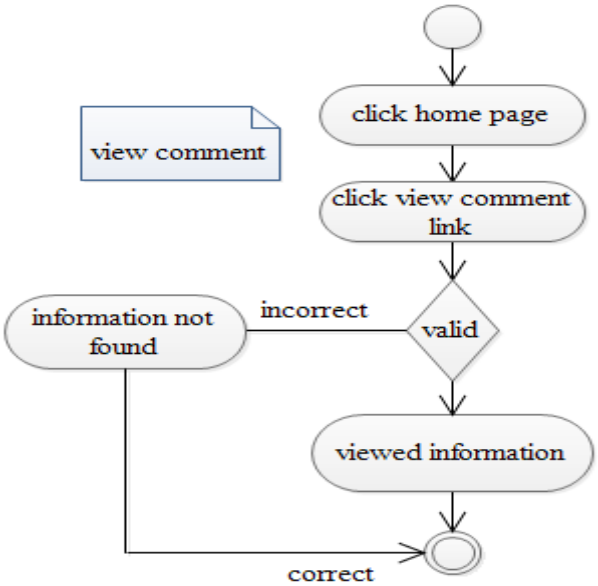


Figure 4-28 Activity diagram for View Comment

CHAPTER FIVE

5. SYSTEM DESIGN

System design is the transformation of the analysis model into a system design model. Design is process of describing, organizing, and structuring system components at architectural design level and detailed design level. This project is designed in a manner that solves the problems of the organization by minimizing the work load of the existing system and employee. It provides more efficient, reliable and time saving system.

5.1. System Overview

Wolkite university saving and credit association system is a system designed to create an automated, strong, and an easy bridge between the employees of Wolkite university and the association.

Using the system, the admin can handle various works that will help them to communicate with the employee's finance statement. This system will let admin to manage client account which may include; accepting client registration, managing client account, loan approval…etc.

Only admin is not the only one who will be able to use this system. Accountant and client heads are also the users of the system being developed.

The client can view everything of their financial statement of them which is done by the accountant those things may include, their loan and how much they saved.

The accountant will do the finance transaction and also registering the approved clients.

5.2. Design goals

The objectives of design are to model the system with high quality. The design goals are derived from nonfunctional requirements that means non-functional requirement is the description of the feature characteristics and attribute of the system as well as any constraints that may limit the boundary of the proposed system. The Design Goals specify the qualities of the system that should be achieved and addressed during the design of the system.

5.2.1. Performance

The system should be able to serve a number of users with in the same time which are users have access permission in the system by using many Web server. It is the middle tier it will contain the core parts of our system.

5.2.2. Dependability

The Organization needs the system to be highly dependable as it is expected to be used by non-IT professionals. The system should be robust and fault tolerant. Furthermore, as the system is handling sensitive data of the organization, high emphasis should be given with regards to security, as there are subsystems to be accessed through web. The proposed system should achieve the following dependability characteristics in order to resist crash and be available and reliable.

- 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. But for the server side there might be an error during the process of entering a data. In this time the system will provide an error page and the system will continue without failure or affection.
- Availability: -as long as there is an internet connection the system will be available always.
- Security: the system should be secured, i.e., not allow unauthorized users to access the database system.
- 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.

5.2.3. Maintenance

The system should be easily extensible to add new functionalities at a later stage. It should als o be easily modifiable to make changes to the features and functionalities.

5.2.4. End User Criteria

The system should have simple and understandable graphical user Interface such as forms and buttons, which have descriptive names. It should give reliable response for each user request at least before the session expires. All the interfaces, forms and buttons are written or designed in a simple language or common language so that the user can access it without any difficult.

5.2.5. Priorities of Design Goal

- Developing reusable components that are easy to modify and maintain by paying attention to low coupling and high cohesion principle. We strongly believe that, using well-known design patterns can help us to attain this goal.
- Providing easy graphical user interface to increase user friendliness.

  Developing system that can handle errors that is invalid inputs and give meaningful feedback to users

5.3. Proposed System Architecture

We use 3-tier for our project because 3- tier architecture provides scalability, performance, availability for the project.

Client Tire (user interface): which runs on the user's computer or in this side trader, manager, License officer and other workers interface exists in this side. It is also called presentation logic is responsible for formatting and presenting data on user's screen.

Server side: This middle tier runs on a server and is often called the application server or the web server connects to the database and gives respond for client request. It handles processing logic, business rule logic and data management logic.

Database Server: that stores the data required by the middle tier. It is also called data storage tire. Database communication, MYSQL queries and completing them via the related API.

