WOLKITE UNIVERSITY

COLLEGE OF COMPUTING AND INFORMATICS

DEPARTMENT OF INFORMATION TECHNOLOGY

Proposal on:

Web Based Insurance Information Management System in EIC for Wolkite Branch

PREPARED BY:

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Ethiopia

January 4, 2021

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PROJECT TITLE: WEB BASED INSURACNE INFORMATION MANAGEMENT SYSTEM IN EIC FOR WOLKITE BRANCH

SUBMITED TO DEPARTMENT OF INFORMATION TECHNOLOGY

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR

THE DEGREE OF BACHLER OF SCIENCE IN INFORMATION TECHNOLOGY

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DECLARATION

This is to declare that this project work which is done under the supervision of Mr. Nigus asres and having the title WEB BASED INSURANCE INFORMATION MANAGEMENT SYSTEM IN EIC FOR WOLKITE BRANCH is the sole contribution of:

1. Fatuma Abdela
2. Nigest Kinfe
3. Belayneh Zewdu

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

Date: _____

Group Members:

Full Name	Signature
_____	_____
_____	_____
_____	_____

APPROVAL FORM

This is to confirm that the project report entitled web based insurance information management system in EIC for wolkite submitted to Wolkite University, College of Computing and Informatics department of Information Technology in partial fulfillment of the requirement for the award of the degree of Bachelor of Science in Information Technology is an original work carried out by Fatuma, Nigest and Belayneh is approved for submission.

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

First of all, we would like to thank Almighty GOD for the strength, he has given us throughout our life and this project; nothing could happen without the help of GOD. Secondly, we would like to express our gratitude to our advisors, Mr. Nigus Asres abundantly helpful and offered invaluable assistance, support and guidance. Special thanks also to all our graduate friends, especially group members; for sharing the literature and invaluable assistance. Not forgetting to our best friends who always been there. We would also like to convey thanks to the School of computing and informatics for providing the computer laboratory facilities.

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LIST OF ABBREVIATIONS

ADMIN: Administrator

BR: Business Rule

CCI: college of computing and informatics

CSS: Cascade style Sheet

DB: Database

EIC: Ethiopian Insurance Corporation.

FK: Foreign Key

GUI: Graphical User Interface

HTML: Hyper Text Markup Language

HTTP: Hypertext Transfer Protocol

MySQL: Open source relational database management

OOSAD: Object Oriented System Analysis Design

OOA: Object Oriented Analysis

OOD: Object Oriented Design

PHP: Hypertext Preprocessor

PK: Primary Key

UC: Use case (Unified Modeling Language)

UI: User Interface

UML: Unified Modeling Language

WKU: Wolkite University.

XAMPP: platform apache MySQL Perl PHP

ABSTRACT

Information technology has become an integral part of human daily activity that has major impact on the way we live and work. The project is developing a web based Ethiopian insurance information management system in EIC for Wolkite branch. The main objective of the project is solving problems by identifying problems of the existing system and we analyses the problem, gather requirements and designing of the system to solve existing problem. This project can perform many functions like insured management, account management, and report generating, payment management. The project is web based so it is user friendly system and it provide more significant for the user, developer, and the organization. Moreover, the design and implementation will be carried out using HTML, CSS, PHP, JAVASCRIPT, APACHE Server, and MYSQL for data base and also we use primary and secondary data gathering techniques. This documentation describes the different diagram and approaches used to compose the new system.

CHAPTER ONE

1. INTRODUCTION

The insurance system is one of the important organizations in the world that is becoming more spread from time to time. Insurance system is a system in which one agrees to pay money to a company and the company pays back if an accident or injury happens to the members of the organization. The one that pays money to the company is called insured and the one that pays back if an accident or injury happens is the insurer. In other words, the insured pays money to the insurer. The insured receives a contract or insurance policy which details the conditions and circumstances under which the insured will be financially compensated. Insurance involves pooling funds from many insured entities to pay for the losses that some may incur. The insured entities are therefore protected from risk for a fee, with the fee or premium being dependent upon the frequency and severity of the event occurring on the members of the organization. There are different types of insurances given by companies such as car insurance, condominium insurance, fire insurance, auto or vehicle insurance, etc.

1.1. Background of the Organization

Currently, in Ethiopia, there are many insurance corporations. From those corporations, Ethiopian Insurance Corporation is one of the corporations that concerned about insurance related services and one of the earliest institutes established in 1976 by proclamation no.68/1975 in Ethiopia [1]. It have 6 main branches (south east main branch, north main branch, west main branch, east main branch, south west main branch, Hiwot main branch) and it have 46 sub branches from those branches wolkite branch was established in 2004 E.C. The establishment of these institute is expected to give much to the ongoing development of the country in general. This system is still operate manually. It operates all functions manually like registering, searching, reporting, editing and adding details of information of the insured members of the institution. So this manually operation face to different types problems like that takes time for the operation ,ineffective file, inconsistent, inaccurate, etc. so this system is all about operating the detail operation of the system manually operated.

1.2. Statement of the problem

The current state of Ethiopian Insurance Corporation is still semi-computerized and some of the work or tasks are done manually and the corporation faces challenges or problems due to the manual system. Some of the problem faced within Ethiopian Insurance Corporation is discussed below.

There are a number of operation within the organization such as customer, insured, vehicle, payment, and report related data so the searching mechanism of those data from the manually or semi computerized system take more time and effort. EIC uses desktop application and these application are intended for offline use only and the insured can request the accident physically due to these reason the availability of service are not reach any place at a time for the customer and the customer waste money and time for transportation because they have to go and report accident physically.

The organization faces wastage of money due to manual usage of papers. As we stated above there is semi computerized system in Ethiopian Insurance Corporation so The manager of the branch may advertise their work by using our system, the main branch may inform the branch manager when there is meeting, The customer can request for insurance whenever he or she may need and there may be loss of data or it is accessed by unauthorized users or agents.

In addition, there is redundancy of data means that the same data gets repeated over and over in the manual cabinets so there is a problem of searching or finding the latest file or document, to keep track of the documents, information, and transactions from the cabinets and there will be unavailability for future use since data might get misplaced during manual filing. So data won't be preserved properly for future use.

1.3. Objective of the project

1.3.1. General Objective

The general objective of the project is to develop web based Insurance information management system in EIC for Wolkite branch.

1.3.2. Specific Objectives

The specific objectives of the project are:-

- ✓ To develop a system that can record insurance related information detail to use the system as a source.
- ✓ To develop a system that can request online when an accident happened.
- ✓ To develop a system that manages an account for the user of the system.
- ✓ To develop some security improvement through strong authentication mechanism.

1.4. Scope and limitation of the Project

1.4.1. Scope of the project

This project will be limited on developing a web based Ethiopian Insurance Corporation information Management System for Wolkite branch. That enable to provide fast and available service for the insured of the insurance. On completion of this project we expect that the system will do in the following insurance types.

- ✓ Vehicle (motor) insurance.
- ✓ Fire (lightening) insurance.

1.4.2. Limitation of the project

As we stated on the scope part the project is limited to developing a web based Ethiopian Corporation Insurance information Management System for Wolkite branch and the project can't do some of the insurance types such as life and health insurance because the branch can't give those insurance types and we didn't get information from the company for those insurances.

1.5. Significant of the project

Some of the significance of the proposed system is:

- ✓ The system is reduce cost because of no need of materials such as paper, pen and duplicator.
- ✓ The system yields better time management
- ✓ Speed up the operation (insert, search, update…)
- ✓ Minimize the processing time or increasing speed of activity.

- ✓ Avoiding data loss.
- ✓ The customer should not come to the Ethiopian insurance corporation in order to report the accident that means they can finish any were by using internet access
- ✓ Increase security.
- ✓ Enhance employee morale of the organization by providing quality service.
- ✓ Increase competency.

1.6. Beneficiaries of the project

System users' beneficiary

Administrator

- ✓ Easily data reporting and accessing.
- ✓ Easily access customers' information from organized database.
- ✓ Time saving.
- ✓ Reduce over load.
- ✓ To solve those are associated with the manual system.

Insured

- ✓ They can get more information from the system.
- ✓ Reduce cost.

Casher

- ✓ Avoid the delay in preparation and presentation of report.
- ✓ Reduce over load.
- ✓ Time saving.

Institution beneficiary

- ✓ Reduce its time, cost consumption
- ✓ Reduce work load.
- ✓ Speed up the business operation.
- ✓ Increase competency.
- ✓ Control customers' records.
- ✓ Reduce data redundancy.

Team members' beneficiary

- ✓ The project has initiated our team to get knowledge of how to develop the required application system.
- ✓ The team members will get a comprehensive knowledge and experience in developing and designing a new system.
- ✓ The team got a lot of experience of solving problem while they are facing with some difficulties.
- ✓ To create team spirit among the development team.
- ✓ To get problem solving skill.

1.7. Methodology of the project

1.7.1. Data Collection methodology

In our project we are using use different types of data gathering methodology, some of them are:-

- ✓ **Interview:** To gather more real information about the Ethiopian insurance corporation information system we interview employer of the organization, customers and manager of the organization, and we get lot of information about how their work.
- ✓ **Observation:** Through this method we try to gather information by observing of the insurance center and we observed physically the current existing system which is done by manually.
- ✓ **Document analysis:** For more information about the existing system we refer relevant documents, others reading materials and previous printed documents related to insurance activities and tasks.

1.7.2. Design methodologies

We will use object oriented system development methodologies because of many reasons, some of the reasons are listed below [2].

- ✓ Object oriented is the best approach because of its advanced features such as inheritance, polymorphism, abstraction encapsulation and more of its feature support.

- ✓ Any system made by this methods are easy to maintain, therefore it reduces maintenance burden.
- ✓ It is easy in terms of flexibility and be maintained easily.

1.7.3. Tools Used

Our system will be web based system. So an interactive web based system commonly needs the following tools:-

- ✓ Web server software:- apache web server
- ✓ Server side programming language:-PHP
- ✓ Client side programming language:-HTML, CSS, JavaScript
- ✓ Database system:- MySQL database

Other tools we will use for this project are:

- ✓ Microsoft Visio/ E draw: - this software tool is used for designing different architectural figures, for example, use case diagram, activity diagram, sequence diagram, class diagram, and the likes.
- ✓ Microsoft word 2013:- this software application is used to prepare the document of this project.
- ✓ Adobe Photoshop Cs5 and Microsoft paint: - used for editing different graphical pictures.
- ✓ Sublime text editor: - This software application used for editing the coding part of this project.

There are many reasons why we select PHP for server side programming and MYSQL for the database some of the reasons are described as follows.

From many of scripting languages PHP is powerful, easy to learn, cross platform, free, and PHP is faster. There are also so many reasons to choose MYSQL database some of the reasons are it is quick and powerful, handles large database, and it is free.

1.8. Feasibility study

1.8.1. Economic feasibility:

As we are tried to describe in the problem of the existing system on of its problem is economy because the user may consume more money by Visiting different sites in order to get different resources according to this the system is economically feasible.

1.8.2. Technical feasibility:

The proposed system is technically feasible since it tends to use the existing hardware technology and free available software which makes system usage and deployment easier for the organization. We have identified the existing hardware and software resources that are available in the existing organization is sufficient and no need to have more technologies.

1.8.3. Operational Feasibility:

The proposed system will be accessible to users via any browser such as Mozilla Firefox and any other so that if a user have at least one of the browser it can access the service. In addition the attractiveness of the user interface designed will make the user of the system to feel more comfortable and familiar within the system.

On behalf of the system admin the system is protected through a strong authentication but without making a number of credentials which leads admin to login easily and in a secured manner. Through simple training the admin can enjoy the system without having difficulty.

1.8.4. Schedule Feasibility

This final project can be accomplished with in a given schedule time since that meets the schedule feasibility.

1.8.5. Political Feasibility

After the development of the project the system does not have contradiction with the government policies.

1.9. Time Schedule and Budget of the project

1.9.1. Time Schedule of the project

The proposed system will be implemented in an acceptable timeframe given below. Project coordinator is also responsible for monitoring & controlling the project development based on the schedule shown below

Table 1.1 Time schedule of the project

No	Task Name	2012 EC.				
		10/02/2012 - 01/03/2012	02/03/2012 - 25/03/2012	26/03/2012 - 15/05/2012	20/05/2012 - 30/07/2012	01/08/2012 - 30/03/2012
1	Proposal					
2	Requirement analysis					
3	System designing					
4	System implementation					
5	Operation testing					

1.9.2. Budget of the project

Table 1.2 budget of the project

NO	Material	Amount	Price per unit	Total price
1	A4 size paper	2 Destin	80Birr	160Birr
2	Pen	7	70Birr	140Birr
3	Flash disk	2	140Birr	280Birr
4	For print	100 sheet	2Birr	200Birr
5	TOSHIBACOMPUTER	1	12500Birr	12,500Birr

Total	13,280 Birr

1.9.2. Team Organization

The project team composed of 3 members. Decision on problem and approach are made by group agreement, which is much better than individual decision.

Table 1.3 Team organization

Name	Responsibility
FATUMA ABDELA	Gathering and Analyze requirements, Design the system and implementation
NIGIST KINFE	Gathering and Analyze requirements, Design the system and implementation
BELAYNH ZEWDU	Gathering and Analyze requirements, Design the system and implementation

CHAPTER TWO

2. DESCRIPTION OF EXISTING SYSTEM

2.1. Introduction

This chapter deals with analyzing the major function of the existing system, players in the existing system, business rules of the existing system, describes the existing system working process and problem of the existing system.

Currently insurance information management system in Ethiopian Insurance Corporation for wolkite branch use semi-computerized. In this system registration ,search and update customer information is done by operator officer works in the corporation .when he/she register or update customer information they should put their name and signature on it . The policy agreement is done by the operator who works in the part of the corporation. When operator registers customers there is pre conditional activities which is done by the operator who works in the corporation they prepare report for all its branches. The operator is responsible when some accident is occurring in any customer's property. And the casher is manage the payment activity of insured in the registration form in the first time. In other hand the manager of the corporation is responsible to view report and approve or deny insurance coverage to the customer.

2.2. Users of existing system

Players are anyone participates in the system. In the existing insurance information management system in EIC for wolkite branch there are different players namely manager, operation officer, finance officer, insured and casher. The players of the existing system are discussing below:

- ✓ **Manager: -** the person he or she manages the major activities of the organization like approve, disapprove and so on.
- ✓ **Operation officer: -** the person he or she manages the registration of new insured in the organization.
- ✓ **Finance officer: -** the person he or she manages payment activity at all. Like paying for insured, deploying in the insured.
- ✓ **Casher:-**the person he or she manage the payment activity of insured in the registration form in the first time.

- ✓ **Insured:-**the person he or she can have agreement for insurance in the organization.

2.2. Major Functions of the existing system

This institution perform many operations and the aim is giving guarantees for the insured of the organization. The functions performed in the organization are manage events occurred in the insured, renew information, and handle payment. The institution revises its policies regularly and produces new policies based on the country's current economic development and the demand of customers. The organization have seven employees this employees have its own responsibility and the institution provide insurance for objects insured value is less than or equals to one million birr. The major property and liability insurance services given by the institution are**,** fire and lighting insurance, vehicle (motor) insurance.

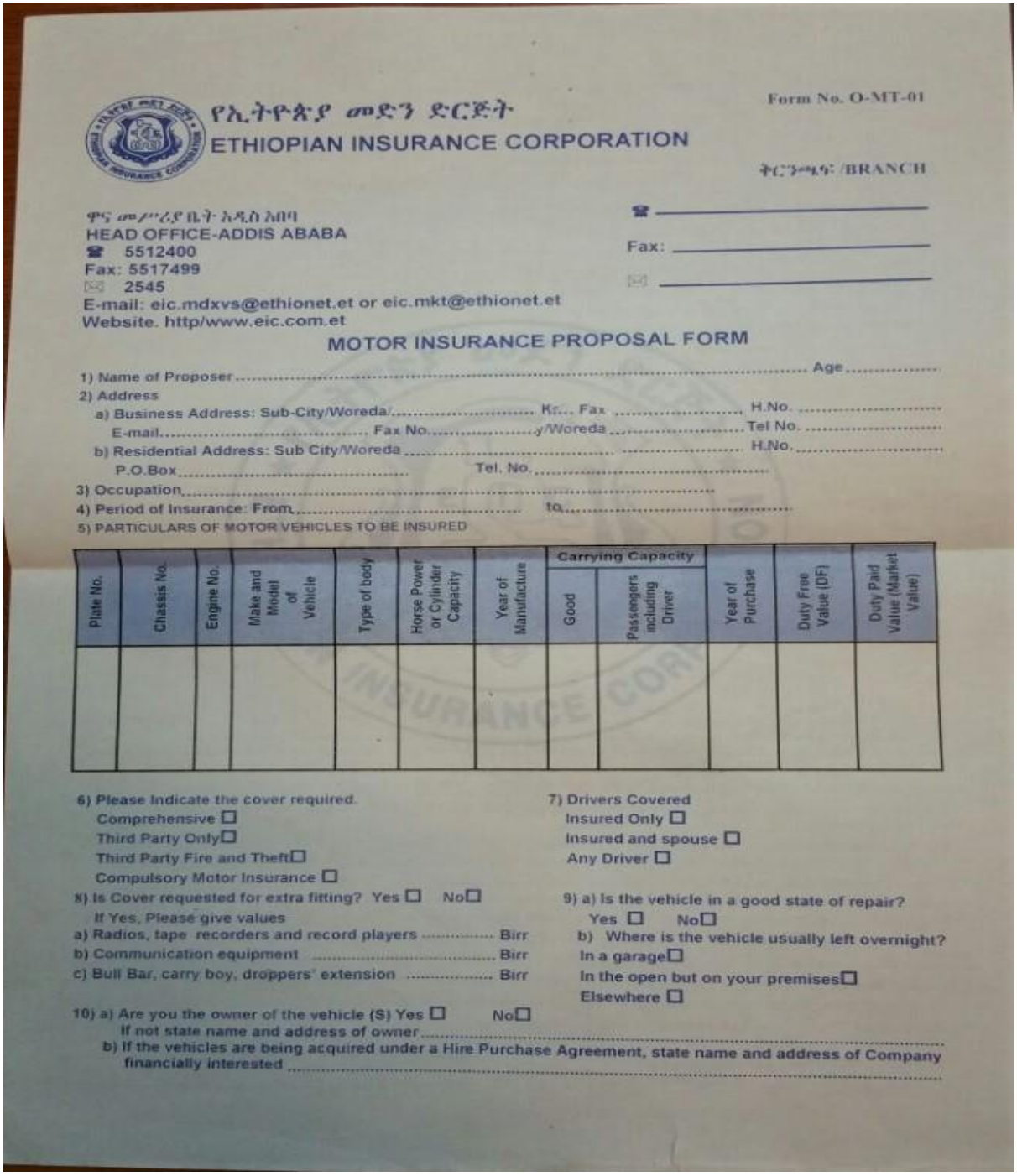
The major functions in the existing system are as the following: -

Register: operator fill all the information about the customer on the registration form and update the customer information manually.

Checking customer file:when the customer have an accident on his or her property then the operator checks whether the accident took place or not and also check whether his or her property has been insured or not. The casher prepare report get from documents.

2.4. Forms of the existing system

Figure 2.1 and 2.2 shows motor insurance proposal registration form. This enables the operation officer to fill the necessary information and register the newly coming motor. The necessary information included in this form are: - Name of the proposer, address, occupation, plate no, chassis no, engine no and so on. Finally the form will be submitted to manager.