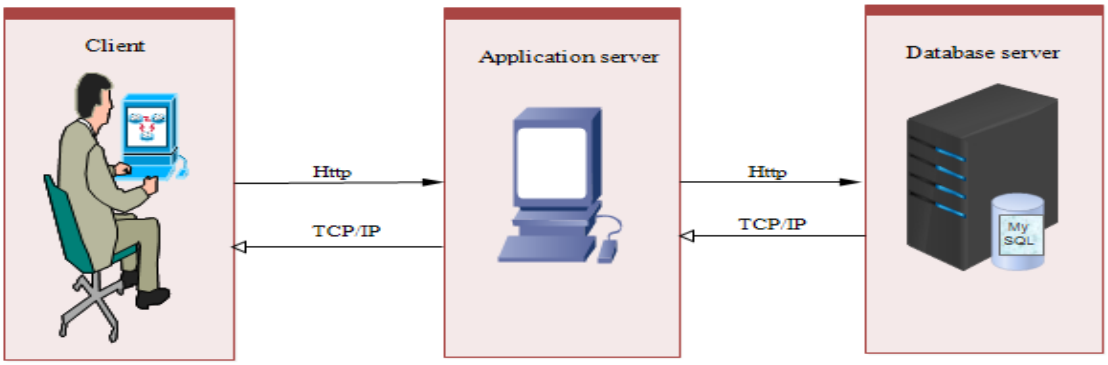


Figure 5.29 Diagram for system architecture

5.3.1. Subsystem Decomposition and Description

Subsystem decompositions will help reduce the complexity of the system. The sub systems that we take the classes that our systems contain and the operation performed in the class. The following are sub systems.

Manage account subsystem: in this subsystem, managing of information regard to account and perform.

- Create account
- Deactive account
- Update account

Report management sub system: This subsystem allows for managing information and performs this operation.

- Generate report
- View report

Request management sub system: This subsystem allows for managing information and performs this operation.

- Request Loan
- Request Resign

Notification Managing sub system: this sub system handles information of notice and perfom.

- send Notification
- View Notification

Database Connection Subsystem: this subsystem used for established connection between business class and database management system.

Comment Managing sub system: this sub system handles information of notice and perform.

- Give comment
- View comment

Register management subsystem: This subsystem allows for managing registration process and performs the following activity.

- Register for new customer
- Register in wku
- Pay for register

Transaction management subsystem: this sub system handles information about payment and

performs the following activity.

- ❖ Deposit money
- ❖ Withdraw money
- ❖ Check balance

Loan management subsystem: This subsystem allows for managing loan process and performs the following activity.