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ETHIOPIAN INSURANCE CORPORATION

Form No. O-MT-01

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ዋና መሥሪያ ቤት አዲስ አበባ
HEAD OFFICE-ADDIS ABABA
☎ 5512400
Fax: 5517499
✉ 2545
E-mail: eic.mdxvs@ethionet.et or eic.mkt@ethionet.et
Website. http/www.eic.com.et

☎ _____
Fax: _____
✉ _____

MOTOR INSURANCE PROPOSAL FORM

1) Name of Proposer ..... Age .....
2) Address
a) Business Address: Sub-City/Woreda/..... Kr... Fax ..... H.No. .....
E-mail..... Fax No..... y/Woreda ..... Tel No. .....
b) Residential Address: Sub City/Woreda .... H.No. .....
P.O.Box..... Tel. No. .....
3) Occupation.....
4) Period of Insurance: From..... to.....
5) PARTICULARS OF MOTOR VEHICLES TO BE INSURED

Plate No.	Chassis No.	Engine No.	Make and Model of Vehicle	Type of body	Horse Power or Cylinder Capacity	Year of Manufacture	Carrying Capacity		Year of Purchase	Duty Free Value (DF)	Duty Paid Value (Market Value)
							Good	Passengers including Driver			

6) Please Indicate the cover required.
Comprehensive ☐
Third Party Only ☐
Third Party Fire and Theft ☐
Compulsory Motor Insurance ☐

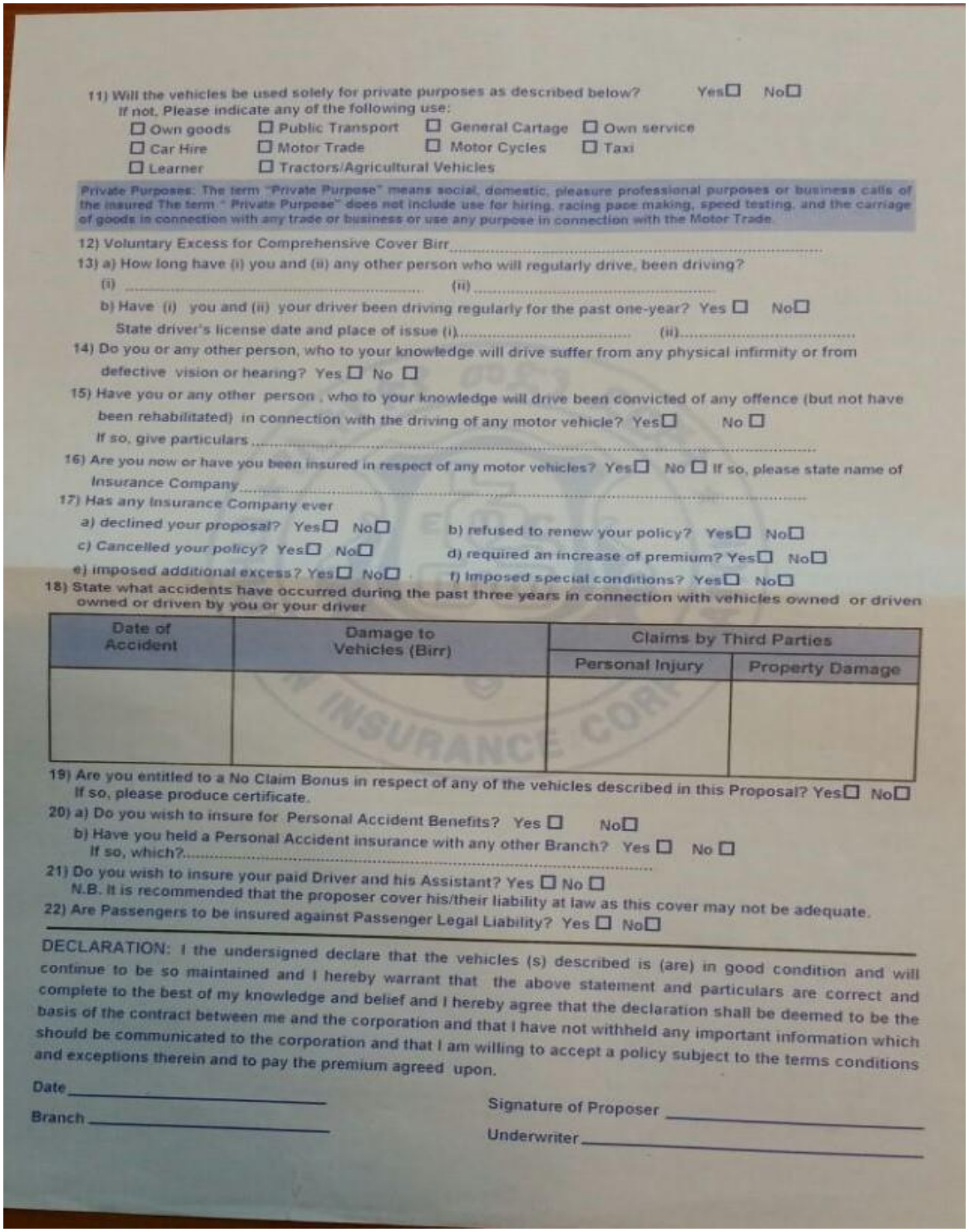
7) Drivers Covered
Insured Only ☐
Insured and spouse ☐
Any Driver ☐

8) Is Cover requested for extra fitting? Yes ☐ No ☐
If Yes, Please give values
a) Radios, tape recorders and record players ..... Birr
b) Communication equipment ..... Birr
c) Bull Bar, carry boy, droppers' extension ..... Birr

9) a) Is the vehicle in a good state of repair?
Yes ☐ No ☐
b) Where is the vehicle usually left overnight?
In a garage ☐
In the open but on your premises ☐
Elsewhere ☐

10) a) Are you the owner of the vehicle (S) Yes ☐ No ☐
If not state name and address of owner .....
b) If the vehicles are being acquired under a Hire Purchase Agreement, state name and address of Company financially interested .....

Figure 2. 1 Motor insurance proposal registration form of the existing system



11) Will the vehicles be used solely for private purposes as described below? Yes☐ No☐
If not, Please indicate any of the following use:
☐ Own goods ☐ Public Transport ☐ General Cartage ☐ Own service
☐ Car Hire ☐ Motor Trade ☐ Motor Cycles ☐ Taxi
☐ Learner ☐ Tractors/Agricultural Vehicles

Private Purposes: The term "Private Purpose" means social, domestic, pleasure professional purposes or business calls of the insured The term " Private Purpose" does not include use for hiring, racing pace making, speed testing, and the carriage of goods in connection with any trade or business or use any purpose in connection with the Motor Trade.

12) Voluntary Excess for Comprehensive Cover Birr.....

13) a) How long have (i) you and (ii) any other person who will regularly drive, been driving?
(i) ..... (ii) .....
b) Have (i) you and (ii) your driver been driving regularly for the past one-year? Yes ☐ No☐
State driver's license date and place of issue (i)..... (ii).....

14) Do you or any other person, who to your knowledge will drive suffer from any physical infirmity or from defective vision or hearing? Yes ☐ No ☐

15) Have you or any other person , who to your knowledge will drive been convicted of any offence (but not have been rehabilitated) in connection with the driving of any motor vehicle? Yes☐ No ☐
If so, give particulars .....

16) Are you now or have you been insured in respect of any motor vehicles? Yes☐ No ☐ If so, please state name of Insurance Company.....

17) Has any Insurance Company ever
a) declined your proposal? Yes☐ No☐ b) refused to renew your policy? Yes☐ No☐
c) Cancelled your policy? Yes☐ No☐ d) required an increase of premium? Yes☐ No☐
e) imposed additional excess? Yes☐ No☐ f) imposed special conditions? Yes☐ No☐

18) State what accidents have occurred during the past three years in connection with vehicles owned or driven owned or driven by you or your driver

Date of Accident	Damage to Vehicles (Birr)	Claims by Third Parties	
		Personal Injury	Property Damage

19) Are you entitled to a No Claim Bonus in respect of any of the vehicles described in this Proposal? Yes☐ No☐
If so, please produce certificate.

20) a) Do you wish to insure for Personal Accident Benefits? Yes ☐ No☐
b) Have you held a Personal Accident insurance with any other Branch? Yes ☐ No ☐
If so, which?.....

21) Do you wish to insure your paid Driver and his Assistant? Yes ☐ No ☐
N.B. It is recommended that the proposer cover his/their liability at law as this cover may not be adequate.

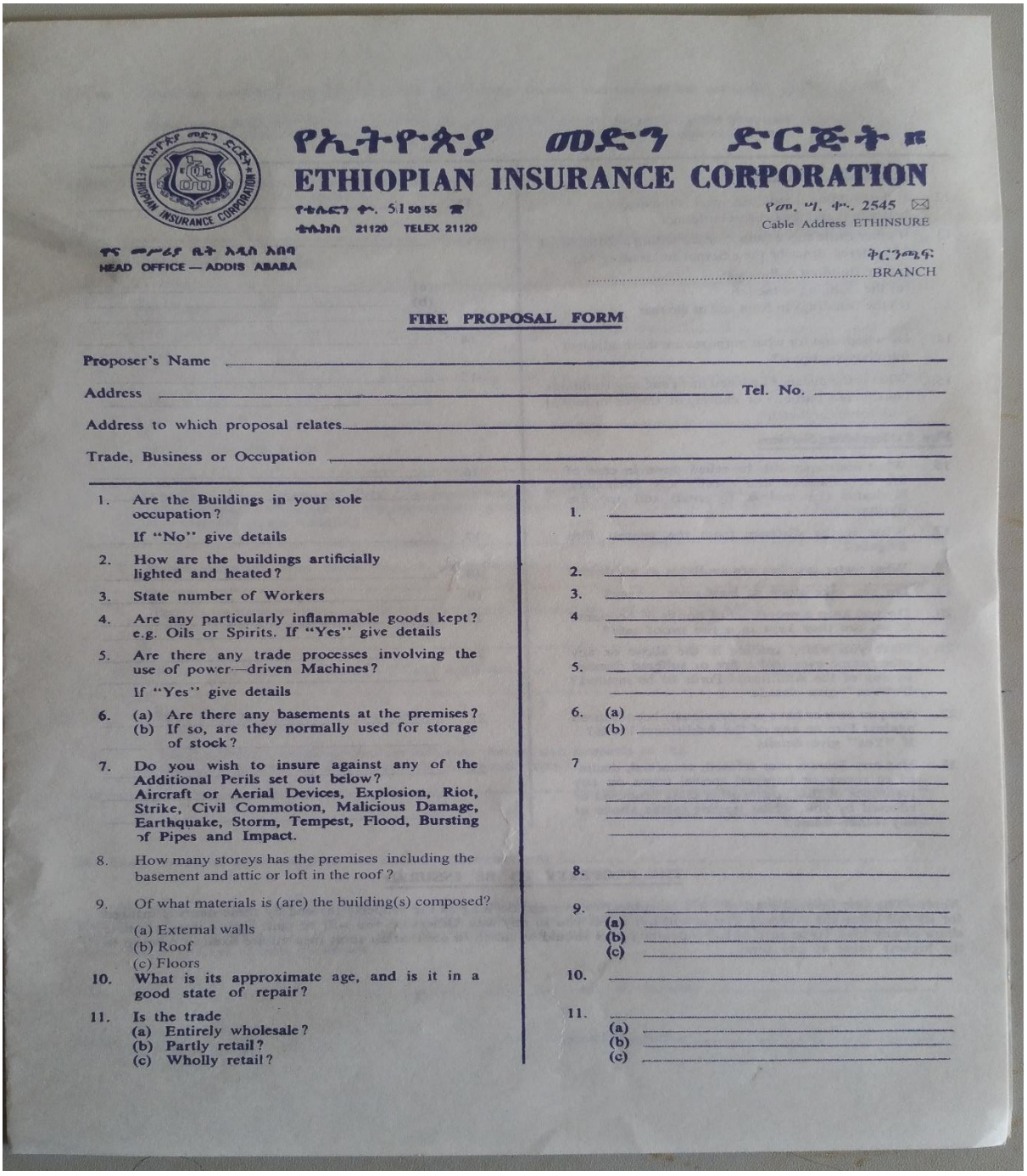
22) Are Passengers to be insured against Passenger Legal Liability? Yes ☐ No☐

DECLARATION: I the undersigned declare that the vehicles (s) described is (are) in good condition and will continue to be so maintained and I hereby warrant that the above statement and particulars are correct and complete to the best of my knowledge and belief and I hereby agree that the declaration shall be deemed to be the basis of the contract between me and the corporation and that I have not withheld any important information which should be communicated to the corporation and that I am willing to accept a policy subject to the terms conditions and exceptions therein and to pay the premium agreed upon.

Date _____ Signature of Proposer _____

Branch _____ Underwriter _____

Figure 2.2 Motor insurance proposal registration form of the existing system



የኢትዮጵያ መድን ድርጅት
ETHIOPIAN INSURANCE CORPORATION
የቴሌፎን ቁ. 51 50 55
ቴሌክስ 21120 TELEX 21120
የመ. ሣ. ቁ. 2545
Cable Address ETHINSURE
ዋና መሥሪያ ቤት አዲስ አበባ
HEAD OFFICE — ADDIS ABABA
ቅርንጫፍ
BRANCH

FIRE PROPOSAL FORM

Proposer's Name _____

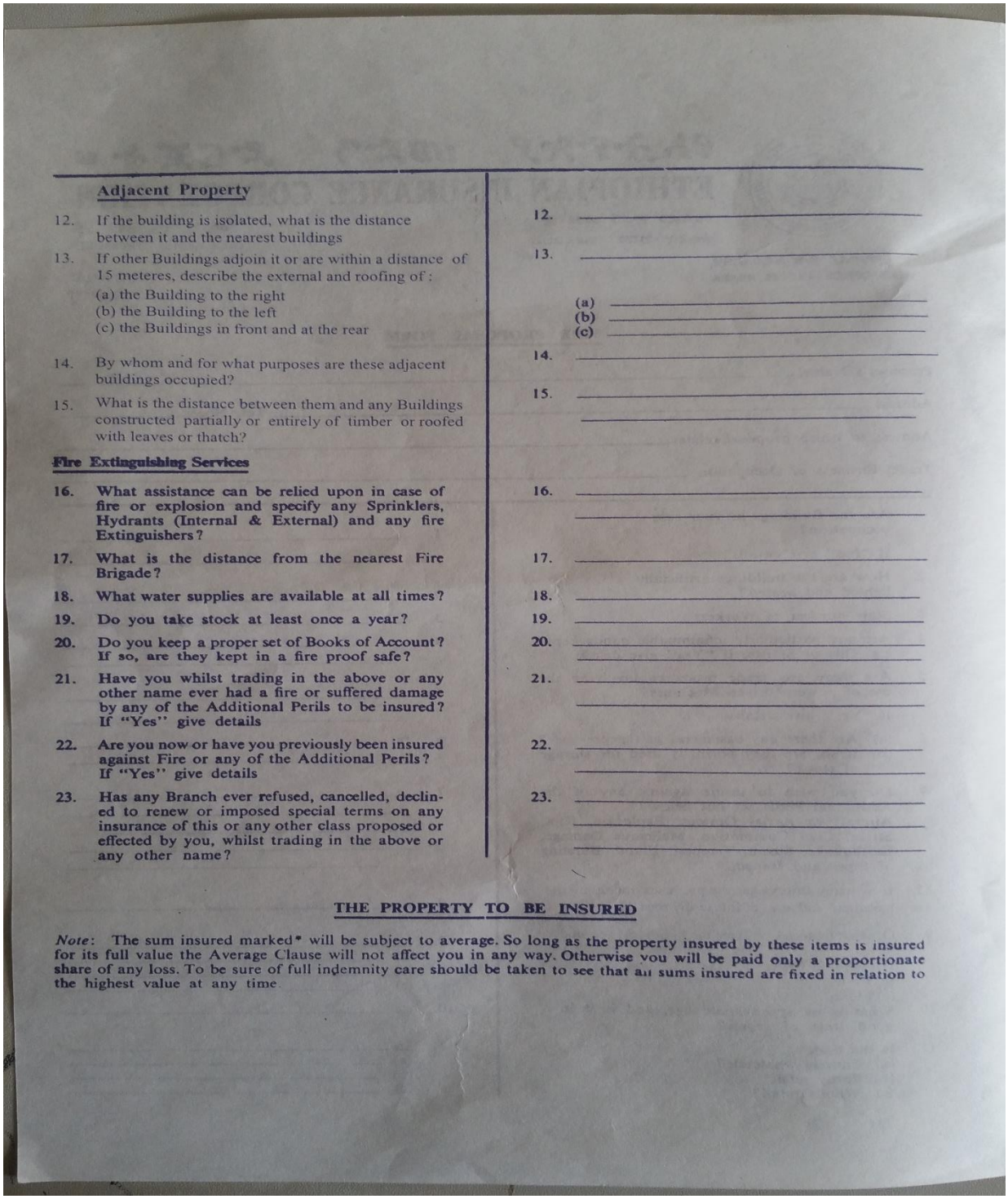
Address _____ Tel. No. _____

Address to which proposal relates _____

Trade, Business or Occupation _____

1. Are the Buildings in your sole occupation?	1. _____
If "No" give details	_____
2. How are the buildings artificially lighted and heated?	2. _____
3. State number of Workers	3. _____
4. Are any particularly inflammable goods kept? e.g. Oils or Spirits. If "Yes" give details	4 _____
5. Are there any trade processes involving the use of power—driven Machines?	5. _____
If "Yes" give details	_____
6. (a) Are there any basements at the premises? (b) If so, are they normally used for storage of stock?	6. (a) _____ (b) _____
7. Do you wish to insure against any of the Additional Perils set out below? Aircraft or Aerial Devices, Explosion, Riot, Strike, Civil Commotion, Malicious Damage, Earthquake, Storm, Tempest, Flood, Bursting of Pipes and Impact.	7 _____
8. How many storeys has the premises including the basement and attic or loft in the roof?	8. _____
9. Of what materials is (are) the building(s) composed? (a) External walls (b) Roof (c) Floors	9. _____ (a) _____ (b) _____ (c) _____
10. What is its approximate age, and is it in a good state of repair?	10. _____
11. Is the trade (a) Entirely wholesale? (b) Partly retail? (c) Wholly retail?	11. _____ (a) _____ (b) _____ (c) _____

Figure 2.3 Fire proposal registration form of the existing system



Adjacent Property

12. If the building is isolated, what is the distance between it and the nearest buildings — 12. _____

13. If other Buildings adjoin it or are within a distance of 15 meteres, describe the external and roofing of : — 13. _____

(a) the Building to the right — (a) _____
(b) the Building to the left — (b) _____
(c) the Buildings in front and at the rear — (c) _____

14. By whom and for what purposes are these adjacent buildings occupied? — 14. _____

15. What is the distance between them and any Buildings constructed partially or entirely of timber or roofed with leaves or thatch? — 15. _____

Fire Extinguishing Services

16. What assistance can be relied upon in case of fire or explosion and specify any Sprinklers, Hydrants (Internal & External) and any fire Extinguishers? — 16. _____

17. What is the distance from the nearest Fire Brigade? — 17. _____

18. What water supplies are available at all times? — 18. _____

19. Do you take stock at least once a year? — 19. _____

20. Do you keep a proper set of Books of Account? If so, are they kept in a fire proof safe? — 20. _____

21. Have you whilst trading in the above or any other name ever had a fire or suffered damage by any of the Additional Perils to be insured? If "Yes" give details — 21. _____

22. Are you now or have you previously been insured against Fire or any of the Additional Perils? If "Yes" give details — 22. _____

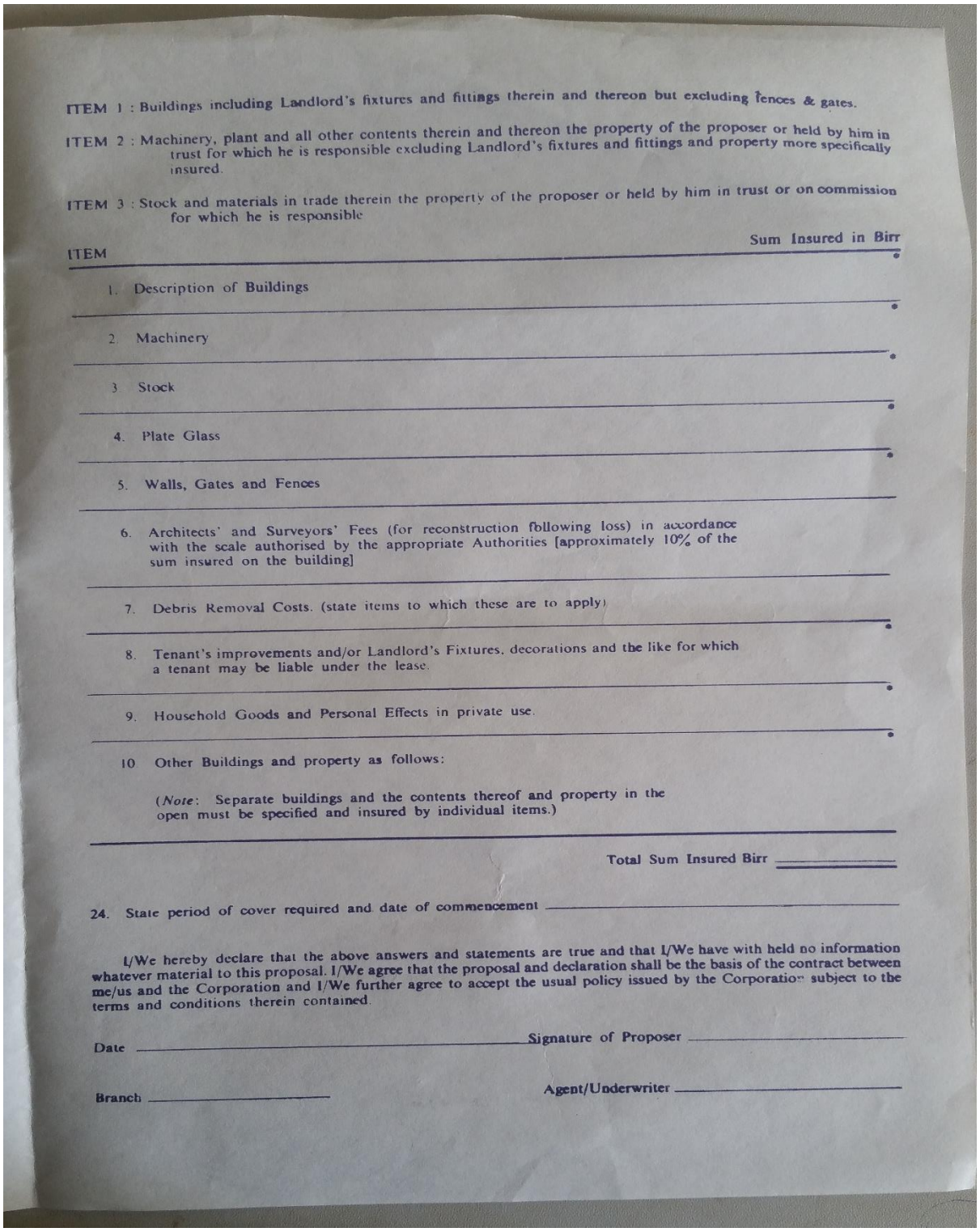
23. Has any Branch ever refused, cancelled, declined to renew or imposed special terms on any insurance of this or any other class proposed or effected by you, whilst trading in the above or any other name? — 23. _____

THE PROPERTY TO BE INSURED

Note: The sum insured marked* will be subject to average. So long as the property insured by these items is insured for its full value the Average Clause will not affect you in any way. Otherwise you will be paid only a proportionate share of any loss. To be sure of full indemnity care should be taken to see that all sums insured are fixed in relation to the highest value at any time.