- ❖ Pay loan

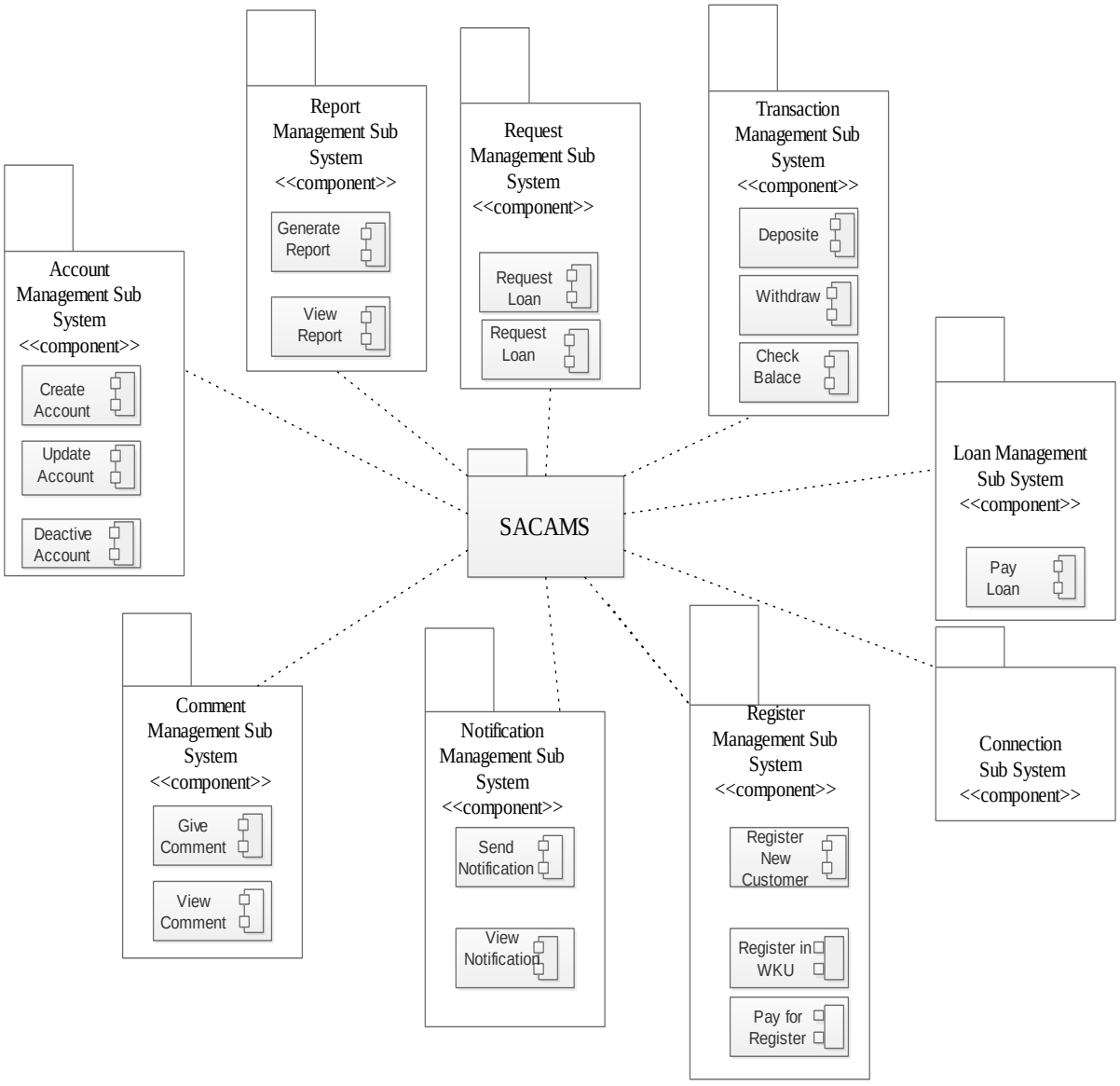


Figure 5-30 Diagram for sub system decomposition

5.2.2. Hardware/Software Mapping