Figure 2.4 Fire proposal registration form of the existing system

Figure 2.3 and 2.4 shows fire proposal registration form. Containing proposer's name, address of proposer and type of property to be insured. This form is filled by the operational officer and submitted to the manager.



ITEM 1 : Buildings including Landlord's fixtures and fittings therein and thereon but excluding fences & gates.

ITEM 2 : Machinery, plant and all other contents therein and thereon the property of the proposer or held by him in trust for which he is responsible excluding Landlord's fixtures and fittings and property more specifically insured.

ITEM 3 : Stock and materials in trade therein the property of the proposer or held by him in trust or on commission for which he is responsible

ITEM — Sum Insured in Birr

1. Description of Buildings
2. Machinery
3. Stock
4. Plate Glass
5. Walls, Gates and Fences
6. Architects' and Surveyors' Fees (for reconstruction following loss) in accordance with the scale authorised by the appropriate Authorities [approximately 10% of the sum insured on the building]
7. Debris Removal Costs. (state items to which these are to apply)
8. Tenant's improvements and/or Landlord's Fixtures, decorations and the like for which a tenant may be liable under the lease.
9. Household Goods and Personal Effects in private use.
10. Other Buildings and property as follows:

(*Note*: Separate buildings and the contents thereof and property in the open must be specified and insured by individual items.)

Total Sum Insured Birr _____

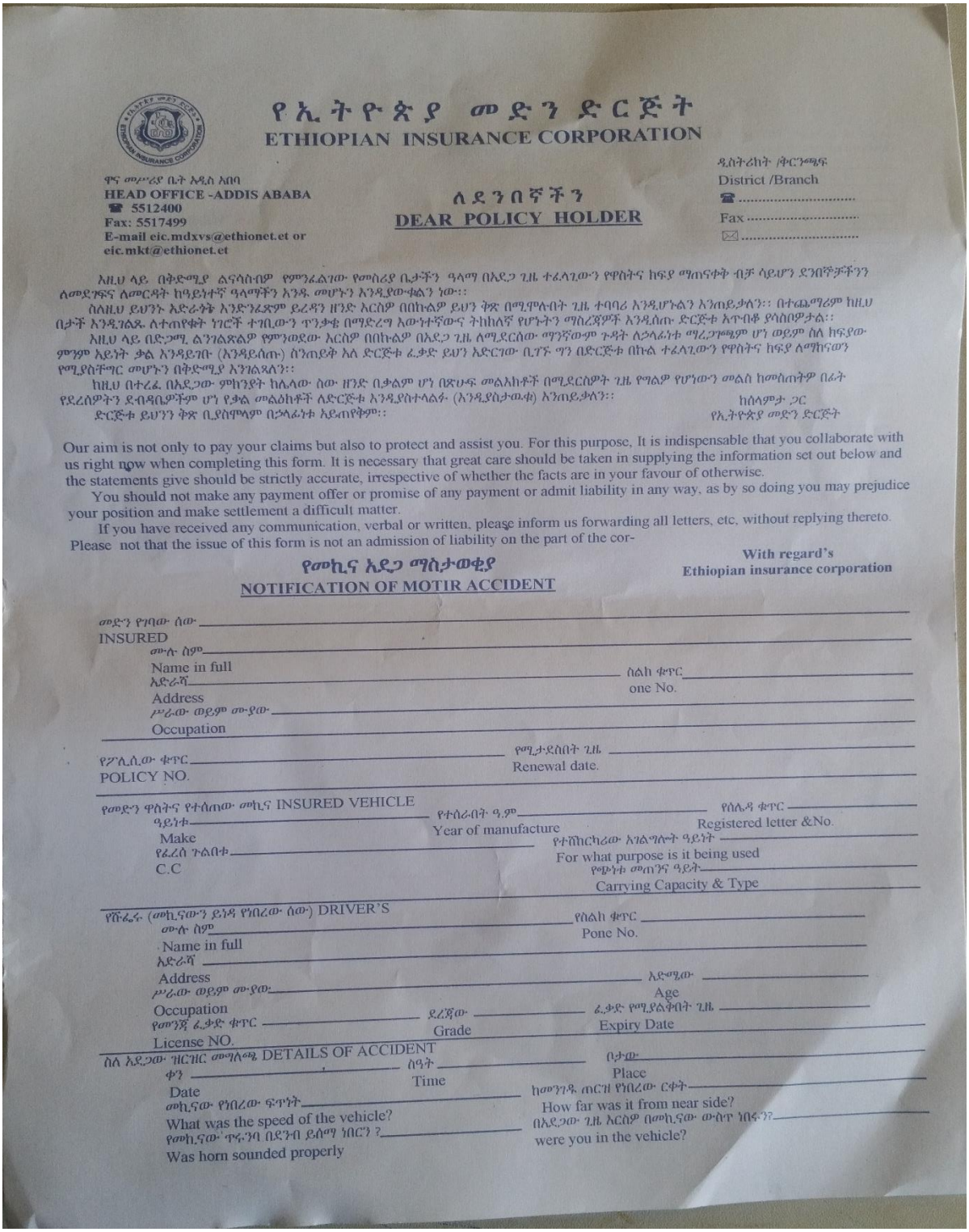
24. State period of cover required and date of commencement _____

I/We hereby declare that the above answers and statements are true and that I/We have with held no information whatever material to this proposal. I/We agree that the proposal and declaration shall be the basis of the contract between me/us and the Corporation and I/We further agree to accept the usual policy issued by the Corporation subject to the terms and conditions therein contained.

Date _____ Signature of Proposer _____

Branch _____ Agent/Underwriter _____

Figure 2.5 Fire proposal registration form of the existing system



የኢትዮጵያ መድን ድርጅት
ETHIOPIAN INSURANCE CORPORATION

ዋና መሥሪያ ቤት አዲስ አበባ
HEAD OFFICE -ADDIS ABABA
☎ 5512400
Fax: 5517499
E-mail eic.mdxvs@ethionet.et or
eic.mkt@ethionet.et

ለደንበኛችን
DEAR POLICY HOLDER

ዲስትሪክት /ቅርንጫፍ
District /Branch
☎.....
Fax.....
✉.....

አዚህ ላይ በቅድሚያ ልናሳስብዎ የምንፈልገው የመስሪያ ቤታችን ዓላማ በአደጋ ጊዜ ተፈላጊውን የዋስትና ክፍያ ማጠናቀቅ ብቻ ሳይሆን ደንበኞቻችንን ለመደገፍና ለመርዳት ከዓይነተኛ ዓላማችን አንዱ መሆኑን እንዲያውቁልን ነው።
ስለዚህ ይህንኑ አድራጎቱ እንድንፈጽም ይረዳን ዘንድ አርስዎ በበኩልዎ ይህን ቅጽ በሚሞሉበት ጊዜ ተባባሪ እንዲሆኑልን እንጠይቃለን። በተጨማሪም ከዚህ በታች እንዲገልጹ ለተጠየቁት ነገሮች ተገቢውን ጥንቃቄ በማድረግ እውነተኛውና ትክክለኛ የሆኑትን ማስረጃዎች እንዲሰጡ ድርጅቱ አጥብቆ ያሳስበዎታል።
አዚህ ላይ በድጋሚ ልንገልጽልዎ የምንወደው አርስዎ በበኩልዎ በአደጋ ጊዜ ለሚደርሰው ማንኛውም ጉዳት ለኃላፊነቱ ማረጋገጫም ሆነ ወይም ስለ ክፍያው ምንም አይነት ቃል እንዳይገቡ (እንዳይሰጡ) ስንጠይቅ አለ ድርጅቱ ፈቃድ ይህን አድርገው ቢገኙ ግን በድርጅቱ በኩል ተፈላጊውን የዋስትና ክፍያ ለማከናወን የሚያስችግር መሆኑን በቅድሚያ እንገልጻለን።
ከዚህ በተረፈ በአደጋው ምክንያት ከሌላው ሰው ዘንድ በቃልም ሆነ በጽሁፍ መልእክቶች በሚደርስዎት ጊዜ የግልም የሆነውን መልስ ከመስጠትዎ በፊት የደረሰዎትን ደብዳቤዎችም ሆነ የቃል መልዕክቶች ለድርጅቱ እንዲያስተላልፉ (እንዲያስታውቁ) እንጠይቃለን።
ድርጅቱ ይህንን ቅጽ ቢያስሞላም በኃላፊነቱ አይጠየቅም።

ከሰላምታ ጋር
የኢትዮጵያ መድን ድርጅት

Our aim is not only to pay your claims but also to protect and assist you. For this purpose, It is indispensable that you collaborate with us right now when completing this form. It is necessary that great care should be taken in supplying the information set out below and the statements give should be strictly accurate, irrespective of whether the facts are in your favour of otherwise.
You should not make any payment offer or promise of any payment or admit liability in any way, as by so doing you may prejudice your position and make settlement a difficult matter.
If you have received any communication, verbal or written, please inform us forwarding all letters, etc, without replying thereto.
Please not that the issue of this form is not an admission of liability on the part of the cor-

With regard's
Ethiopian insurance corporation

የመኪና አደጋ ማስታወቂያ
NOTIFICATION OF MOTIR ACCIDENT

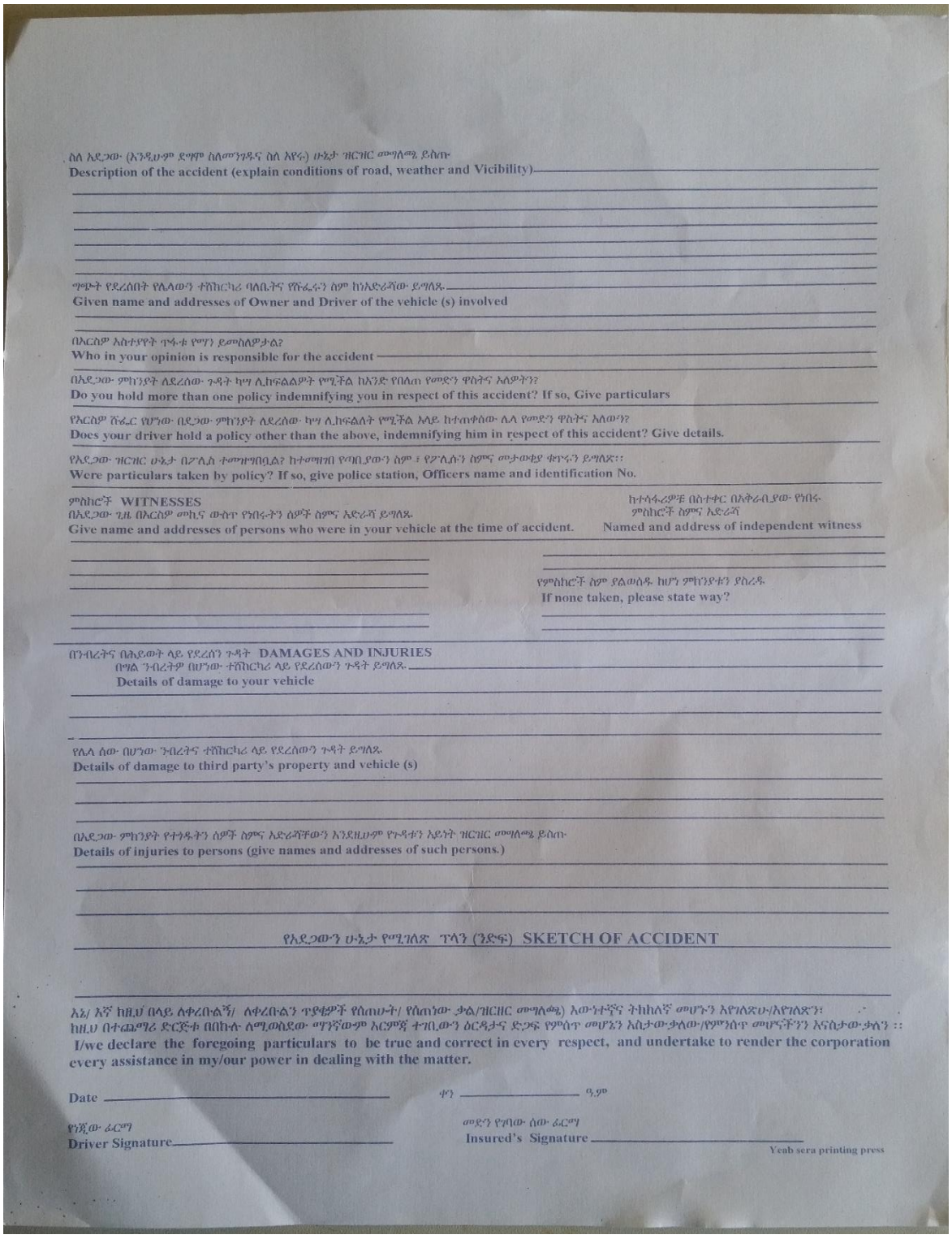
መድን የገባው ሰው
INSURED
ሙሉ ስም
Name in full
አድራሻ
Address
ሥራው ወይም ሙያው
Occupation
ስልክ ቁጥር
one No.
የፖሊሲው ቁጥር
POLICY NO.
የሚታደስበት ጊዜ
Renewal date.

የመድን ዋስትና የተሰጠው መኪና INSURED VEHICLE
ዓይነቱ
Make
የፈረስ ጉልበቱ
C.C
የተሰራበት ዓ.ም
Year of manufacture
የተሸከርካሪው አገልግሎት ዓይነት
For what purpose is it being used
የሰሌዳ ቁጥር
Registered letter &No.
የጭነቱ መጠንና ዓይነት
Carrying Capacity & Type

የሹፌሩ (መኪናውን ይነዳ የነበረው ሰው) DRIVER'S
ሙሉ ስም
Name in full
አድራሻ
Address
ሥራው ወይም ሙያው
Occupation
የስልክ ቁጥር
Pone No.
አድሜው
Age
የመንጃ ፈቃድ ቁጥር
License NO.
ደረጃው
Grade
ፈቃድ የሚያልቅበት ጊዜ
Expiry Date

ስለ አደጋው ዝርዝር መግለጫ DETAILS OF ACCIDENT
ቀን
Date
ሰዓት
Time
በታው
Place
መኪናው የነበረው ፍጥነት
What was the speed of the vehicle?
የመኪናው ጥሩንባ በደንብ ይሰማ ነበር?
Was horn sounded properly
ከመንገዱ ጠርዝ የነበረው ርቀት
How far was it from near side?
በአደጋው ጊዜ አርስዎ በመኪናው ውስጥ ነበሩ?
were you in the vehicle?

Figure 2.6 Notification of motor accident form of the existing system



ስለ አደጋው (እንዲሁም ደሞም ስለመንገዱና ስለ አየሩ) ሁኔታ ዝርዝር መግለጫ ይስጡ
Description of the accident (explain conditions of road, weather and Vicibility)

ግጭት የደረሰበት የሌላውን ተሽከርካሪ ባለቤትና የሹፌሩን ስም ከነአድራሻው ይግለጹ
Given name and addresses of Owner and Driver of the vehicle (s) involved

በአርስዎ አስተያየት ጥፋቱ የማን ይመስለዎታል?
Who in your opinion is responsible for the accident

በአደጋው ምክንያት ለደረሰው ጉዳት ካሣ ሊከፍልልዎት የሚችል ከአንድ የበለጠ የመድን ዋስትና አለዎትን?
Do you hold more than one policy indemnifying you in respect of this accident? If so, Give particulars

የአርስዎ ሹፌር የሆነው በደጋው ምክንያት ለደረሰው ካሣ ሊከፍልለት የሚችል አላይ ከተጠቀሰው ሌላ የመደን ዋስትና አለውን?
Does your driver hold a policy other than the above, indemnifying him in respect of this accident? Give details.

የአደጋው ዝርዝር ሁኔታ በፖሊስ ተመዝግቦቢል? ከተመዛገበ የጣቢያውን ስም ፣ የፖሊሱን ስምና መታውቂያ ቁጥሩን ይግለጽ::
Were particulars taken by policy? If so, give police station, Officers name and identification No.

ምስክሮች WITNESSES
በአደጋው ጊዜ በአርስዎ መኪና ውስጥ የነበሩትን ሰዎች ስምና አድራሻ ይግለጹ.
Give name and addresses of persons who were in your vehicle at the time of accident.

ከተሳፋሪዎቹ በስተቀር በአቅራቢያው የነበሩ ምስክሮች ስምና አድራሻ
Named and address of independent witness

የምስክሮች ስም ያልወሰዱ ከሆነ ምክንያቱን ይስረዱ
If none taken, please state way?

በንብረትና በሕይወት ላይ የደረሰን ጉዳት DAMAGES AND INJURIES
በሣል ንብረትዎ በሆነው ተሽከርካሪ ላይ የደረሰውን ጉዳት ይግለጹ.
Details of damage to your vehicle

የሌላ ሰው በሆነው ንብረትና ተሽከርካሪ ላይ የደረሰውን ጉዳት ይግለጹ.
Details of damage to third party's property and vehicle (s)

በአደጋው ምክንያት የተጎዱትን ሰዎች ስምና አድራሻቸውን እንደዚሁም የጉዳቱን አይነት ዝርዝር መግለጫ ይስጡ
Details of injuries to persons (give names and addresses of such persons.)

የአደጋውን ሁኔታ የሚገለጽ ፕላን (ንድፍ) SKETCH OF ACCIDENT

እኔ/ እኛ ከዚህ በላይ ለቀረቡልኝ/ ለቀረቡልን ጥያቄዎች የሰጠሁት/ የሰጠነው ቃል/ዝርዝር መግለጫ) እውነተኛና ትክክለኛ መሆኑን እየገለጽሁ/እየገለጽን፣ ከዚህ በተጨማሪ ድርጅቱ በበኩሉ ለሚወስደው ማንኛውም አርምጃ ተገቢውን ዕርዳታና ድጋፍ የምሰጥ መሆኔን አስታውቃለሁ/የምንሰጥ መሆናችንን እናስታውቃለን ::
I/we declare the foregoing particulars to be true and correct in every respect, and undertake to render the corporation every assistance in my/our power in dealing with the matter.

Date _____ ቀን _____ ዓ.ም

የነጂው ፊርማ
Driver Signature _____

መድን የገባው ሰው ፊርማ
Insured's Signature _____

Yeab sera printing press

Figure 2.7 Notification of motor accident form of the existing system

Figure 2.6 and 2.7 depicts notification of motor accident form. Containing full information of the accident occurred including insured, full information of insured vehicle, policy no and full information of the driver. Finally this form should be submitted to the manager.

2.5. Drawbacks of the Existing System

In this section we have discussed about the weakness, problems and limitation of the Existing system. The existing system have many problems. We classified the problem as follow.

2.5.1. Weakness of existing system

- Inputs
  - ✓ Data may not accurately captured if it contains errors.
  - ✓ The input data filled by the operator officer is not validated.
- Outputs
  - ✓ Sometimes incorrect output will be generated due to manual data entry.
  - ✓ The generated information may not have proper format.
  - ✓ Information is not timely to its subsequent use.
- Stored Data
  - ✓ Data is not flexible –not easy to meet new information needs from stored data.
  - ✓ Data is not accessible easily.
- Service
  - ✓ The existing system is not that easy and it is uncomfortable to use.
- Security and Controls
  - ✓ Data or information can be accessed by unauthorized people.
- Efficiency

  Performance (Response time): the response time is less.

2.5.2. Problem of the Existing system

As we mention in section 1.2 the current operation of EIC in wolkite branch was done through manually and some of the tasks was done through desktop application. Even if the company work with semi-computerized application it may face challenges. Some of the problem faced within the company are listed below

- ✓ Problem in accident request management because the insured cannot request an accident online.
- ✓ Large space required to store data because of insured data redundancy may be occur.
- ✓ It takes long time to search information from manual system.

2.5.3. Limitation in the existing system

- ✓ Since it is semi-computerized it doesn't send alert messages.
- ✓ It doesn't give request accident report in online.
- ✓ It uses desktop application but it works in offline.
- ✓ Although the advertisement is broadcasted on TV, all insured may not see the advertisement.

2.6. Business Rules

A business rule is effectively an operating principle or policy that your software must satisfy Business rules often focus on access control issue. The organization has its own business rules and regulation used to perform the work easily and efficiently.

BR1: New insured fill the registration form correctly and fill all the required information.

BR2: Insured must pay the required money when he/she come to finish the policy agreement.

BR3: Every insured should have insurance license.

BR4: The insured register its object like car, house and so on.

BR5: Insured pay the premium value of the object and insured not pay this not approved or not provide any service from the insurer until the premium value paid.

BR6: Insurer check accidents of insured and the insurer immediately check the accident and provide needed support to the insurer.

BR7: Insurer pay the value of object when accident is happen.

2.7. Alternative solution

As we justifies above that the existing system have many problems. So the alternative solution to reduce this problem replace the existing manual system or desktop application to web based system. This is the best solution that we set. Because the propose system will improve the efficiency of existing system by developing, central data base system, web based system, authentication based system and accessible system. This is the alternative solution that we take to improve the existing system.

CHAPTER THREE

3. PROPOSED SYSTEM

3.1. Introduction

The existing system has many problems. So the alternative solution to reduce this problem replace the existing manual system or desktop application to a web-based system. This is the best solution that we set. Because the proposed system will improve the efficiency of the existing system by developing, central database system, a web-based system, an authentication based system, and an accessible system. And also the proposed system is capable of provides high security of data, the capability of organizing all information in a single client-server system, easy way of recording and accessing items information by its well organized user-friendly interface. Generally, the proposed system will improve the performance of the existing system and reduce this problem, time wastage, bring data security, data inconsistency and reduces wastage of paper.

3.2. Functional requirements

Functional requirements drive the application architecture of a system. Functional requirements are the intended behaviors of the system. This behavior may be expressed as services, tasks or functions that the system is required to perform. The functional requirements that the proposed system Performs are the following.

- **The system shall allow the administrator to:**
  - Create account.
  - Update account.
  - Delete account.
  - View accident request.
  - Approve accident request.
  - View Report.
  - Add advertisement.
- **The system shall allow the operator officer to:**
  - Register new insured.
  - Update insured.
  - Delete insured.

- Register accident.
- Policy agreement.
- Check renew.
- View report.
- Post notice.
- Send messages.

❖ **The system shall allow casher to:-**

- Payment record.
- Update payment.
- Generate report.

❖ **The system shall allow insured to:-**

- Update account.
- Report accident.
- View notice.

3.3. Nonfunctional Requirements

The proposed system provides the following Non-functional requirements to describe the user-visible aspects of the system. Such as the following: -

3.3.1. User Interface and Human Factors

The interface of the proposed system is simple to understand, easy to use and user-friendly interface and users of the system easily use and perform their tasks. To design a better user interface we design buttons, checkboxes, menus, and others by using bootstrap framework.

3.3.2. Security Issues

Our system will be built with security methods. The user has to enter a user name and password to get into one of the services. Therefore the system assures that any invalid user is not allowed to access it. Also, the system is going to have a session that requires a user to log in again after a predefined period.

- ✓ The external security should be provided by given the login authentication.
- ✓ There should be proper security regarding the accessing of data by an unauthorized user.

- ✓ The system should provide databases' modification only for employers and system administrator after authorization procedures.

3.3.3. Performance Consideration

1. **Response Time-** Upon request for user inquiry the system under normal condition should display results as quickly as possible.

2. **Processing Time-** Since the system is developing with efficient programming language and database upon request for user's Activities the system under normal condition should `process the request as quickly as possible by using multi-tier architectures.

3. **Concurrent -** Processing the system can support multiple users at a time.

Efficiency:

- ✓ The system gives appropriate output based on the expected lists of inputs.
- ✓ The system must ensure allocation and use of services being requested for the users by using minimum memory storage, cost, time and human power.

Accuracy:

- ✓ Proposed system will be better due to reduction of error. All operation can be done correctly and it ensures that whatever information is coming from the data base is accurate.

3.3.4. Error handling and validation

Our system will face different interactions from different users. Therefore; each interaction may bring an invalid input to the system. These invalid inputs may crash the system. Our system will be implemented to capture any invalid data with the Error Handling Mechanism. Therefore; any invalid data will be thrown and notified to the user as soon as possible.

- ✓ Enable the user to confirm that details are correct before creation, deletion or modification occurs.
- ✓ Respond to error inputs by asking the user to reenter data in the correct format.

The system should display an error message if the user inputs an invalid character.

This all will be done by using JavaScript which supports declaration of a function and we will use that function to validate the user input strongly.

3.3.5. Quality issues

Reliability

The system should be reliable in retrieving and displaying only the requested data for the user. Users can rely on the information get would be true and dependable.

Availability

The availability of the system will be ensured by the tolerance of error and by including all information's in the system and using java script as control of faults.

The system should available full of data and interface before and after the user login to the system. The system tolerates some faults like username and other inputs, and it gives related feedbacks for the error encountered like" enter correct user name or password".

Usability

- ✓ The system shall provide a uniform look and feel between all the web pages.
- ✓ The system shall provide the use of icons and toolbars.
- ✓ The interface should contain prompts and help to avoid making mistakes
- ✓ The product should be used by people with no training

Portability:

- ✓ To install the proposed system, no change need to be made on the current infrastructure, the system will suit most infrastructures automatically. The system will run on a number of major operating system and architectures, including Windows and Linux.
- ✓ The system must be designed for plate form independent i.e. the system is compatible with all operating system like Linux Windows, Macintosh.
- ✓ The system supports mobile platforms like smart phones and tablets.

3.3.6. Backup and Recovery

This is used to prevent data losing in case if the database got failure.by having a copy of the database on local disk of the computer we can prevent our customers' data from loose.

3.3.7. Physical environment

The system deploys in a server computer that supports the 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.

3.3.8. Resource issue

The system consumes resources that required high processor speed and memory for both server and client.

3.3.9. Documentation

The new system provides required full documentation that is system and user documentation. 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

4.1. System model

Analysis model contain three models: functional, object and dynamic model. The functional model can be described by use case diagrams. Class diagrams describes the object model [3]. Dynamic model can also be described in terms of sequence [4], state chart and activity diagrams.

4.1.1. Use case model

Actor specification

In our system we have the following actors.

Actor lists:

- ✓ Administrator.
- ✓ Operation officer.
- ✓ Casher.
- ✓ Insured.

4.1.1.1. Use case diagram

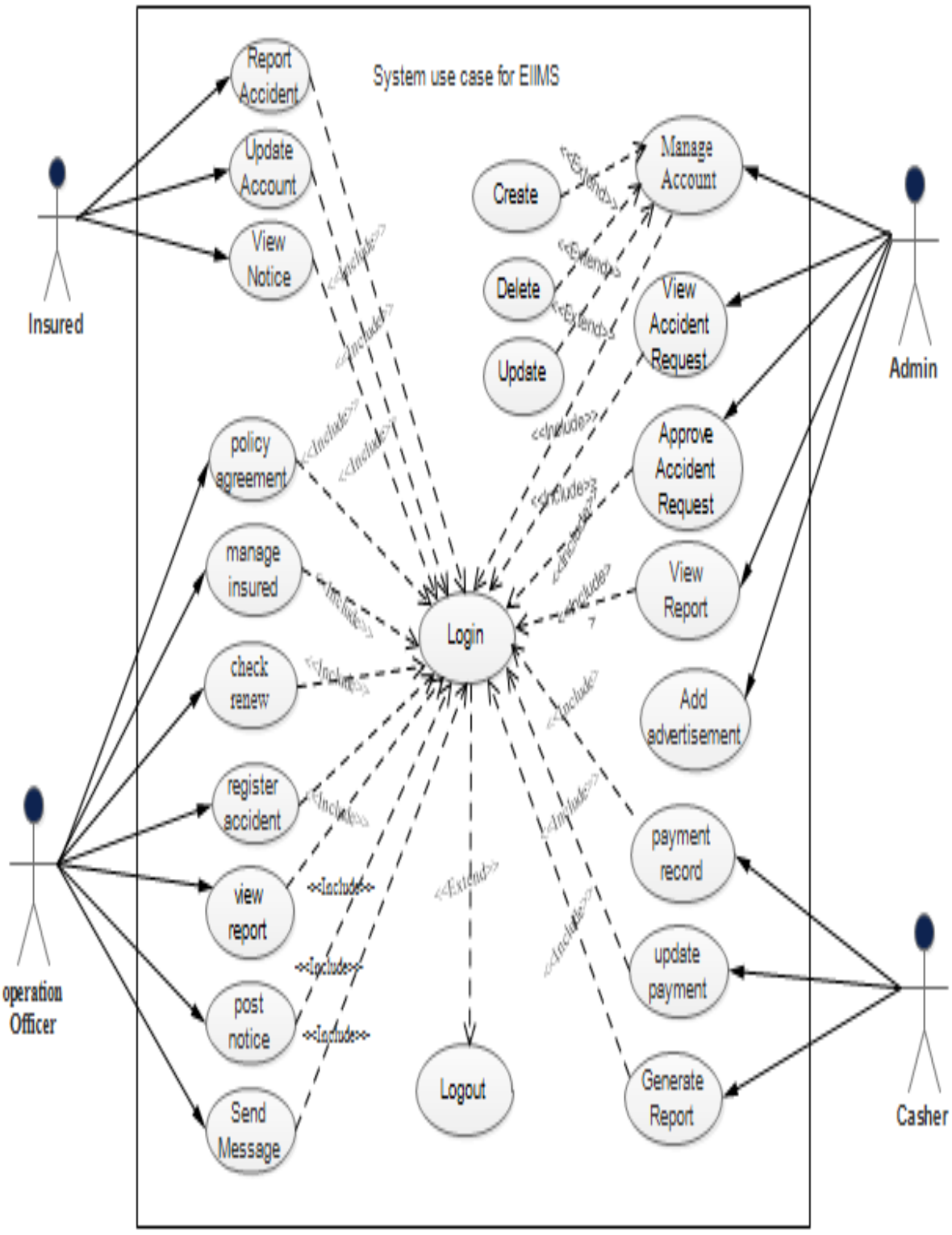


Figure 4.1 Use case diagram

4.1.1.2. Use case description

Table 4.1 Use Case Description for Login

Use Case Id	UC 01	
Use case name	Login	
Description	It allows all the users to use and interact with the system.	
Actor(s)	Administrator, Operation Office, Casher and Insured.	
Pre-condition	All users must have valid username and password in the system	
Basic Course of Action	Actor Action	System response
	Step1. The user launches the system. Step 3. The user enters their username and password. Step 5. The user logs in to his/her specified page.	Step 2. The system displays home page including login page for all users of the system. Step 4. The system checks the validity of their user name and password. Step 6. use case end
Alternative course action	If user name and password are incorrect A.1 The system display invalid user name and password. A.2 The user back to step 3 of basic course of action.	
Post condition	The login success and go to user specified page.	

Table 4 2 Use Case Description Manage account

Use Case Id	UC 02	
Use case name	Manage account	
Description	The system administrator must login to control the account of users.	
Actor(s)	Admin	
Pre-condition	This activity is performed when the admin wants to manage the account	
Basic Course of Action	Actor Action	System response

	Step1. Admin enters user name and password. Step 3. Admin select manage account page: - 1. Create account. 2. Update account. 3. Delete account. If create account Step6. Admin enter user account information. If update account Step10. Admin enters user account information to be update. If to delete the account Step13. Admin enters user account information to be deleted	Step 2. The system checks the authentication of user name and password. Step4. The system displays admin page. Step5. The system display creates account page. Step7. The system checks created user account information. Step8. The system creates a user account Step9. The system displays update account page. Step11. The system checks update user account information. Step12. The system displays deletes account page. Step14. The system check deleted user account information.
Alternative course action	If invalid entry. A.1 the system displays an error message. A.2 go to step 6 to fill again.	
Post condition	The system admin successfully creates, update and delete the account.	

Table 4.3 Use Case Description for Approve Accident request

Use Case ID	UC03
Use case Name	Approve Accident Request
Description	The admin want to approve registered accident by the insured.
Actor(s)	Administrator.
Pre-condition	The system admin must login to the system.

Basic course of action	Actor action	System response
	Step1: The system admin login to his/her page. Step3: The system admin clicks accident request list link. Step5: The system admin select and clicks approve button.	Step2: The system displays his/her page. Step4: The system displays all accident request list. Step6: The system approves the selected request. Step7: Use case ends.
Alternative course action	If accident request is empty in the list or in the database. A.1 The system displays error message not accident in the database. A.2 The system admin go to step3 and try again.	
Post condition	The requested Accident is successfully approved by using the system.	

Table 4.4 Use Case Description for View accident request

Use case Id	UC04	
Use case name	View Accident request	
Description	Administrator can view accident occurred in different time as needed	
Actor	Administrator.	
Pre-condition	The system admin must login to the system.	
Basic course of action	Actor Action	System response
	Step1. The administrator login to the system. Step3. The system admin Clicks view accident request link.	Step2. The system displays the admin page. Step4. The system displays all accidents Step5. use case end
Alternative course action	If there are no accidents in the database. A.1 The system displays error message no accidents in the database. A.2 then go to step3 and try again.	
Post condition	The Administrator view the accident on time.	

Table 4.5 Use Case Description for View report

Use Case ID	UC05	
Use case Name	View Report	
Description	Administrator and Operator officer can view the detailed information of the insurance.	
Actor(s)	Administrator and Operator officer	
Pre-condition	They must login to the system	
Basic course of action	Actor action	System response
	Step 1. The operator officer and the administrator login to the system. Step 3. The operator officer and the administrator start to view the reports.	Step 2: The system displays the form to select and enter criteria Step4: the user views the available reports. Step 5. Use case end.
Alternative course action	If the input value is incorrect A.1 the system displays error message that the input value is incorrect. A.2 the operator officer and the administrator back to step 3 of basic course of action.	
Post condition	Report view successfully.	

Table 4.6 Use Case Description for Register Insured

Use Case Id	UC 06	
Use case name	Register Insured	
Description	The insured register his/her information to become member of the institution (insurer) to get service.	
Actor(s)	Operation officer.	
Pre-condition	The operation officer must login to the system.	
Basic Course of Action	Actor Action	System response

	Step 1. The operation officer clicks the register link. Step 3. The operation officer fills the form and clicks submit button.	Step 2. The system displays the registration page. Step 4. The system validates the form Input. Step 5. The system stores the information and display successful message. Step 7. use case end
Alternative course action	If the form in puts are incorrect A.1 the system displays error message incorrect input. A.2 The operation officer back to step 3 of basic course of action.	
Post condition	The employee is registered successfully.	

Table 4.7 Use Case Description for Update Insured

Use case Id	UC07	
Use case name	Update Insured	
Description	Allow the operation officers to update the information of insured.	
Actor(s)	Operation officer.	
Pre-condition	The operation officer must login to the system.	
Basic course of action	Actor Action	System response
	Step1. The operation officer login to the system. Step 3. Operation officer click on update Insured link. Step 5. Search the update information using ID Step7. Fill the update data and click submit button.	Step 2. The system displays operation officer page. step4. the system displays update form Step 6 the system displays the specified information Step 8. The system store update information to the data base. step 9.usecase end
Alternative course	If the update information is not found	

action	A.1 The system display error message A.2 The operation officer back to step 5 of basic course of action.
Post condition	The information is updated.

Table 4.8 Use Case Description for Delete Insured

Use Case Id	UC08	
Use Case Name	Delete Insured	
Description	It Allows operation officer delete insured if the insurance is finished.	
Actor(s)	operation officer	
Pre-condition	The operation officer must login to the system.	
Basic course of action:	Actor action	System response
	Step1. The operation officer login to the system. Step3. The operation officer clicks the delete Insured link. Step5.the operation officer fills the delete form	Step2.The system displays the operation officer page. Step4.The system displays delete form Step6.The system deleted the insured from database. Step7. The system displays confirm message. Step8. The use case ends
Alternative course action	If the selected insured is not available. A.1. The system displays error message. A.2. Go to step5 to select the insured again.	
Post condition	The insured is deleted from the database and not member of insurance	

Table 4. 9 Use Case Description for Register accident

Use Case ID	UC09
Use case Name	Register Accident
Description	The operation officer want to register new accident.
Actor(s)	Operation Officer

Pre-condition	The operation officer must login to the system	
Basic course of action	Actor action	System response
	Step1. The user login to the system. Step3. The user clicks register new accident link. Step5. The user fills the form and clicks save button.	Step2. The system displays operation officer page. Step4. The system displays register accident form. Step6. The system checks the validity of the input. Step7. The system saves the data in to database. Step8. Use case ends.
Alternative course action	If the user fills incorrect input for the form. A.1 The system displays error message like invalid data. A.2 Then go to step5 and try again.	
Post condition	The user successfully register new accident by using the system.	

Table 4.10 Use Case Description for Policy Agreement

Use Case ID	UC10	
Use case Name	Policy Agreement	
Description	This use case provides the operator officer to register insured update, Delete, and search.	
Actor(s)	Operator officer	
Pre-condition	The operator officer must be login to the system.	
Basic course of action	Actor action	System response
	Step 1. The operator officer login to system. Step 3. Select create policy form from the policy agreement Step 4. The operator fills policy criteria and register.	Step 2. The system displays the policy agreement form. Step5. The system verifies the form and save to database. Step 6. Use case end.

Alternative course action	If the input value is incorrect A.1 the system displays error message that the input value is incorrect. A.2 the operator officer back to step 3 of basic course of action.
Post condition	Policy agreement successfully done.

Table 4.11 Use Case Description for Check Renew

Use Case ID	UC11	
Use case Name	Check Renew	
Description	It allows the operation to check the information of customers.	
Actor(s)	Operation Officer	
Pre-condition	The Operation officer must login to the system.	
Basic course of action	Actor action	System response
	Step 1. The Operation officer login to system Step 3 Then click on check renew link Step 5. Operation officer start to check the information.	Step 2. The system displays the operation office page. Step 4. The system displays the insured information. Step 6. use case end
Alternative course action	If the renewed input data is not correct. A.1 The system informs the operation officer to reenter the correct data. A.2 Operation officer back step 6 of basic course of action.	
Post condition	Return to home page or Close the system.	