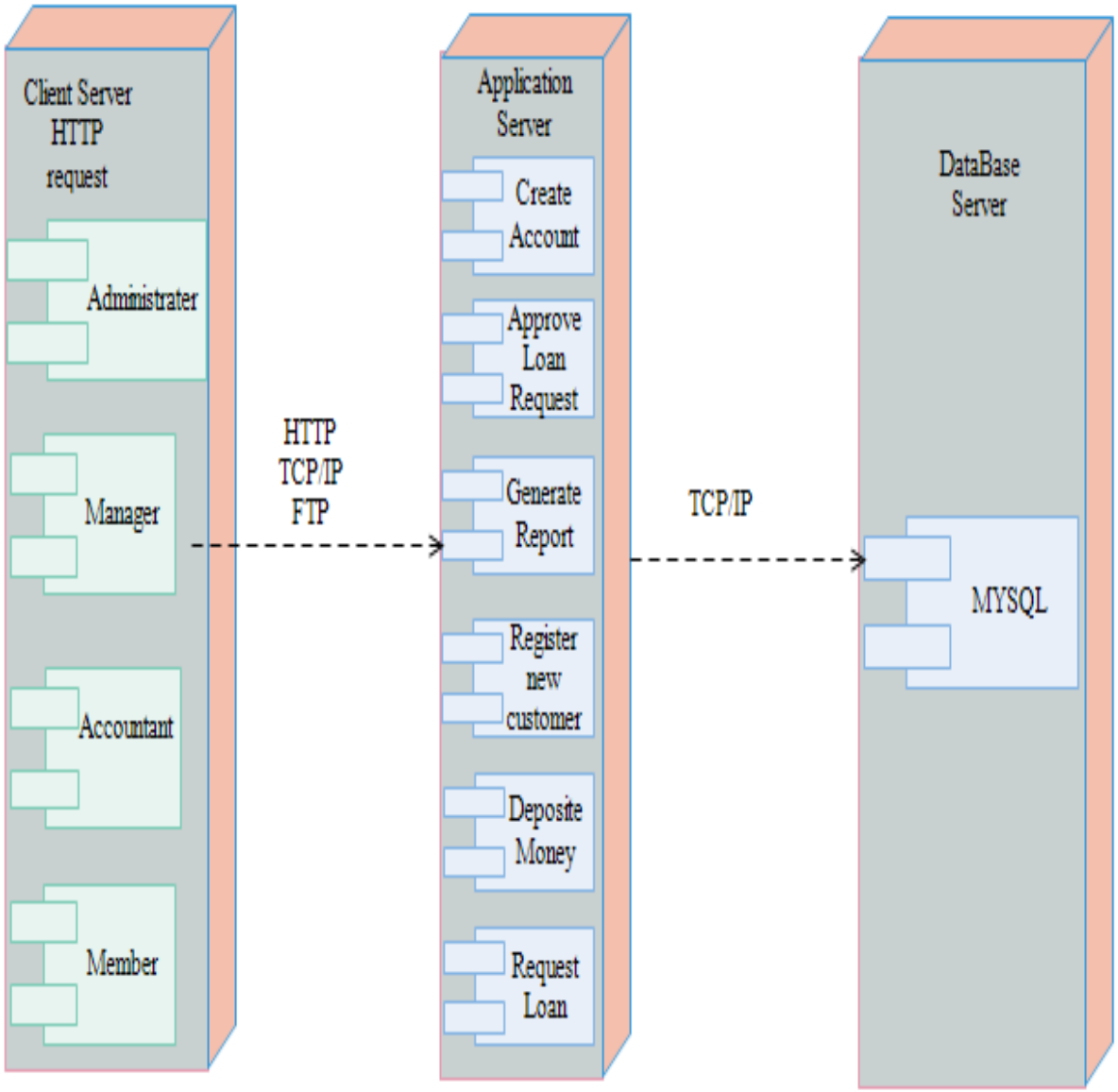


Figure 5-31 Deployment diagram

5.2.3. Detailed Class Diagram

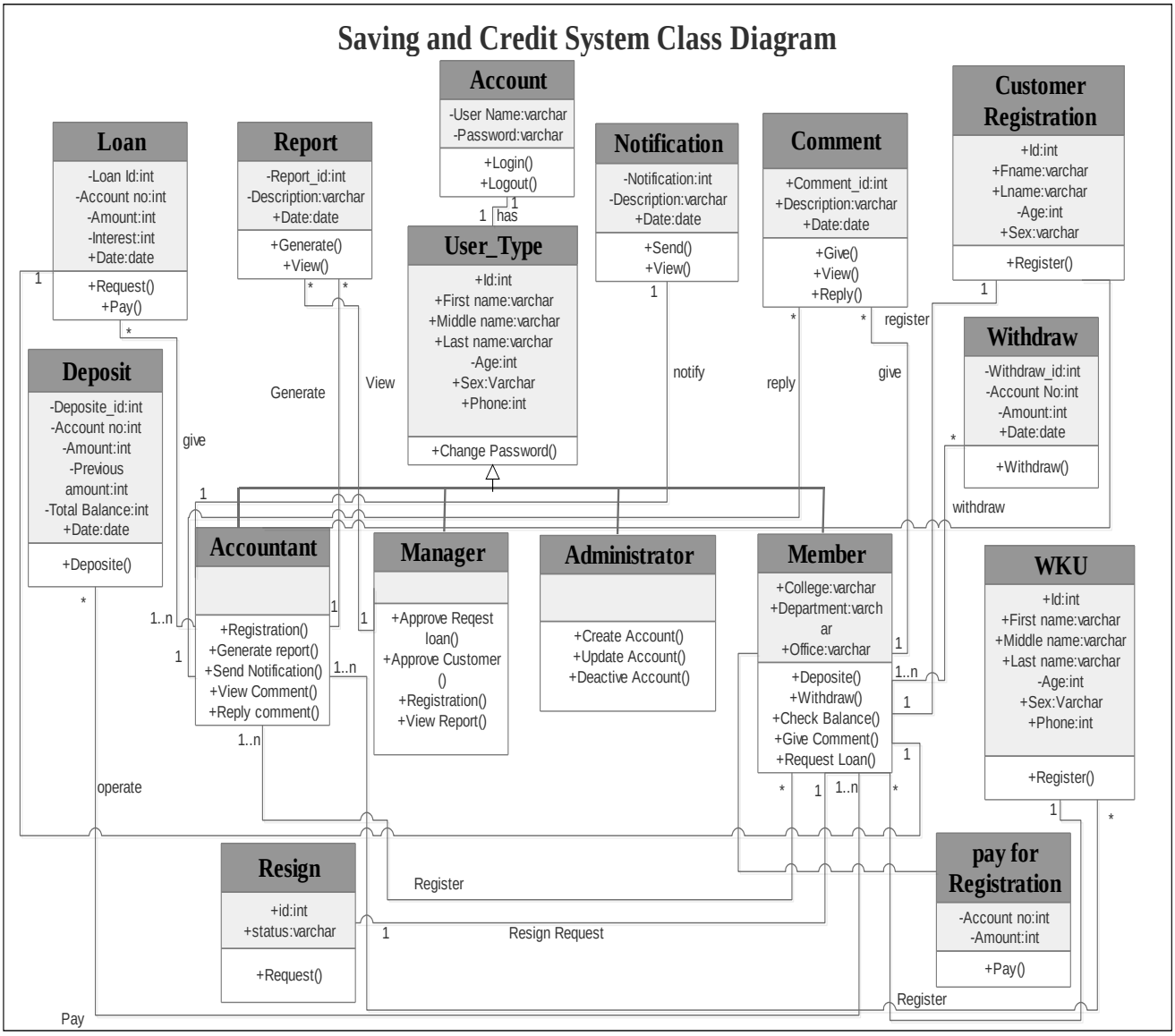