Table 4.12 Use Case Description for Post Notice

Use Case ID	UC12
Use case Name	Post Notice
Description	Post notifications for the insured to provide information from the insurer.
Actor(s)	Operation officer

Pre-condition	The operation officer must login to the system.	
Basic course of action	Actor action	System response
	Step 1. The operation officer login to the system. Step 3. The Operation officer click post link. Step 5 the Operation officer fills the form	Step 2. The system displays operation office page. Step 4. The system displays notice page. Step 6. The system checks the validity of notice Step 7.Use case end
Alternative course action	If the operation input data is not correct.	
Post condition	Post is success.	

Table 4.13 Use Case Description for send message

Use Case Id	UC13	
Use case Name	Send Message	
Description	The insurance marketer giving message to the operator in order to renew customers insurance.	
Actor(s)	Operation officer	
Pre-condition	The operator must log in to the system.	
Basic course of action	Actor Action	System response
	Step1: Marketer log to his page. Step2: Click the message form. Step4: The marketer fills the message Step5: Click send button	Step3: The system display message page lays the customer information. Step6: Display successful message Step7: Use case end.
Alternative course action	If user fills wrong/ incorrect information A.1 Go to step 4 and try again.	
Post condition	The messages successfully send.	

Table 4.14 Use Case Description for Report Accident

Use Case ID	UC 14	
Use case Name	Report Accident	
Description	The insured can report the accident after the accident is takes place on his/her Owen insurance type object occurs.	
Actor(s)	Insured	
Pre-condition	The insured must login to the system.	
Basic course of action	Actor action	System response
	Step1. The insured login to the system Step3.the insured Click the report accident link. Step 5. The insured fill the form and submit.	Step 2. The system displays the insured page Step 4. The system displays the form Step 6. The system saves to the database and display the successful message Step 7.use case end
Post condition	The report is generated.	

Table 4.15 Use Case Description for view notice

Use Case Id	UC15	
Use Case Name	View Notice	
Description	The insured person want to see news in the system	
Actor(s)	Insured.	
Pre-condition	The insured person must be member of the institution and log in to the system.	
Basic course of action	Actor action	System response
	Step1: The user log in to the system. Step3: The user clicks views notice link. Step5: The user select and clicks the one he wants.	Step2: The system displays insured page. Step4: The system displays all listed notices. Step6: The system displays the selected notice.

		Step7: use case ends.
Alternative course action	If there is no notice posted in the system A.1 The system displays an error message there is no notice in the system. A.2 The user go to step3 and try again.	
Post condition	The user successfully view notice by using the system.	

Table 4.16 Use Case Description for Payment Record

Use Case Id	UC16	
Use Case Name	Payment Record	
Description	The casher want to payment record rule in the institution.	
Actor(s)	Casher.	
Pre-condition	The casher must login to the system.	
Basic course of action:	Actor action	System response
	Step 1. Casher login to the system. Step 3. The casher clicks pay link step.5 Casher fill the form	Step 2. The system displays casher page. Step 4 The system display pay form Step 6. The system verifies the form Step 7.The system add the information in to database. Step 8:Use case end
Alternative course action	If payment form input is incorrect A.1 The system informs the casher to reenter the input form. A.2 The casher back step 5 of basic course of action.	
Post condition	The payment is success and the insured is approved.	

Table 4.17 Use Case Description for update payment

Use Case Id	UC17	
Use Case Name	Update Payment	
Description	The casher want to update payment rule in the institution.	
Actor(s)	Casher.	
Pre-condition	The casher must login to the system.	
Basic course of action	Actor Action	System response
	Step1. The casher login to the system. Step3. The casher clicks update payment link. Step5. The casher updates the payment and clicks save button.	Step2. The system displays casher page. Step4. The system displays payment form. Step6. The system checks the updated form and updates the payment and stored in to database. Step7. Use case ends.
Alternative course action	If the updated data will be incorrect. A.1 The system displays error message then go to step5 and try again.	
Post condition	The users successfully update the payment using the system.	

Table 4.18 Use Case Description for Generate Report

Use Case ID	UC18	
Use case name	Generate Report	
Description	Generating of report for the administrator how many insured are pay their premium value.	
Actor(s)	Casher.	
Pre-condition	Request report from the administrator.	
Basic course of action	Actor action	System response

	Step 1. The casher and insured login to the system Step 3. The casher and insured clicks generate report link. Step 5. Fill the form and click submit	Step 2. The system displays their page Step 4. The system displays the form Step 6. Display successful message Step 7. End of use case.
Alternative course action	If the casher fill incorrect data. A.1 The system displays error message then go to step5 and try again.	
Post condition	Report is generated successfully.	

4.1.1.3. Use case scenario

1. Login scenario.

Scenario Name: - Login.

Participating Actor: - Habtamu.

Flow of Event: -

- ✓ Habtamu first open the system.
- ✓ System display the home page that contain the login link.
- ✓ Habtamu click the login link.
- ✓ The system displays the login form.
- ✓ Habtamu enter username and password then click on login button.
- ✓ The system checks the validity of the user name and password.
- ✓ The system displays the required page.

2. Manage Account scenario

Scenario Name: - Manage Account.

Participating Actor: - Ali.

Flow of Events: -

- ✓ Ali first opens his page from the system.
- ✓ The system display his page for provided activities for the admin.
- ✓ Ali selects one of the activities.

- ✓ The system displays his (create, update and delete) page based on the administrator's selection.
- ✓ Ali performs his tasks (create, update and delete).

3. Generate report scenario

When the user of the system wants to generate report.

Scenario Name: -Generate report

Participating Actor: - Barakat.

Flow of event: -

- ✓ Barakat first open the system.
- ✓ The system displays home page.
- ✓ Barakat click login link and enter in to his page.
- ✓ Barakat select and clicks on the "generate report" link on the page.
- ✓ Then the system loads the report generate form then fills the information and click the generate button.
- ✓ The report generated successfully.

4. Report accident scenario

When the user of the system wants to report accident.

Scenario Name: -Report accident.

Participating Actor: - Abdu.

Flow of event: -

- ✓ Abdu first open the system.
- ✓ The system displays home page.
- ✓ Abdu click login link and enter in to his page.
- ✓ Abdu select and click on the "report accident" link on the page.
- ✓ Then the system loads the report accident form then fills the information and click the generate button.
- ✓ The report accident successfully.

4.2. Object model

4.2.1. Class diagram

A class diagram is a type of static structure diagram.it represent the static view of an application, it describes the attribute and operations of a class and constraints imposed on the system. The class diagrams are widely used on the modeling of object oriented system because they are UML.

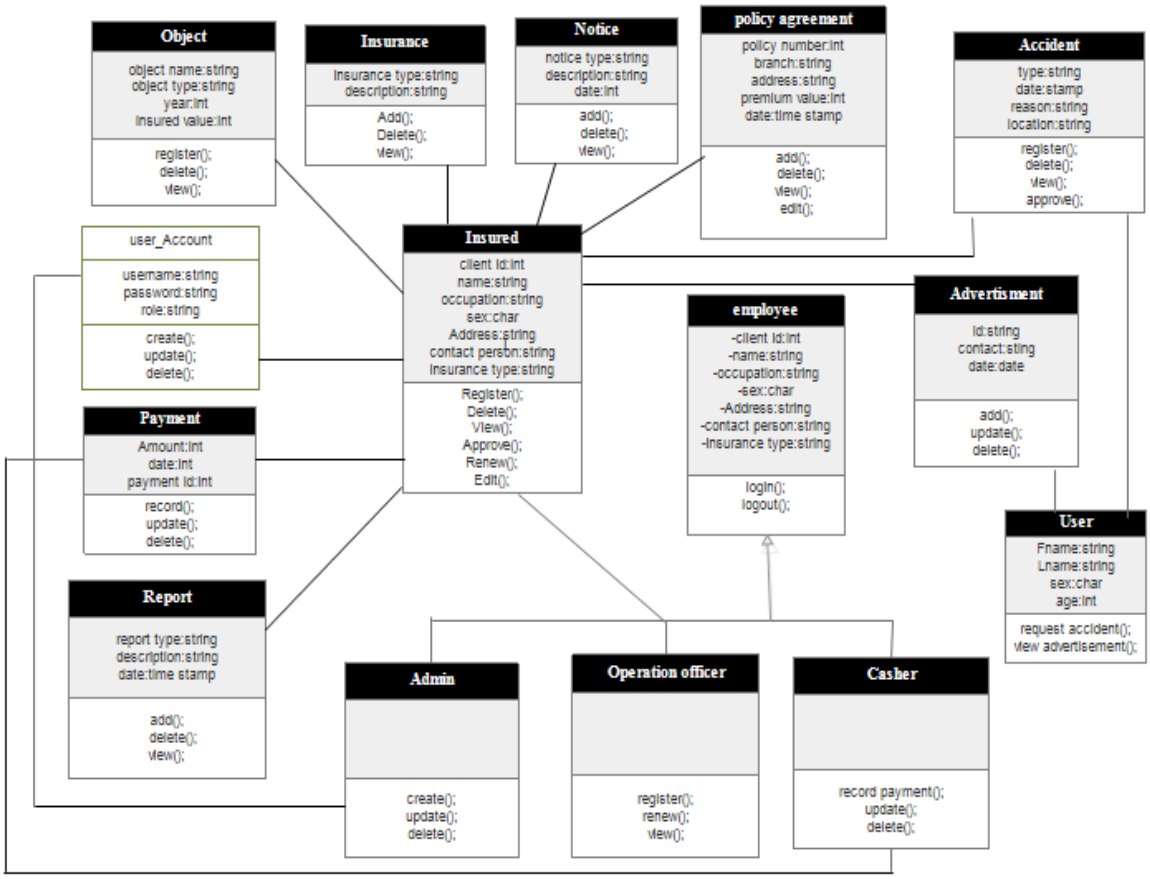


Figure 4. 2 class diagram

4.2.2. Data Dictionary

Table 4.19 Data dictionary Table for account

Key constraints	Field Name	Data Type	Field size
Primary key	Password	String	15
Not null	User name	String	15
Not null	Role	String	15

Table 4.20 Data dictionary Table for insurance

Key constraints	Field Name	Data Type	Field size
Primary key	ID	Long	15
Not null	contact	string	15
Not null	Date	Date	10

Table 4.21 Data dictionary Table for Insured

Key constraints	Field Name	Data Type	Field size
Primary key	ID	Long	15
Not null	fname	String	30
Not null	lname	String	30
Not null	Sex	Character	5
Not null	Contact person	Number	30
Not null	Country	String	15
Not null	Region	String	15
Not null	Zone	String	15
Not null	City	String	15
Not null	Kebele	String	15
Not null	phone number	Varchar	13
Not null	Insurance type	String	15

Table 4.22 Data dictionary Table for object

Key constraints	Field Name	Data Type	Field size
Primary key	Object ID	Long	15
Not null	Object name	String	15
Not null	Object type	String	15
Not null	Insured value	String	15

Not null	year	Date	15

Table 4.23 Data dictionary Table for Accident

Key constraints	**Field Name**	**Data Type**	**Field size**
Primary key	Accident ID	Long	15
Not null	Type	String	15
Not null	Reason	String	30
Not null	location	String	15
Not null	Date	date	15

Table 4.24 Data dictionary Table for policy agreement

Key constraints	**Field Name**	**Data Type**	**Field size**
Primary key	Policy No	String	15
Not null	Branch	String	15
Not null	Country	String	15
Not null	Region	String	15
Not null	Zone	String	15
Not null	City	String	15
Not null	kebele	String	15
Not null	Premium value	char	15

Table 4.25 Data dictionary Table for advertisement

Key constraints	**Field Name**	**Data Type**	**Field size**
Primary key	ID	Long	15
Not null	Contact	integer	15
Not null	Date	Date	15

Table 4.26 Data dictionary Table for Report

Key constraints	**Field Name**	**Data Type**	**Field size**
Primary key	Report ID	Long	15
Not null	Report type	String	15
Not null	Description	String	15
Not null	Date	Date	15

4.3. Dynamic Model

4.3.1. Sequence Diagram

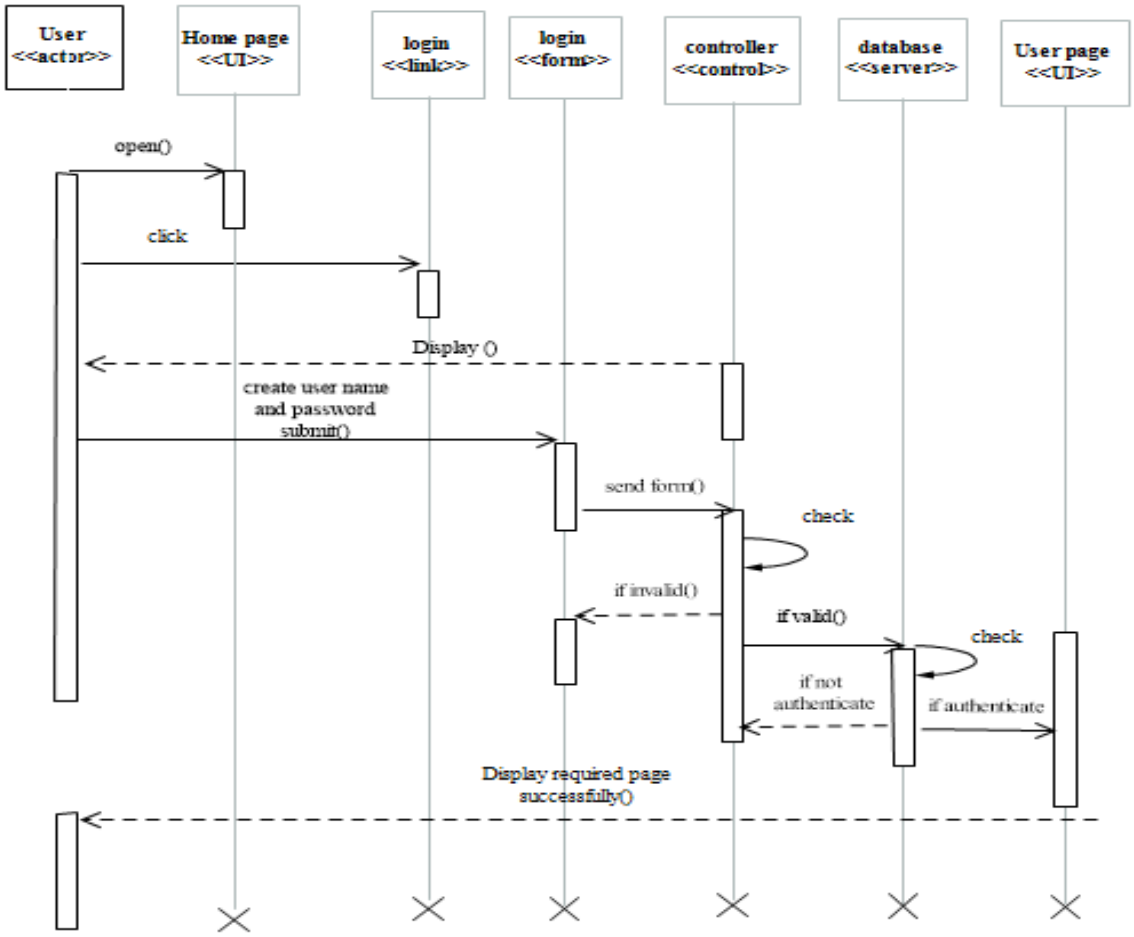


Figure 4.3 Login sequence diagram

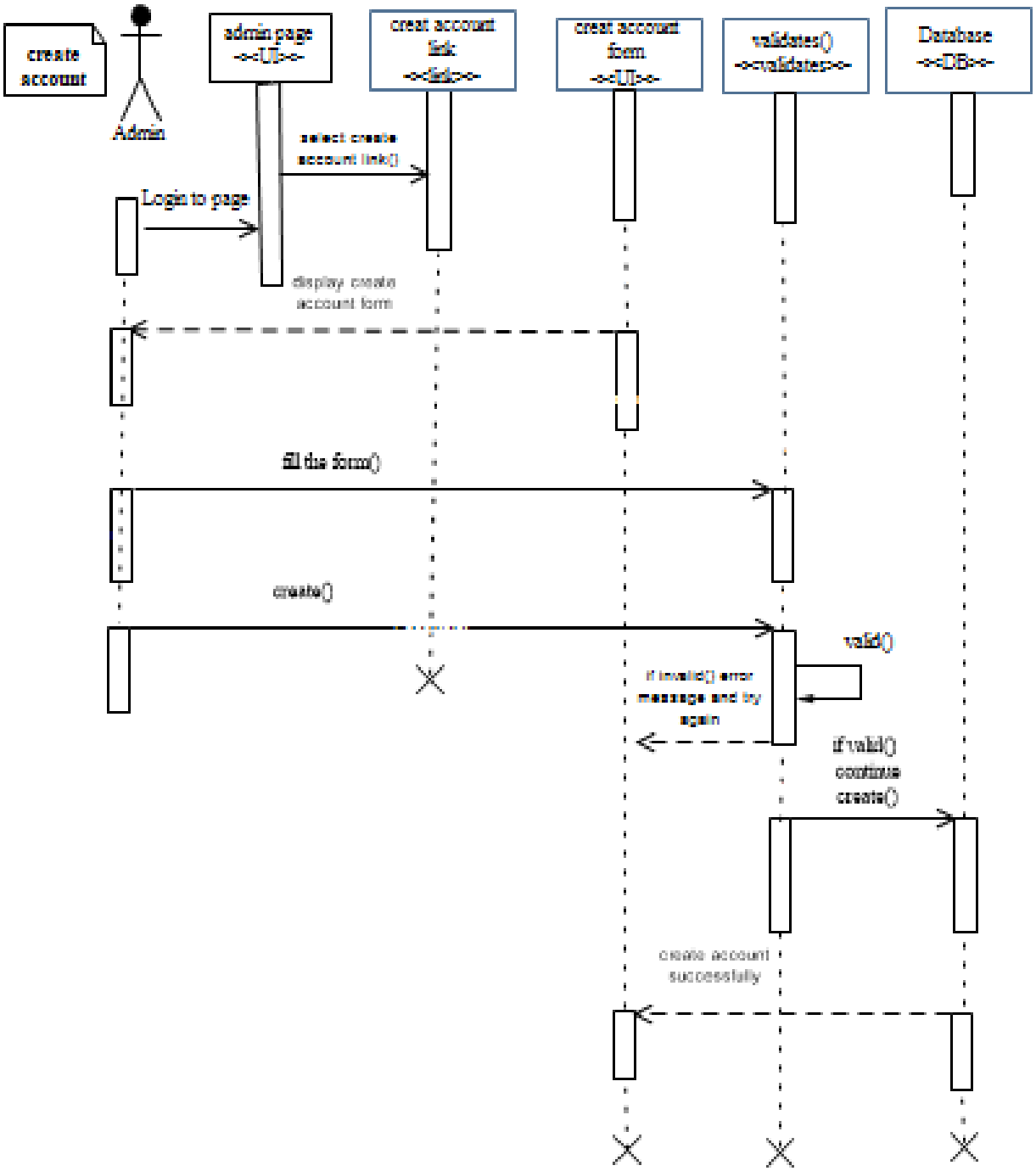


Figure 4.4 Create account sequence diagram

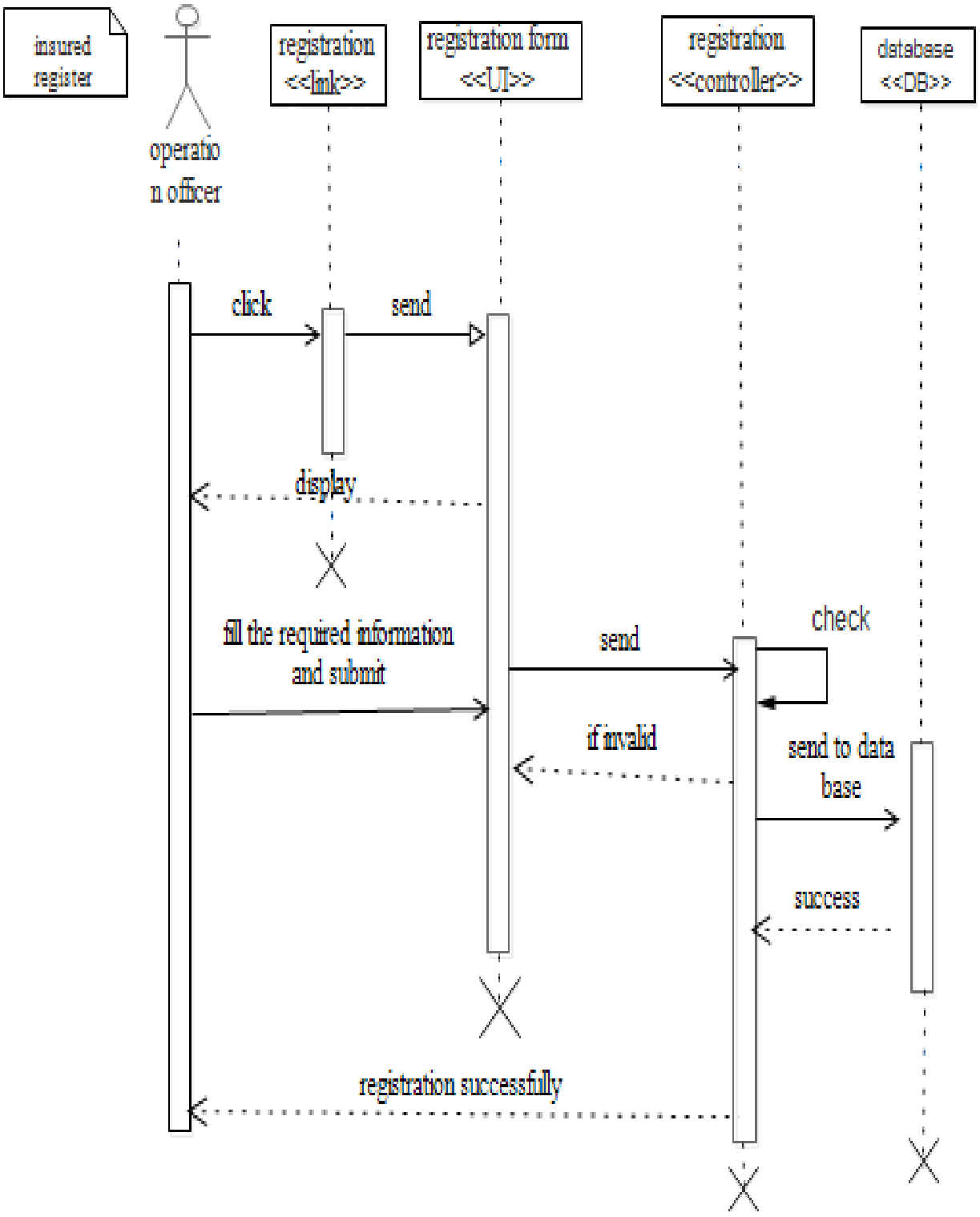

insured register
operatio n officer
registration <<link>>
registration form <<UI>>
registration <<controller>>
database <<DB>>
click
send
display
fill the required information and submit
send
check
if invalid
send to data base
success
registration successfully

Figure 4.5 insured register sequence diagram

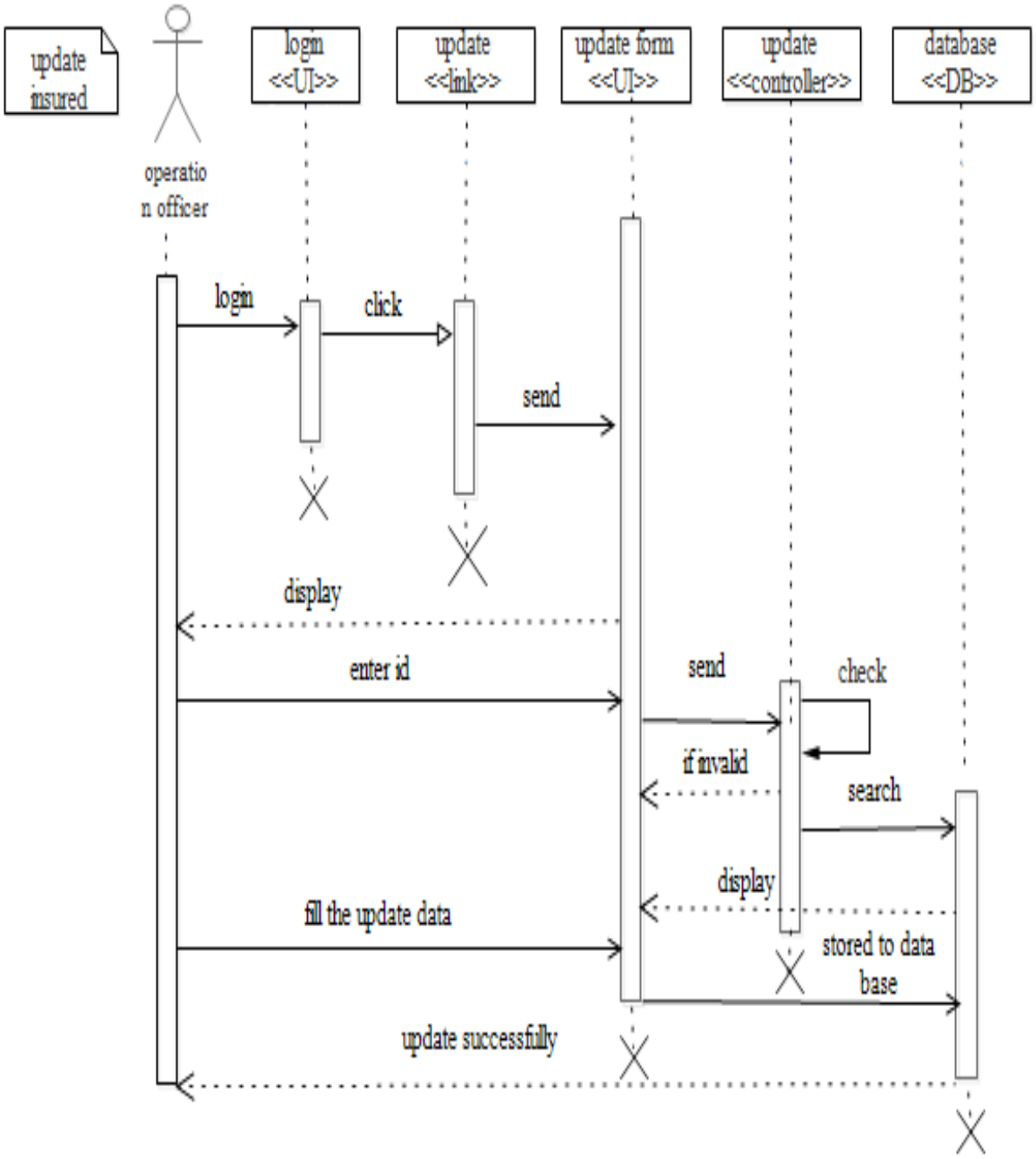


Figure 4.6 update register sequence diagram

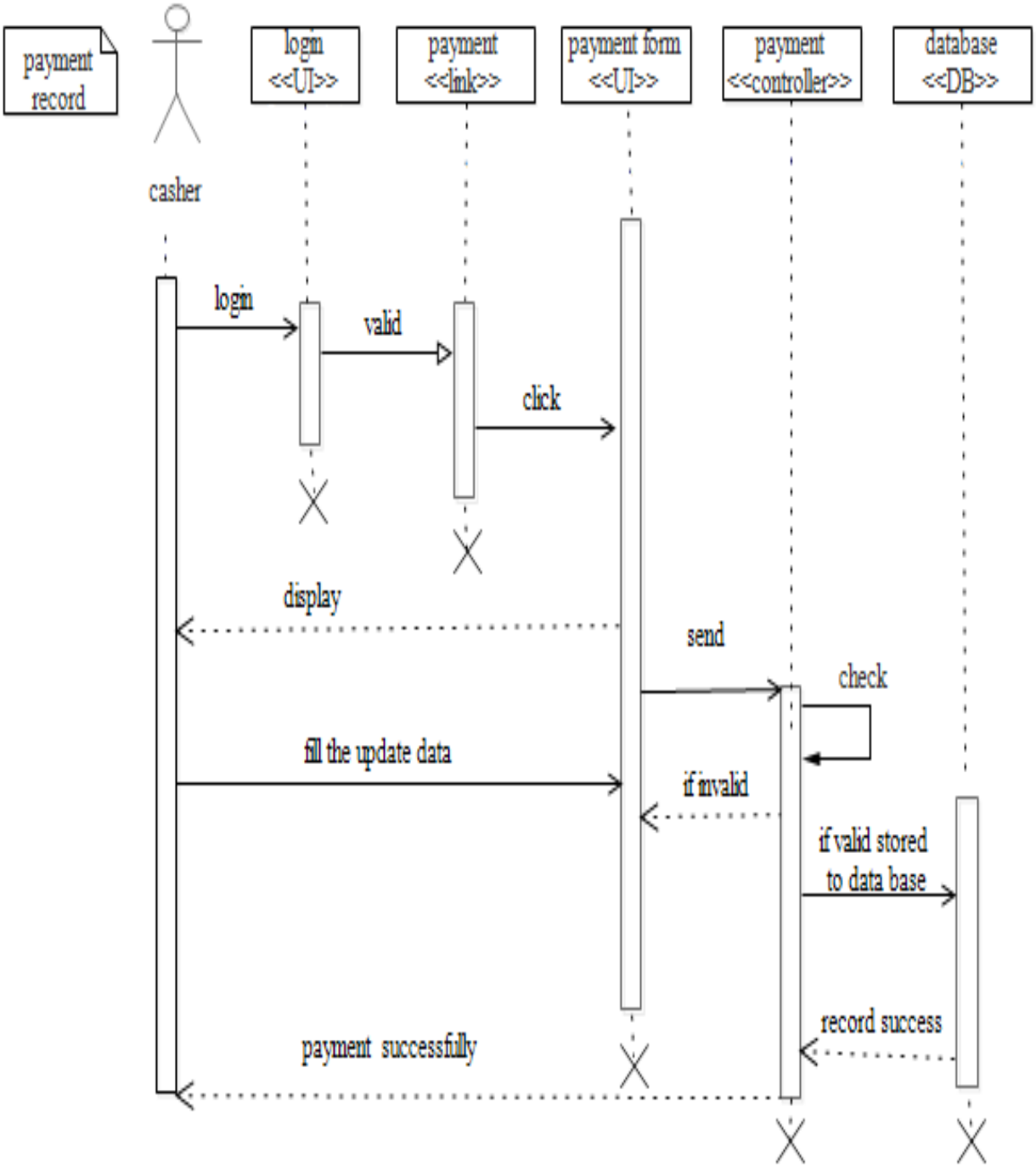


Figure 4.7 payment record sequence diagram

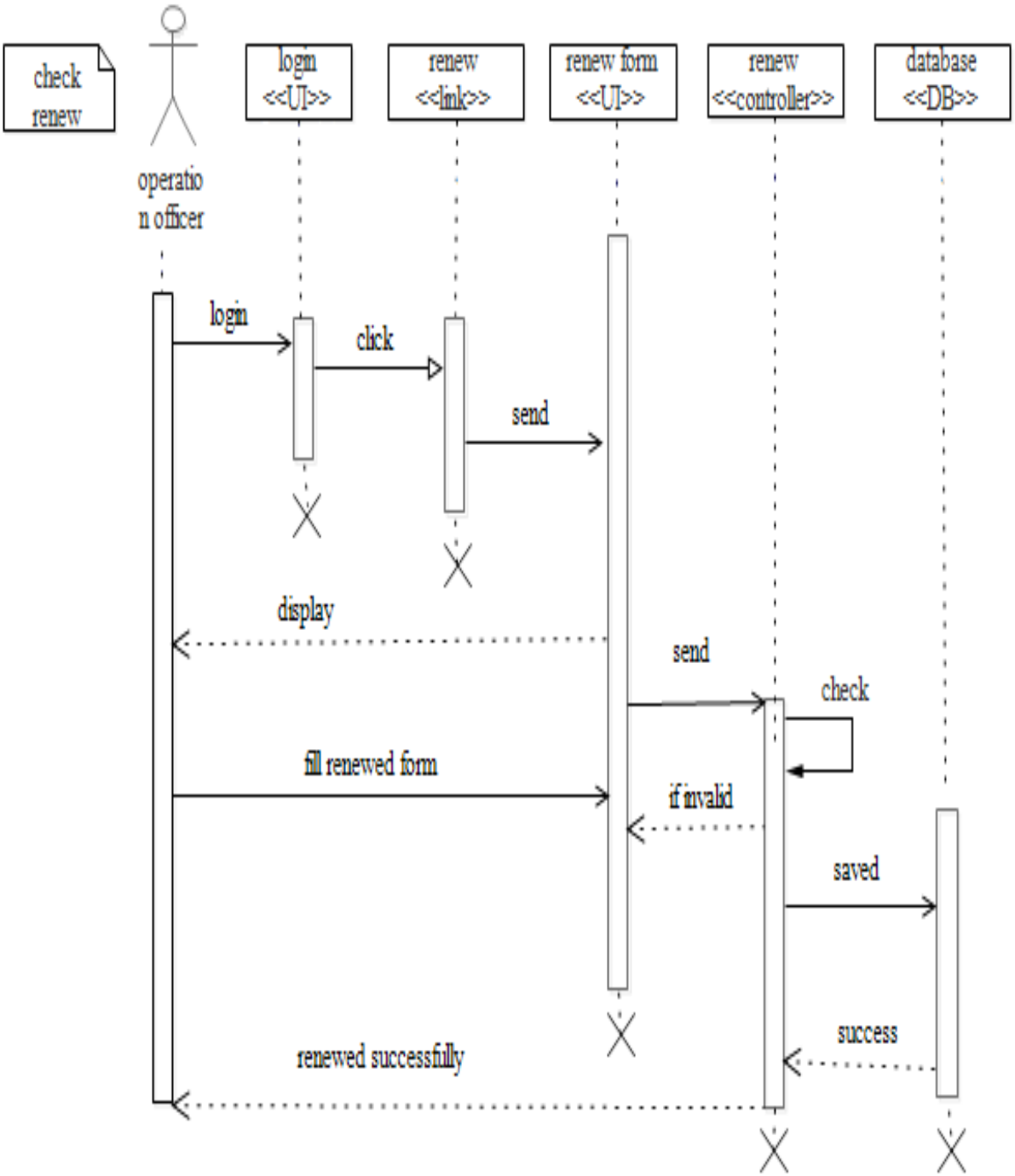


Figure 4.8 check renew sequence diagram

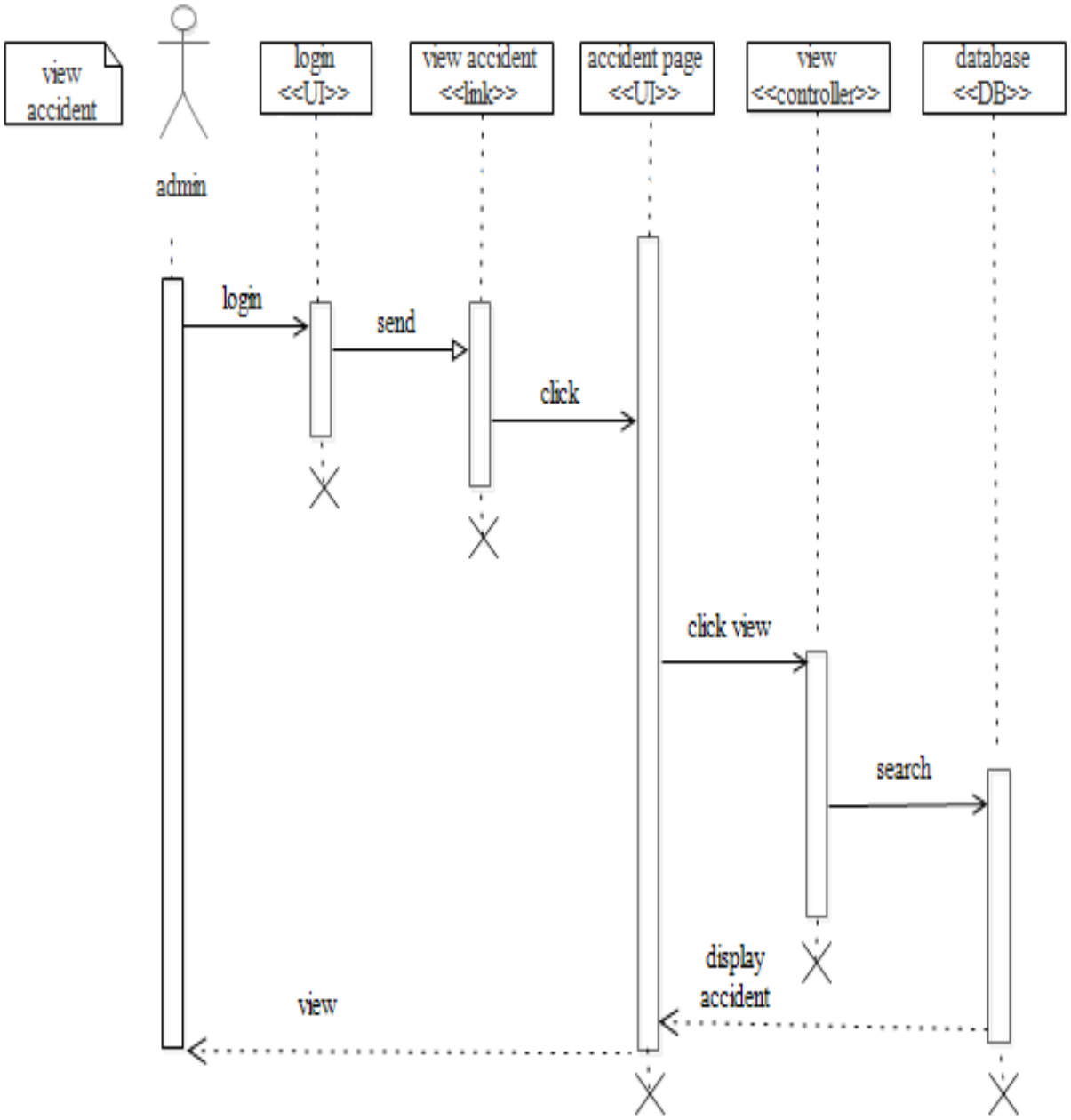


Figure 4.9 view accident sequence diagram

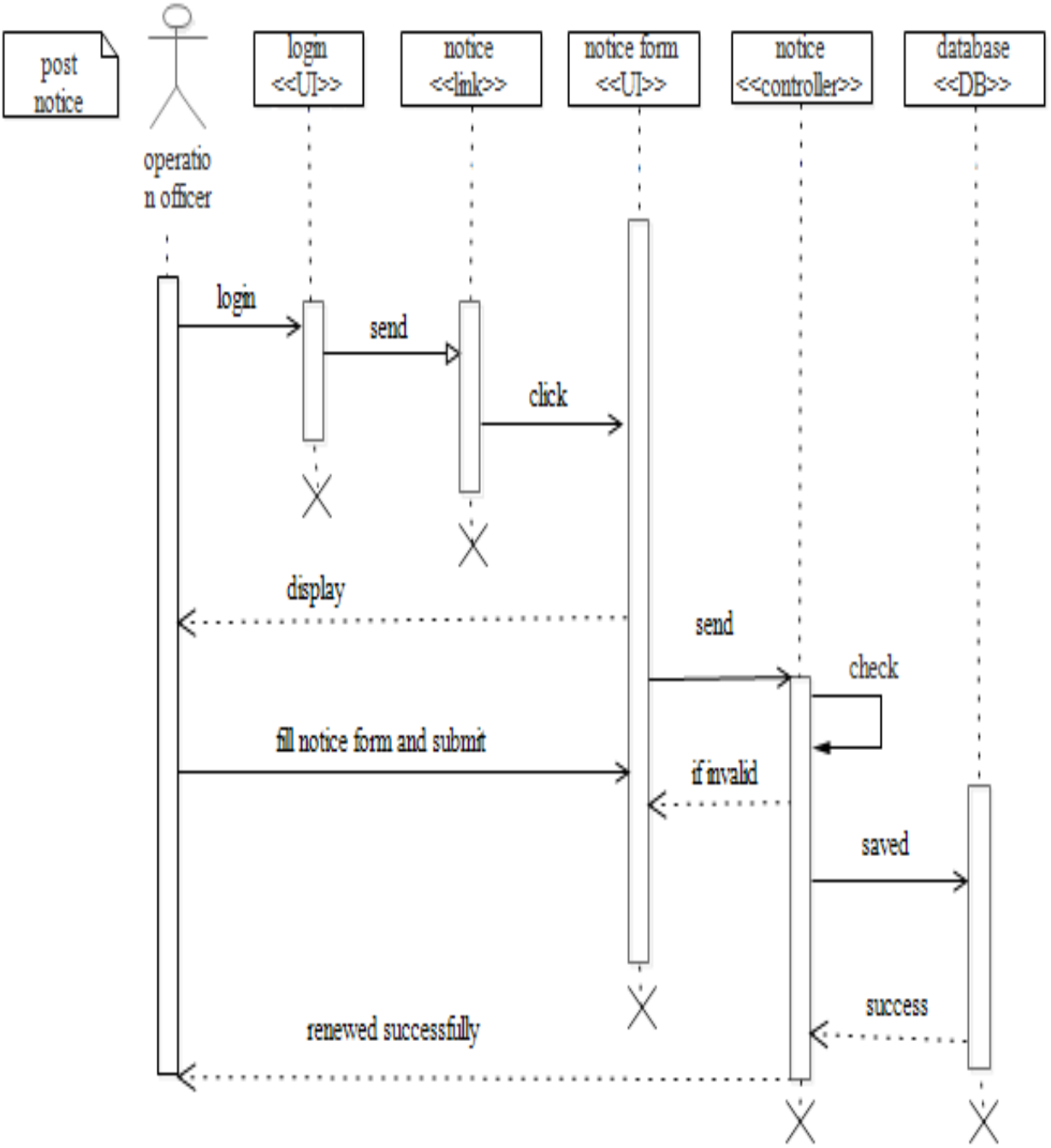


Figure 4.10 post notice sequence diagram

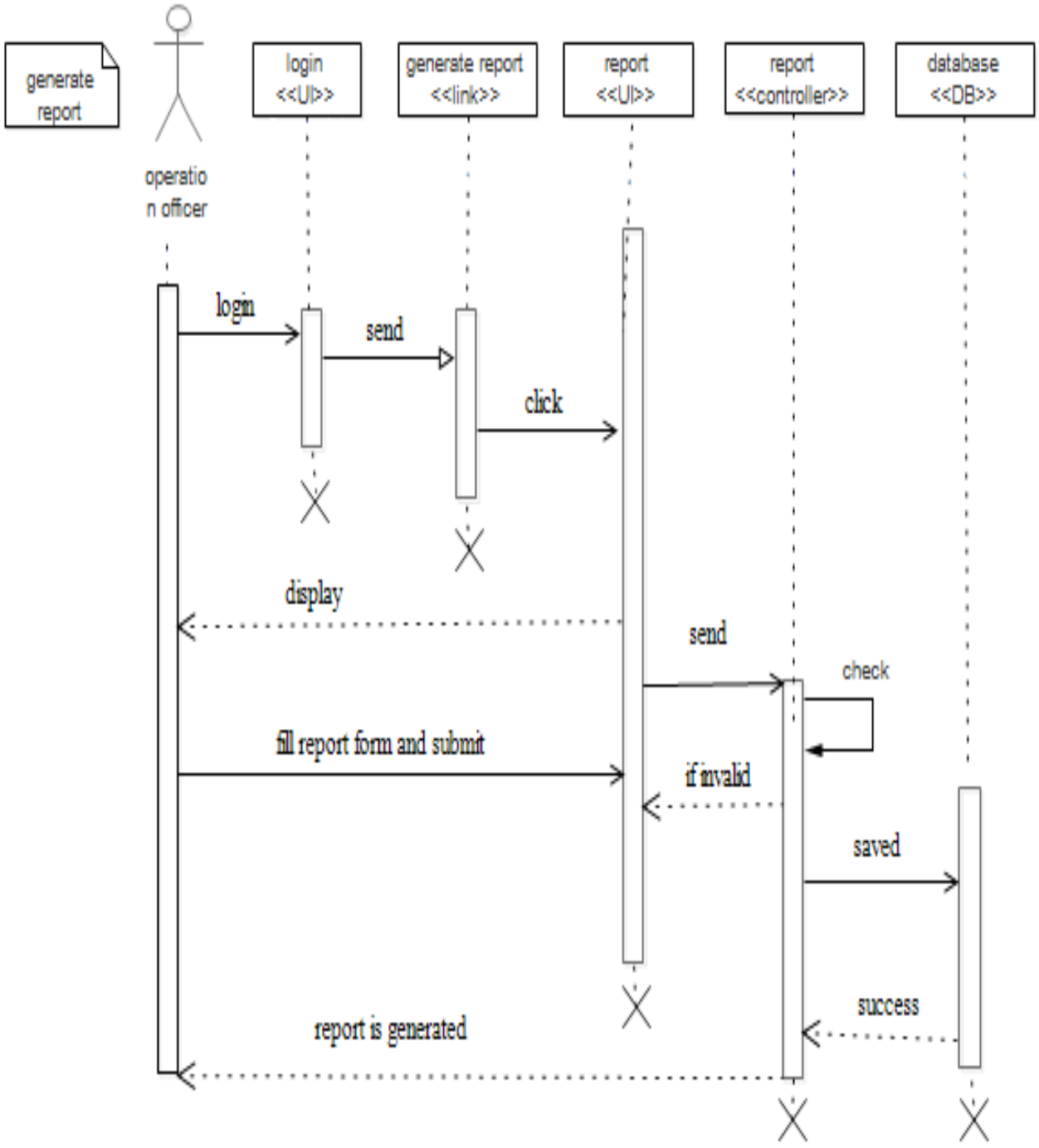


Figure 4.11 generate report sequence diagram

4.3.2. Activity Diagram

An activity diagram focuses on the flow of activities involved in a single process. It shows how single process activities depend on one another and graphical representation of the workflow of stepwise activities and actions with support for choice, iteration and concurrency. Fig 4.12 shows log in diagram it depicts the overall activities to log into the system.