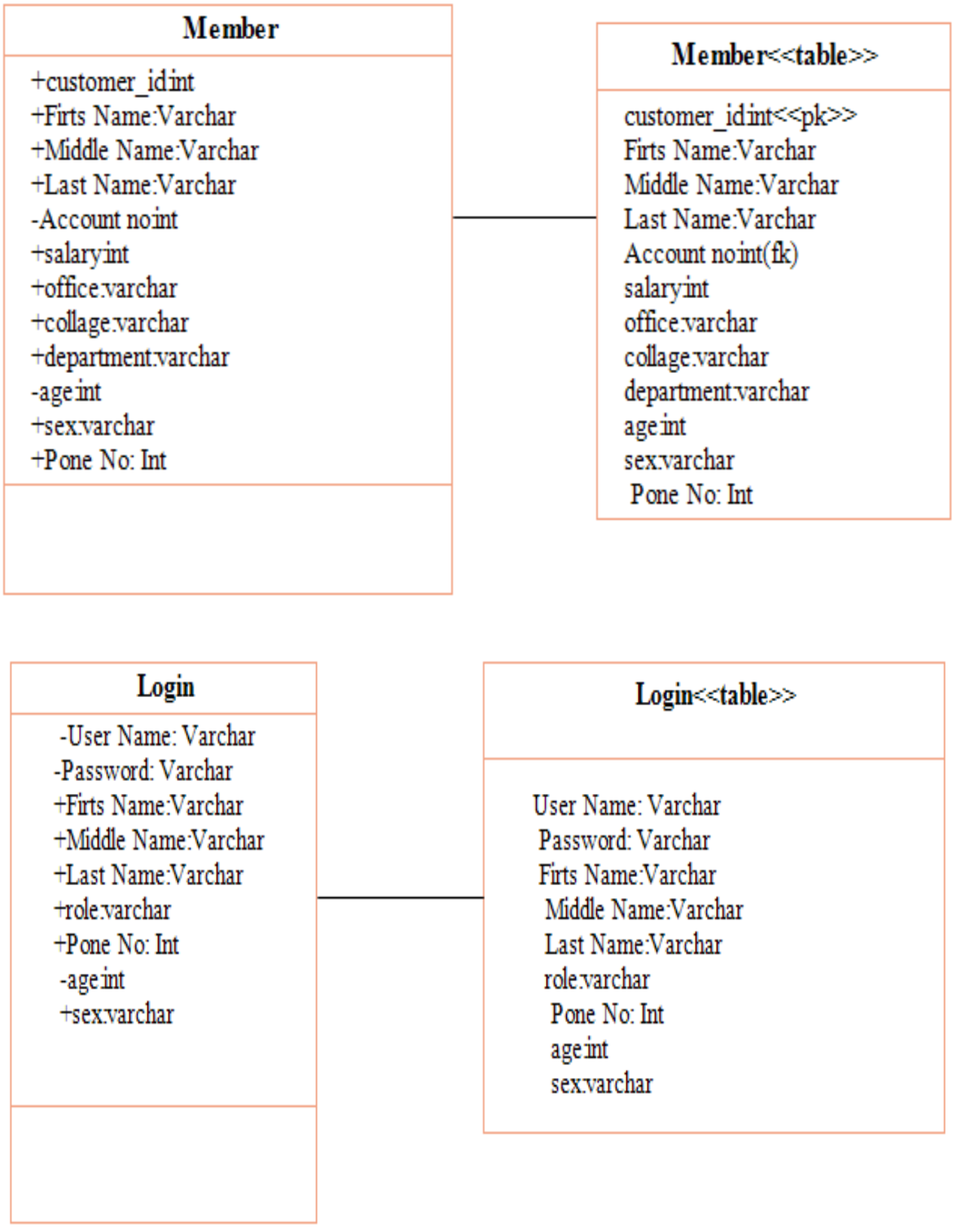
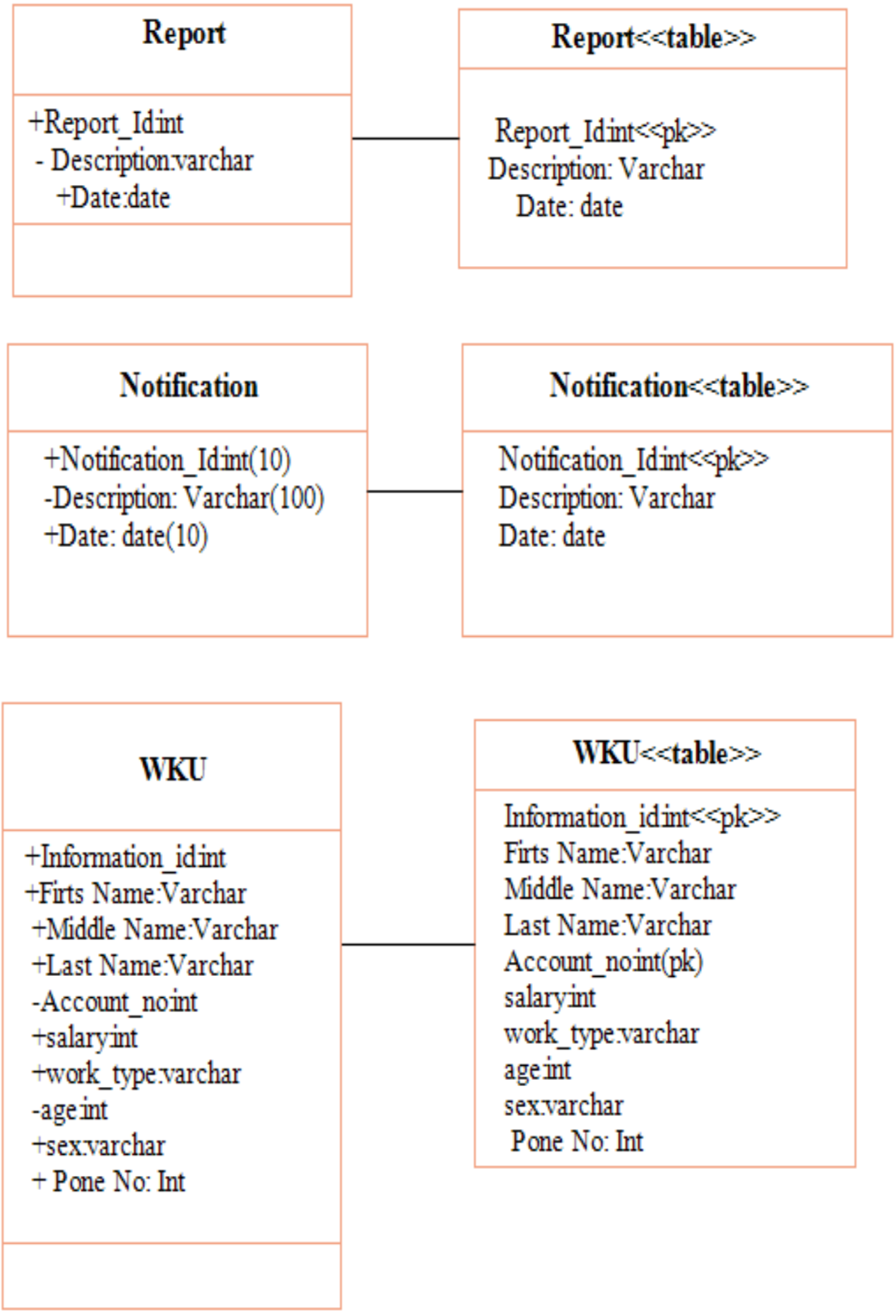
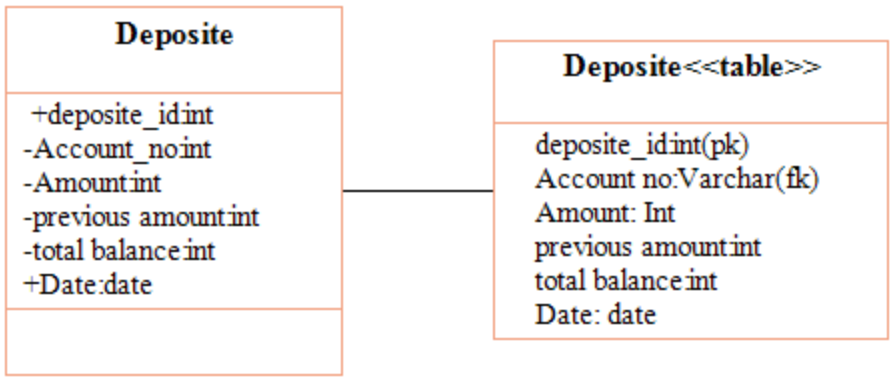