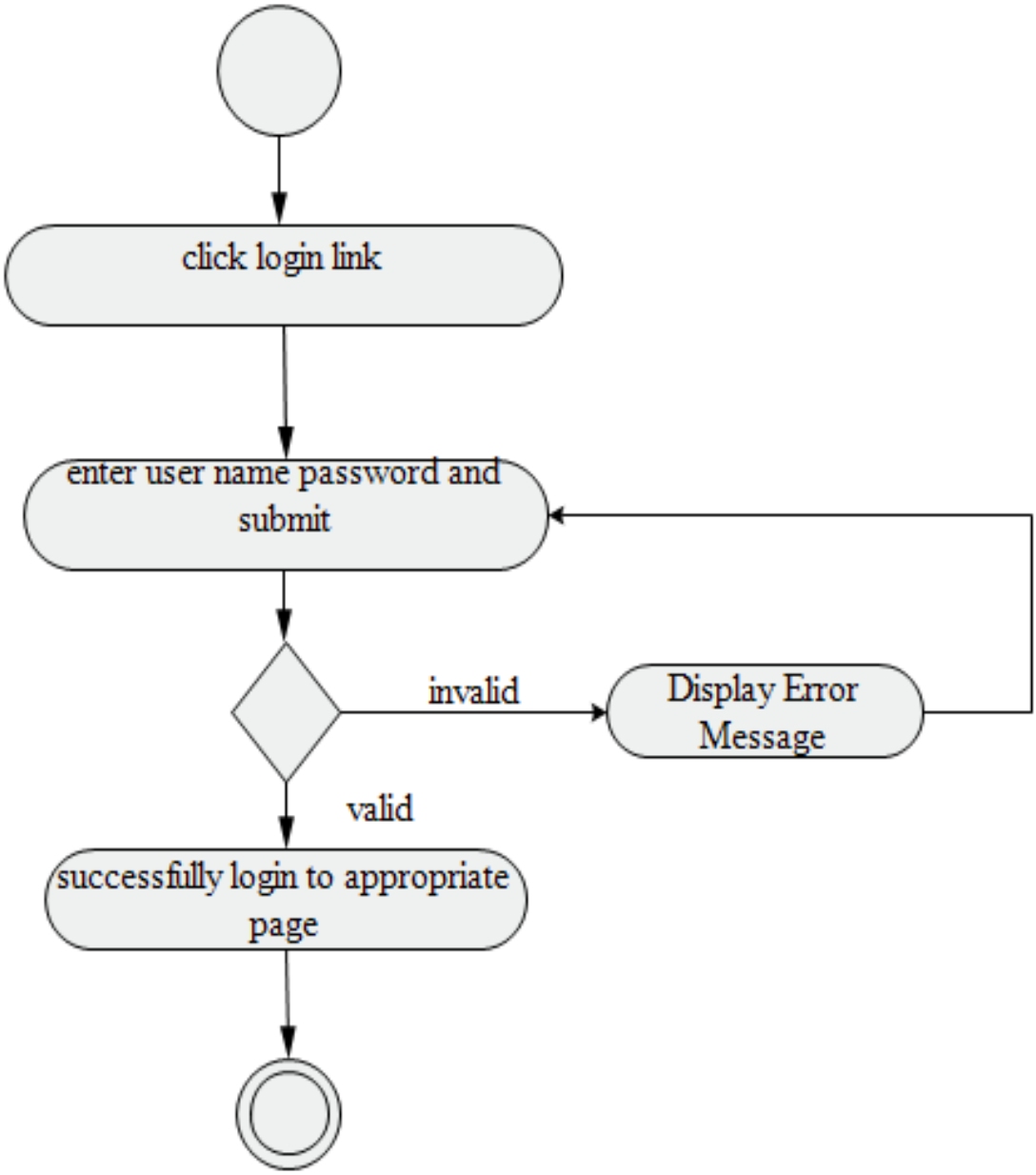


Figure 4.12 Login activity diagram

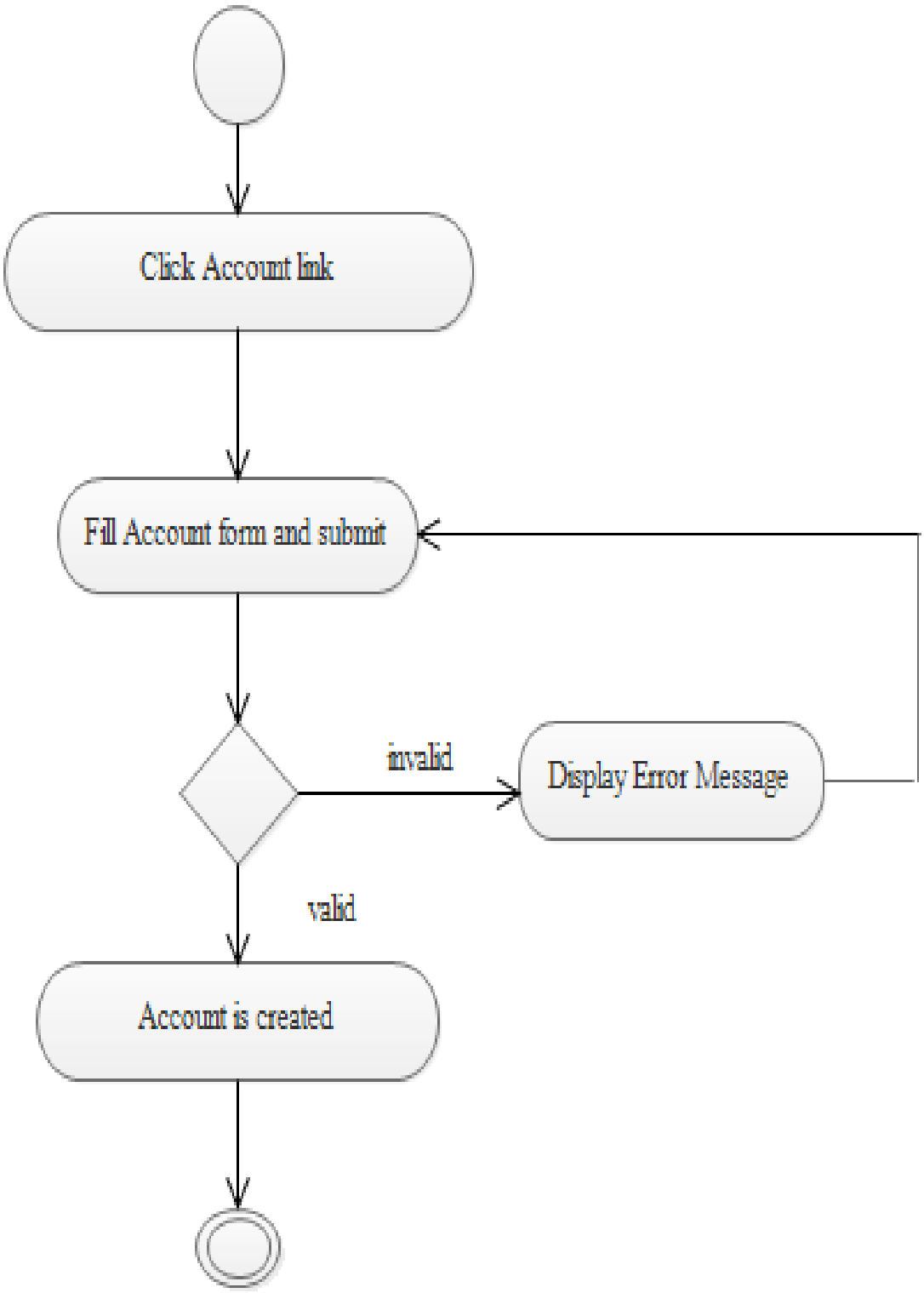


Figure 4.13 create account activity diagram

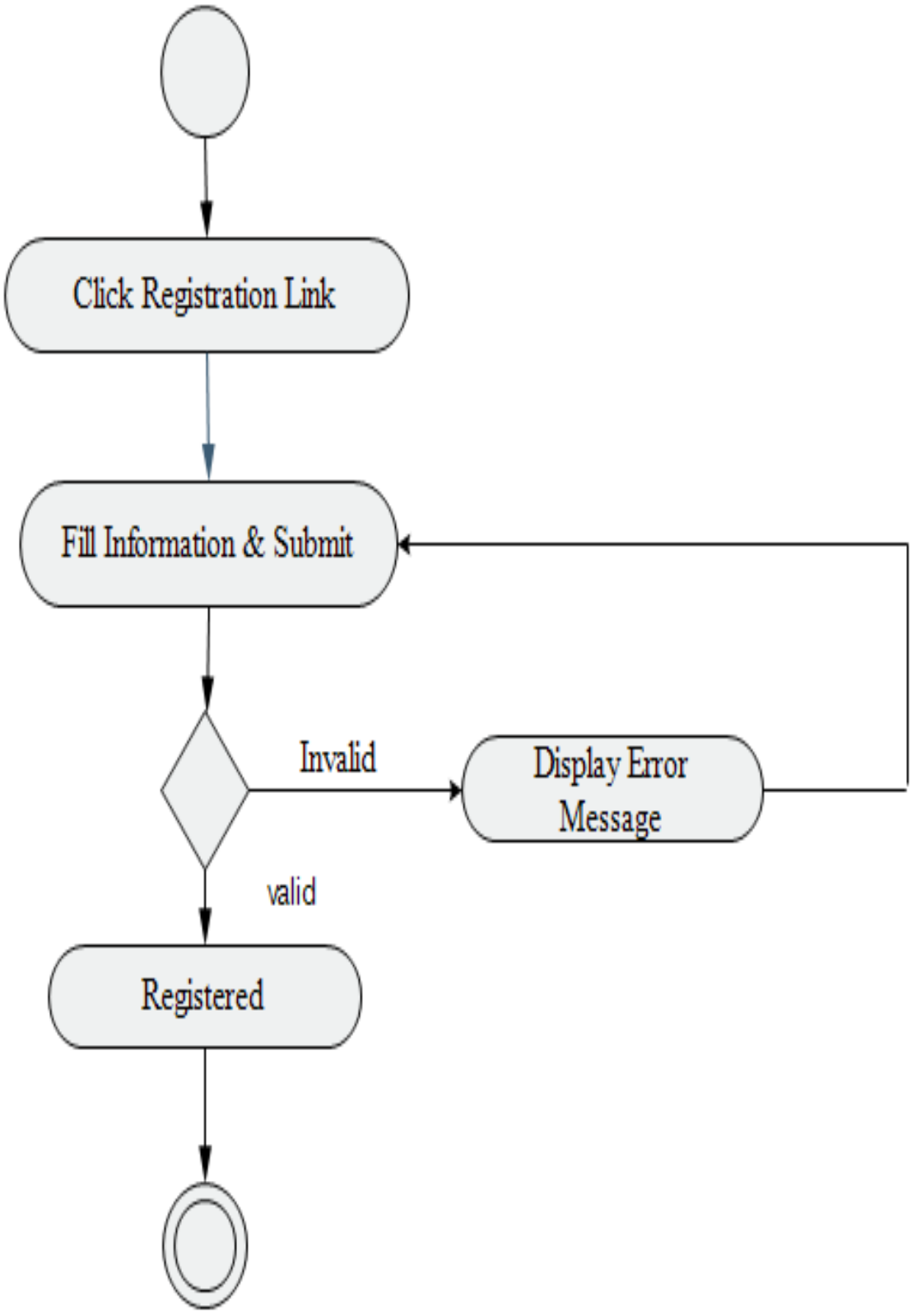


Figure 4.14 register insured activity diagram

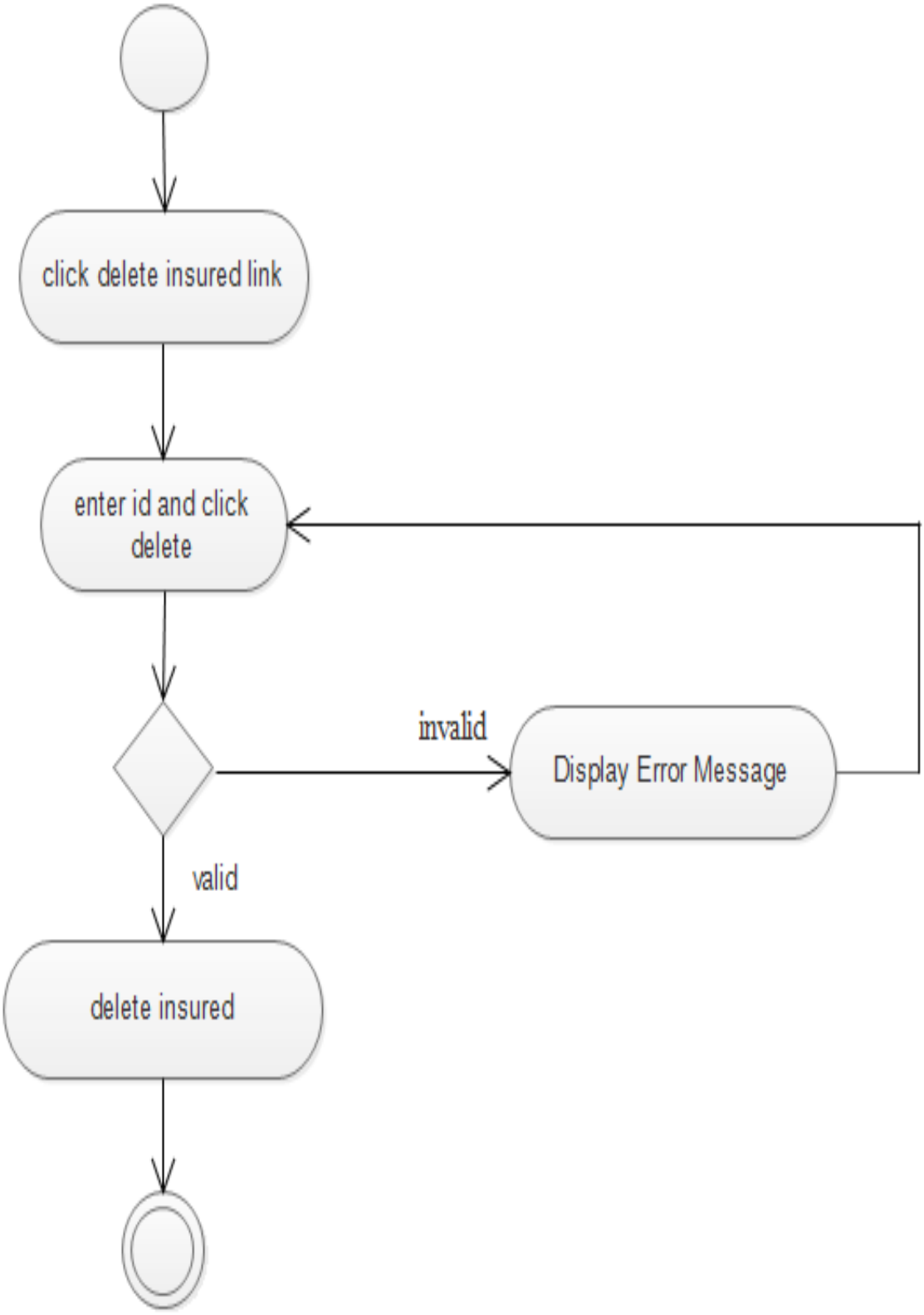


Figure 4.15 delete insured activity diagram

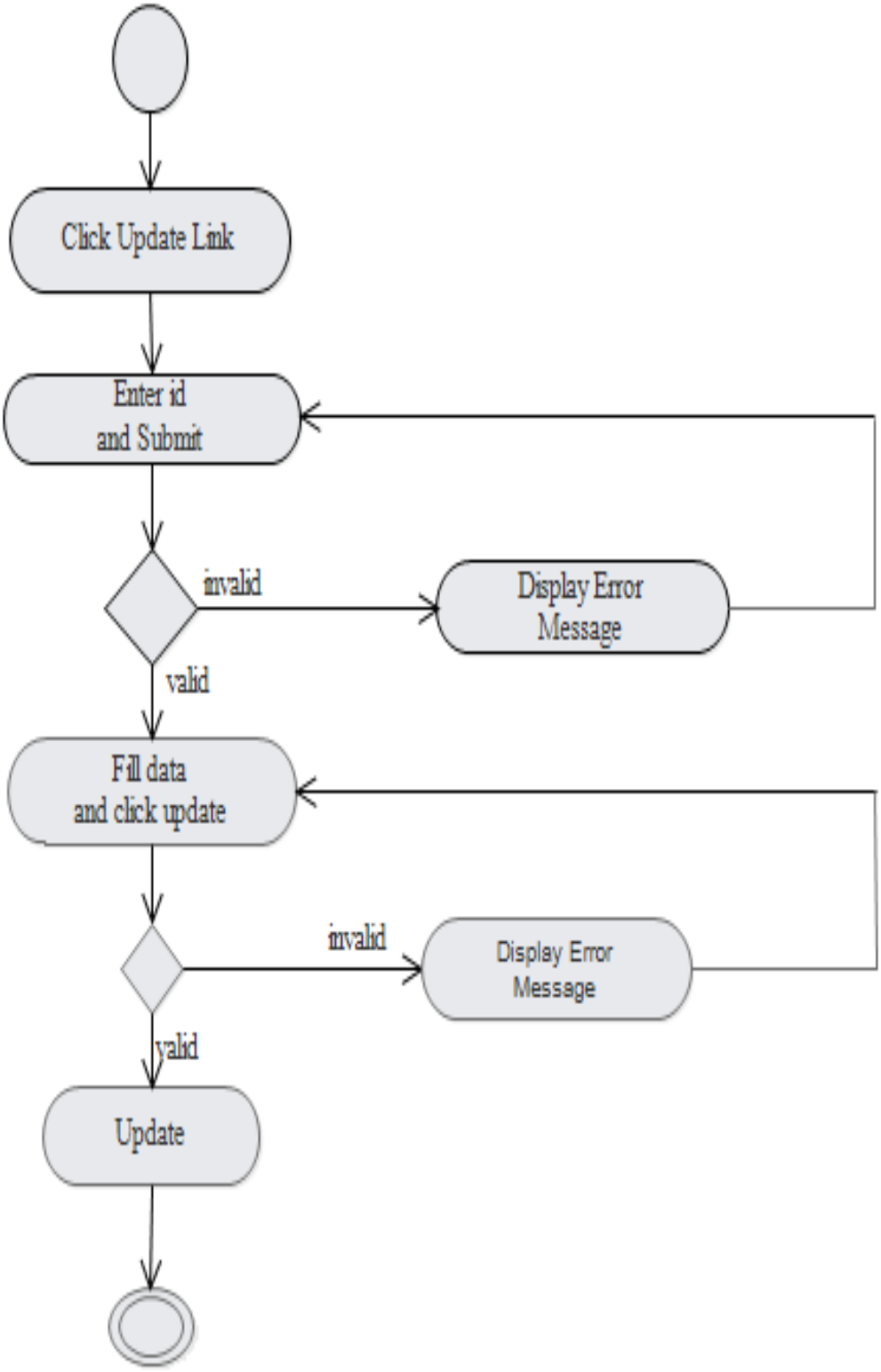


Figure 4.16 update insured activity diagram

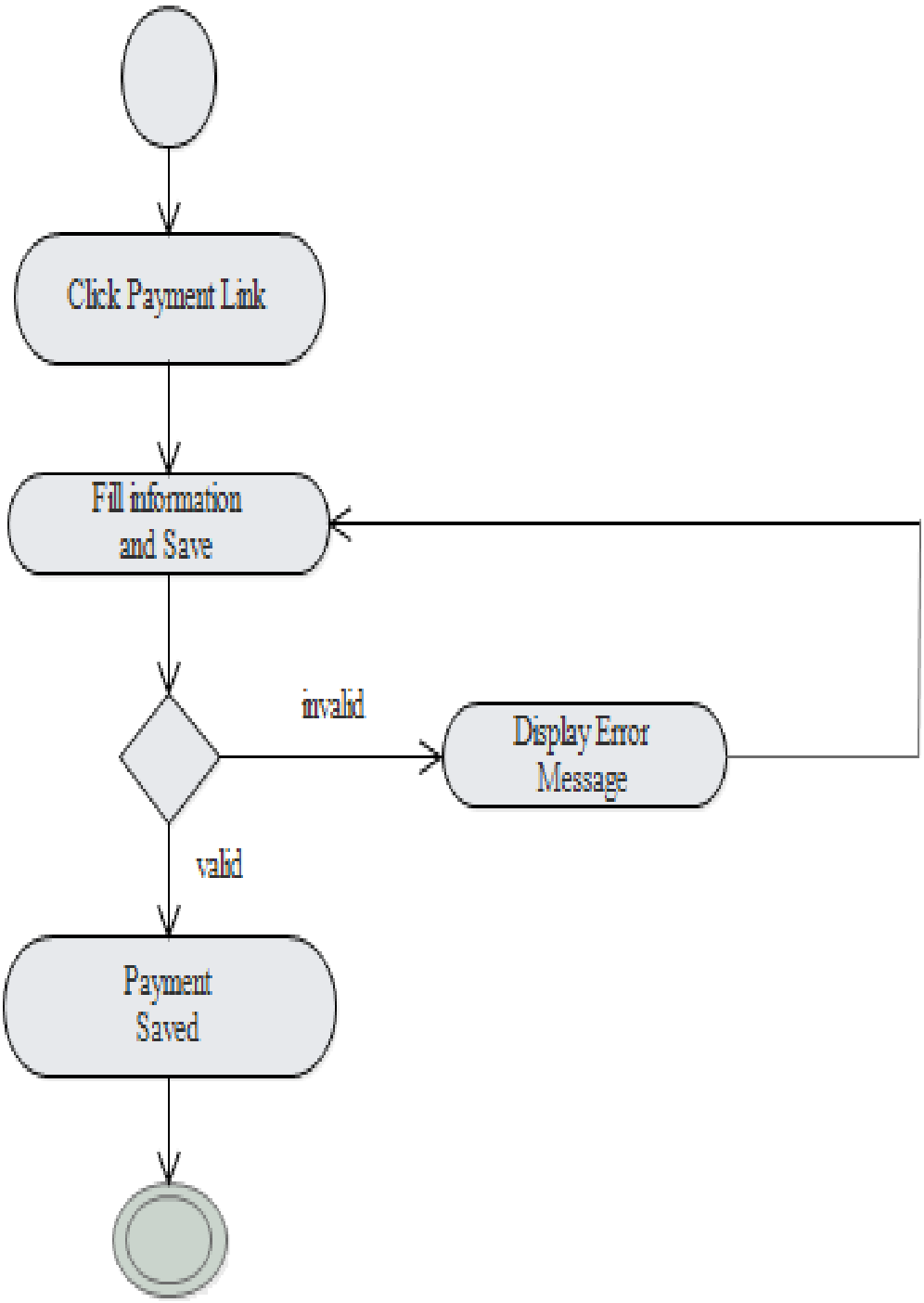


Figure 4.17 payment record activity diagram

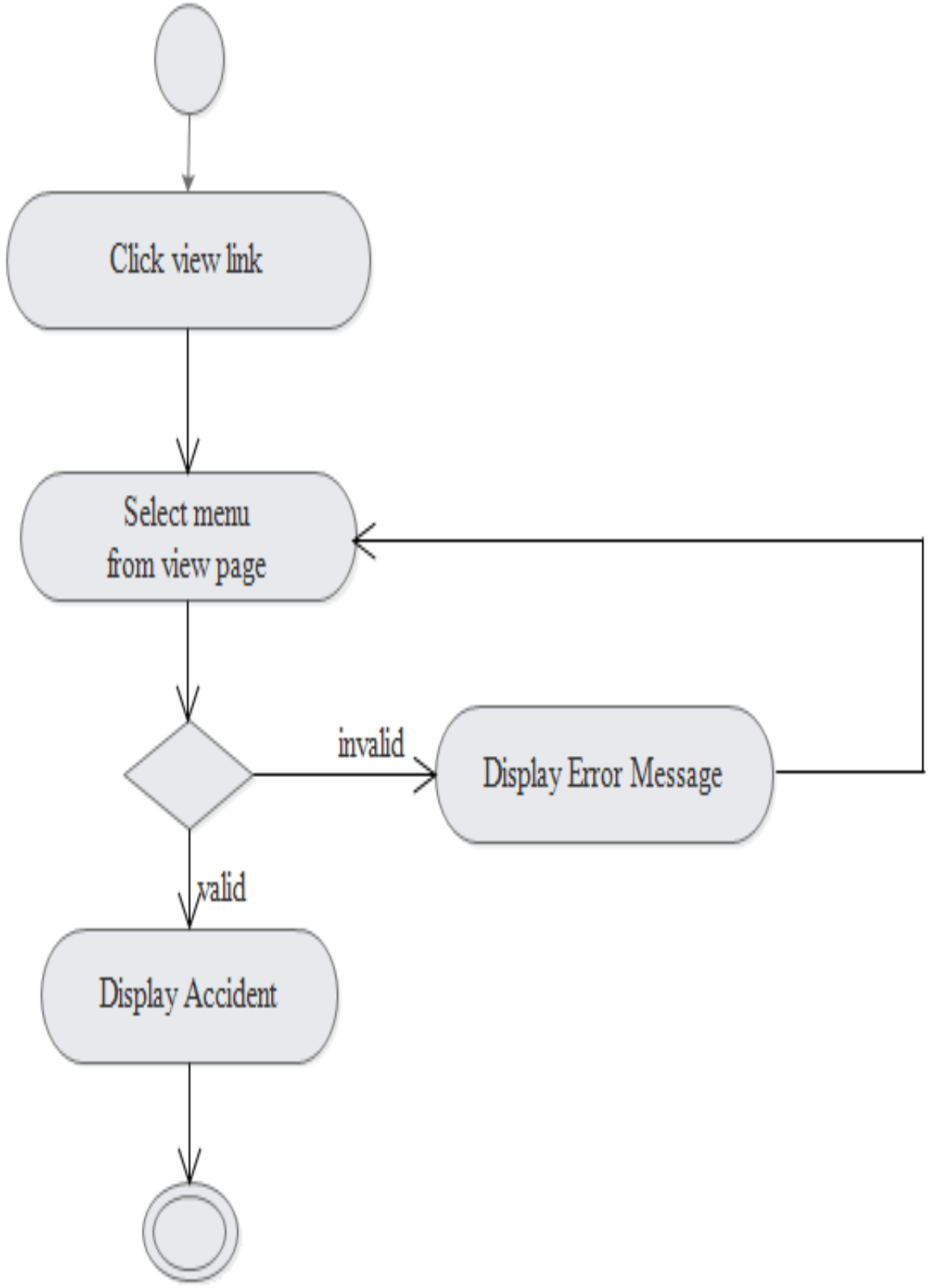