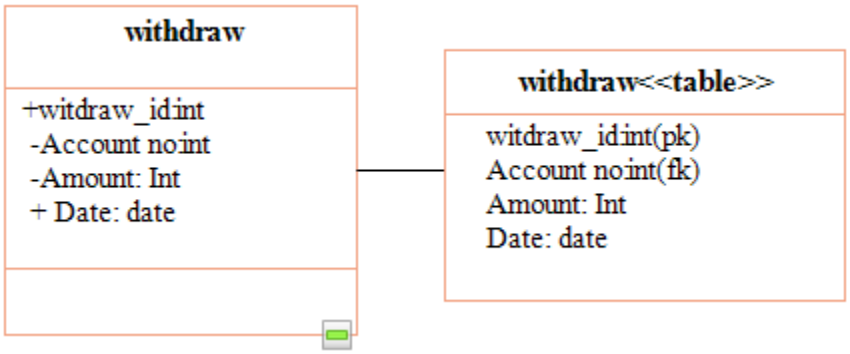
Figure 5-32 Detail Class Diagram

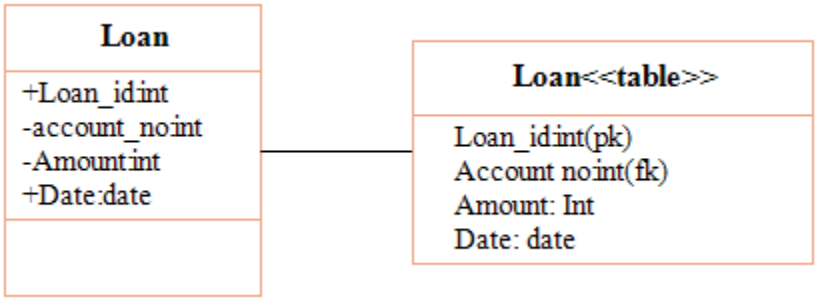
5.2.4. Persistent Data Management

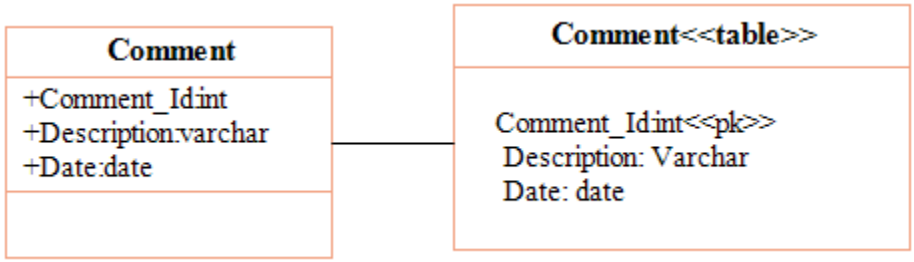

Member
+customer_id:int
+Firts Name:Varchar
+Middle Name:Varchar
+Last Name:Varchar
-Account no:int
+salary:int
+office:varchar
+collage:varchar
+department:varchar
-age:int
+sex:varchar
+Pone No: Int
Member<<table>>
customer_id:int<<pk>>
Firts Name:Varchar
Middle Name:Varchar
Last Name:Varchar
Account no:int(fk)
salary:int
office:varchar
collage:varchar
department:varchar
age:int
sex:varchar
Pone No: Int
Login
-User Name: Varchar
-Password: Varchar
+Firts Name:Varchar
+Middle Name:Varchar
+Last Name:Varchar
+role:varchar
+Pone No: Int
-age:int
+sex:varchar
Login<<table>>
User Name: Varchar
Password: Varchar
Firts Name:Varchar
Middle Name:Varchar
Last Name:Varchar
role:varchar
Pone No: Int
age:int
sex:varchar


Report
+Report_Id:int
- Description:varchar
+Date:date
Report<<table>>
Report_Id:int<<pk>>
Description: Varchar
Date: date
Notification
+Notification_Id:int(10)
-Description: Varchar(100)
+Date: date(10)
Notification<<table>>
Notification_Id:int<<pk>>
Description: Varchar
Date: date
WKU
+Information_id:int
+Firts Name:Varchar
+Middle Name:Varchar
+Last Name:Varchar
-Account_no:int
+salary:int
+work_type:varchar
-age:int
+sex:varchar
+ Pone No: Int
WKU<<table>>
Information_id:int<<pk>>
Firts Name:Varchar
Middle Name:Varchar
Last Name:Varchar
Account_no:int(pk)
salary:int
work_type:varchar
age:int
sex:varchar
Pone No: Int


Deposite
+deposite_id:int
-Account_no:int
-Amount:int
-previous amount:int
-total balance:int
+Date:date
Deposite<<table>>
deposite_id:int(pk)
Account no:Varchar(fk)
Amount: Int
previous amount:int
total balance:int
Date: date


withdraw
+witdraw_id:int
-Account no:int
-Amount: Int
+ Date: date
withdraw<<table>>
witdraw_id:int(pk)
Account no:int(fk)
Amount: Int
Date: date


Loan
+Loan_id:int
-account_no:int
-Amount:int
+Date:date
Loan<<table>>
Loan_id:int(pk)
Account no:int(fk)
Amount: Int
Date: date


Comment
+Comment_Id:int
+Description:varchar
+Date:date
Comment<<table>>
Comment_Id:int<<pk>>
Description: Varchar
Date: date

5.2.5 Access Control and Security

In this system, different actors have access to different information and data. Access control and security specifies what the user can access or what cannot perform by some users. This access control is verified by username and password. System admin represents an authenticated user. The proposed system follows multi user system. In multi user system, different actors have access to different functionality and data. Then it must be having: -

- **Confidentiality**: Only authorized person can see the information. Private data is kept private; personal privacy is respected.
- **Availability**: The system is available at all times to authorized users.

	Manager	Member	Accountant	Administrator
Logging in	YES	YES	YES	YES
Create Account	NO	YES	NO	YES
Update Account	YES	YES	YES	YES
Deactive Acount	NO	No	NO	YES
Request Loan	NO	YES	NO	NO
Pay Loan	NO	YES	NO	NO
Give comment	NO	YES	NO	NO
View comment	NO	NO	YES	NO
Reply comment	NO	NO	YES	NO
Register customer	NO	YES	NO	NO
Deposit money	NO	YES	NO	NO
Withdraw money	NO	YES	NO	NO
Send notification	YES	NO	YES	YES
View notification	YES	YES	YES	NO
Generate report	NO	NO	NO	NO
View report	YES	NO	NO	NO

5.4. Packages

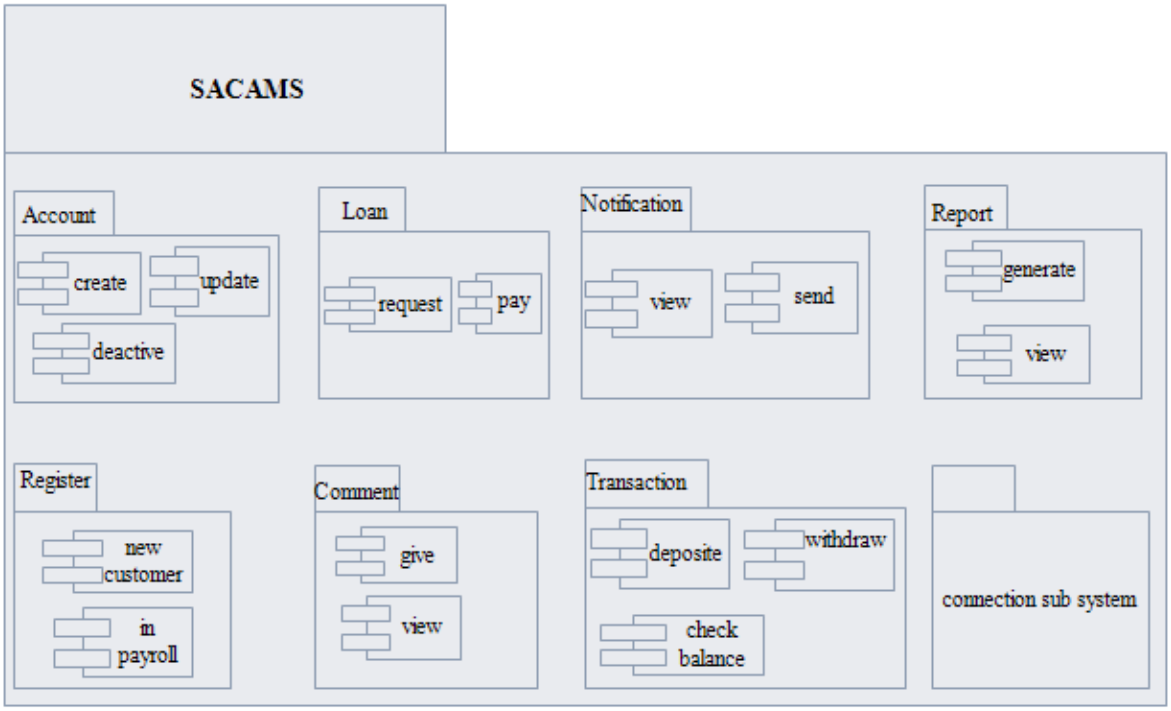


Figure 5-33 Package diagram

5.5. Algorithm Design

An algorithm is an ordered set of unambiguous, executable steps, defining a Terminating process. May be described: - abstractly using human language (pseudo code), using a programming language of your choice we also write algorithm for some method in the following

B. **Login**

Description:

- A customer who login to the system.
- A customer who has a user name and password to login and visit his or her status.

Methods

Login ()

Pseudo code: Do

The System lets the customer to enter into his or her account

B. **Loan**

Description:

- A person can request loan once.
- A person must have a unique account ID to perform request for loan.
- A person must specify amount of loan to get loan service.

Methods

Request ()

Pseudo code: Do

The system allows the customer to request loan.

Accept ()

The system can accept the customer request.

Reject ()

The system can reject the request of the customer based on the rule.

B. **Transaction**

Description:

- A customer can perform a number of transactions.
- A unique Account Number Assigned to perform transaction.

Methods

Cash ()

Pseudo code: Do

The system allows the customer to deposit or withdraw cash.

B. **Account**

Description:

- The system allows the customer to deposit the minimum balance of money during registration

Methods

Add ()

Pseudo code: Do

The system saves Account types and minimum balance into the data base.

Update ()

Pseudo code: Do

The system lets to edit Account types and minimum balance.

Delete ()

Pseudo code: Do

The system deletes Account types and minimum balance from the database.

B. **: loan _ paid**

Description:

- A system lets the customer to pay their loan through manager.

- A customer should pay at least the minimum amount of monthly installment.

Methods

Pay ()

Pseudo code: Do

The system subtracts from the amount of loan he or she has received.

View ()

The system allows the customer to view his/her status.

B. **Interest**

Description

- The customer has an interest based on the loan amount.

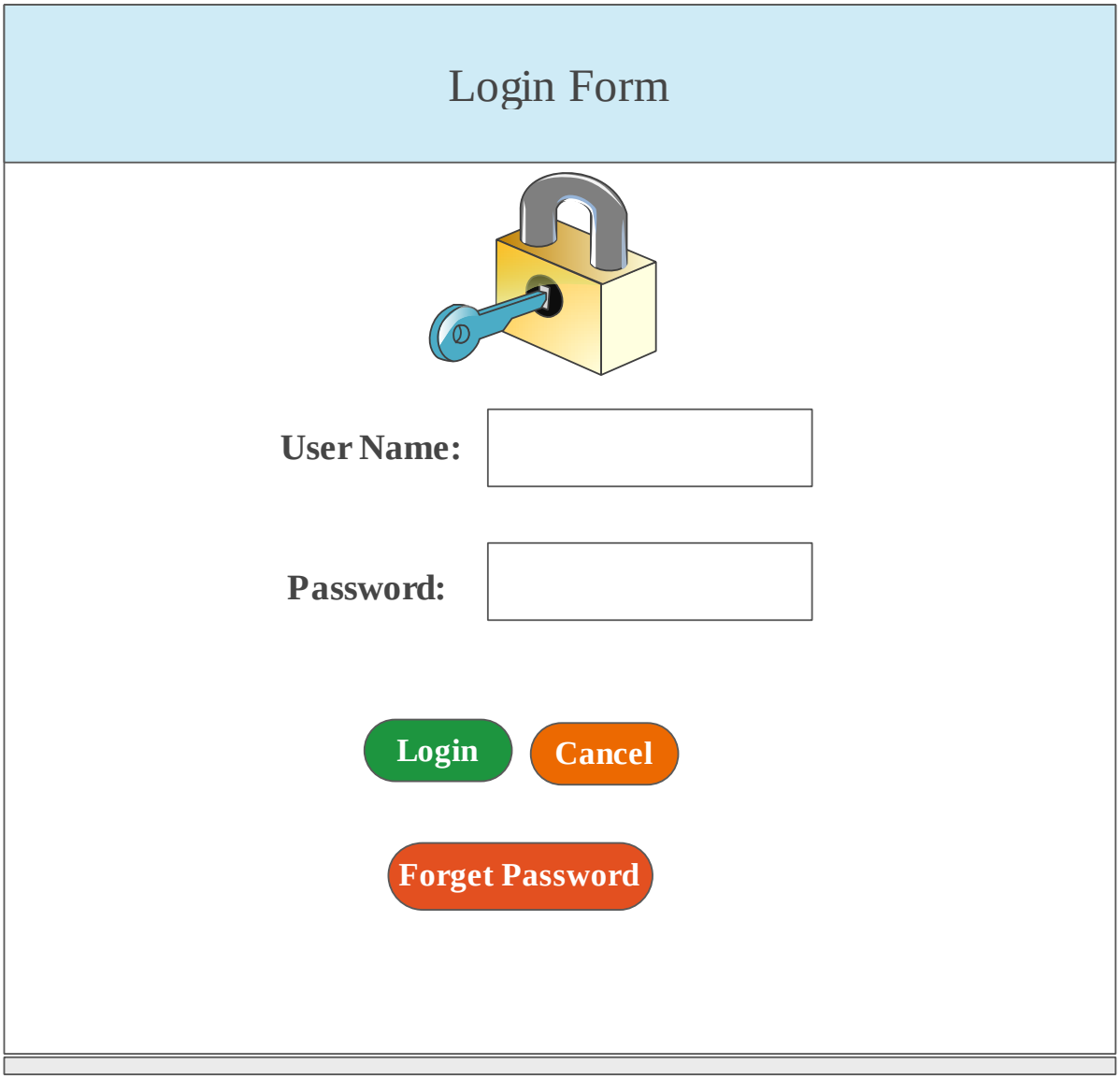
Method

View ()

Pseudo code: Do

The system lets the customer to view his or her loan interest based on the amount they have borrowed.

5.6. User Interface Design



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