Figure 4.18 view accident activity diagram

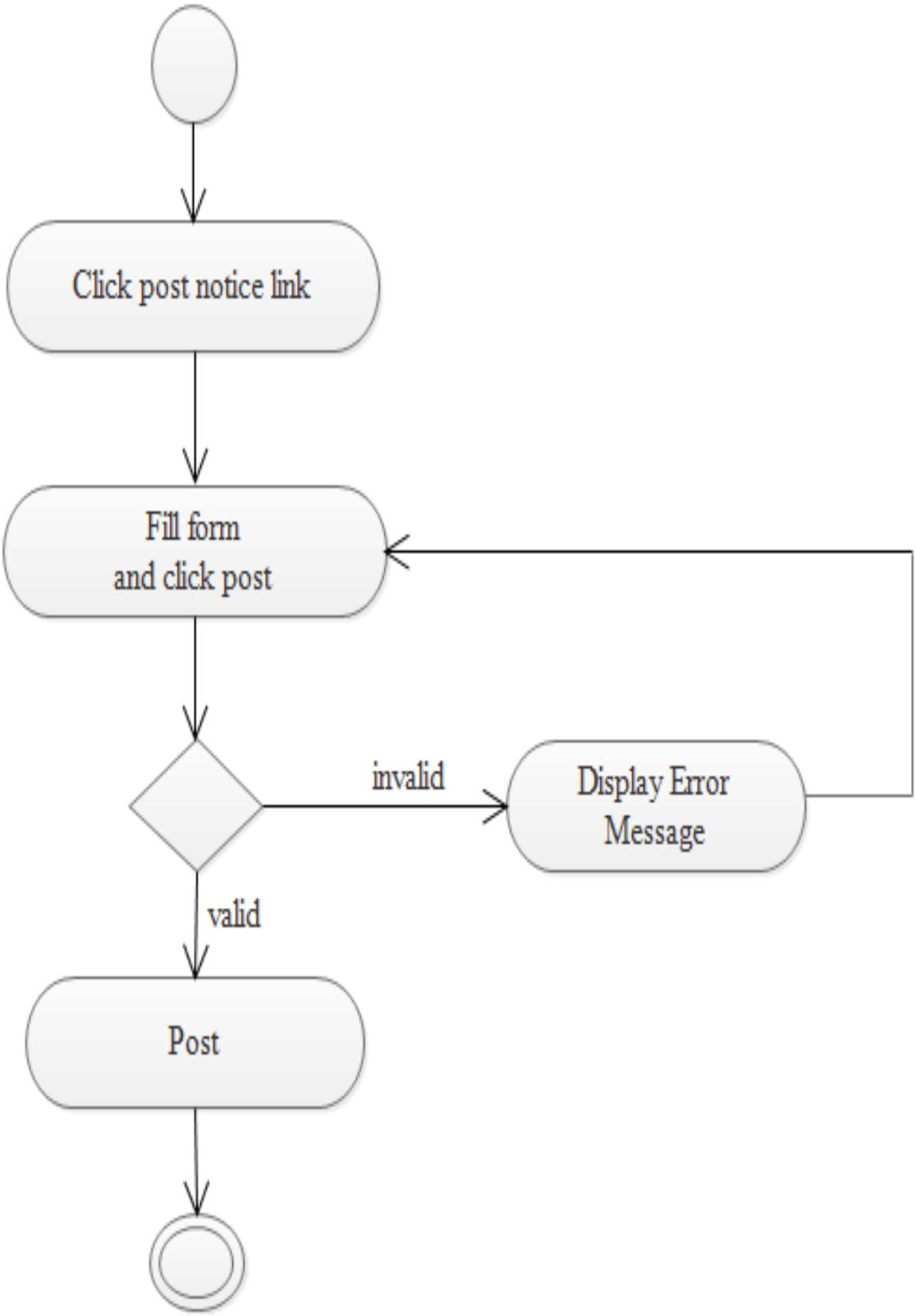


Figure 4.19 post notice activity diagram

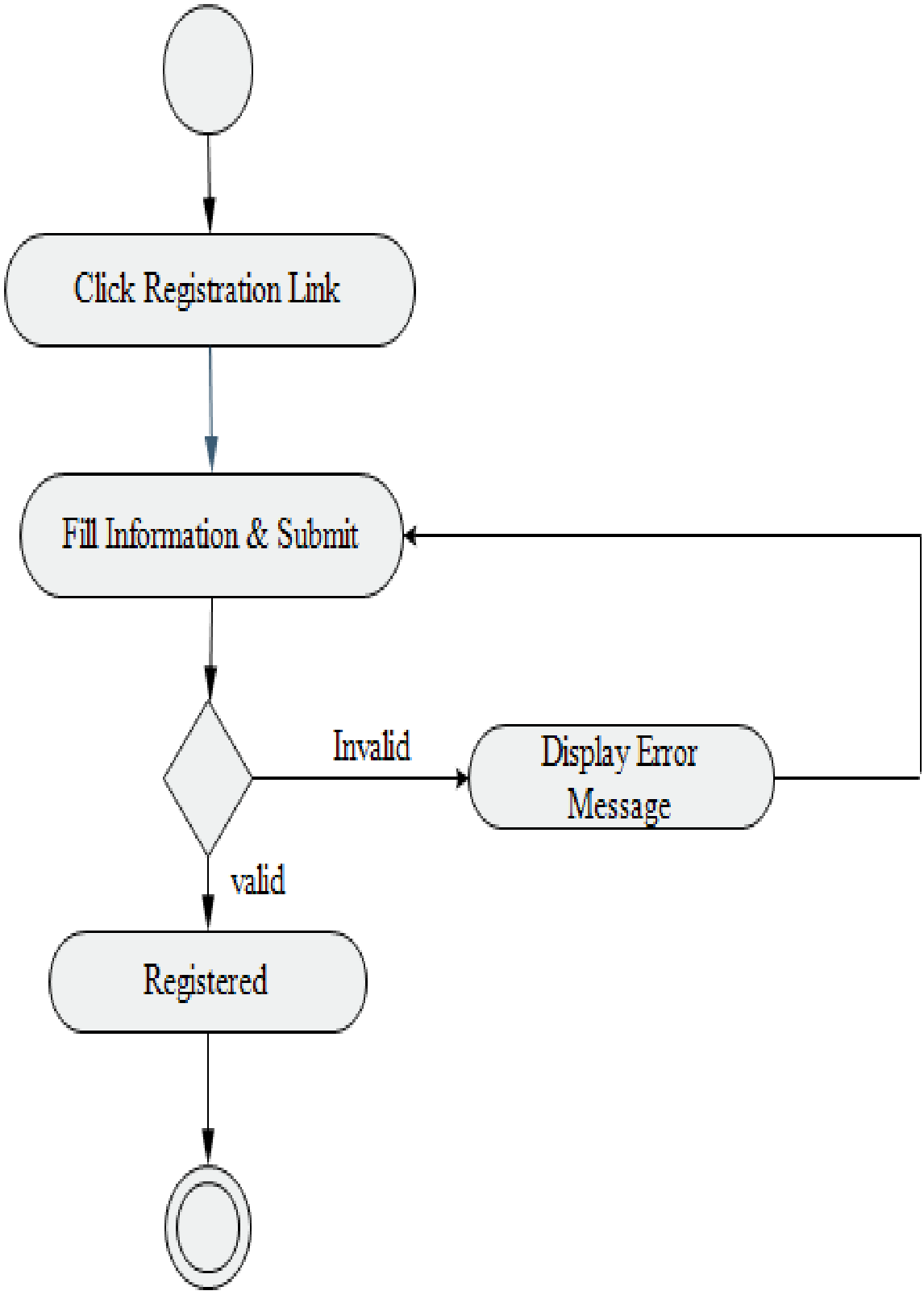


Figure 4.20 generate report activity diagram

4.3.3. State chart Diagram

State chart diagram is used to describe the states of different objects in its life cycle. The emphasis is given on the state changes upon some internal or external events. A diagram that captures the behavior of an object by specifying the sequence of states it goes through during its life time in response to events.

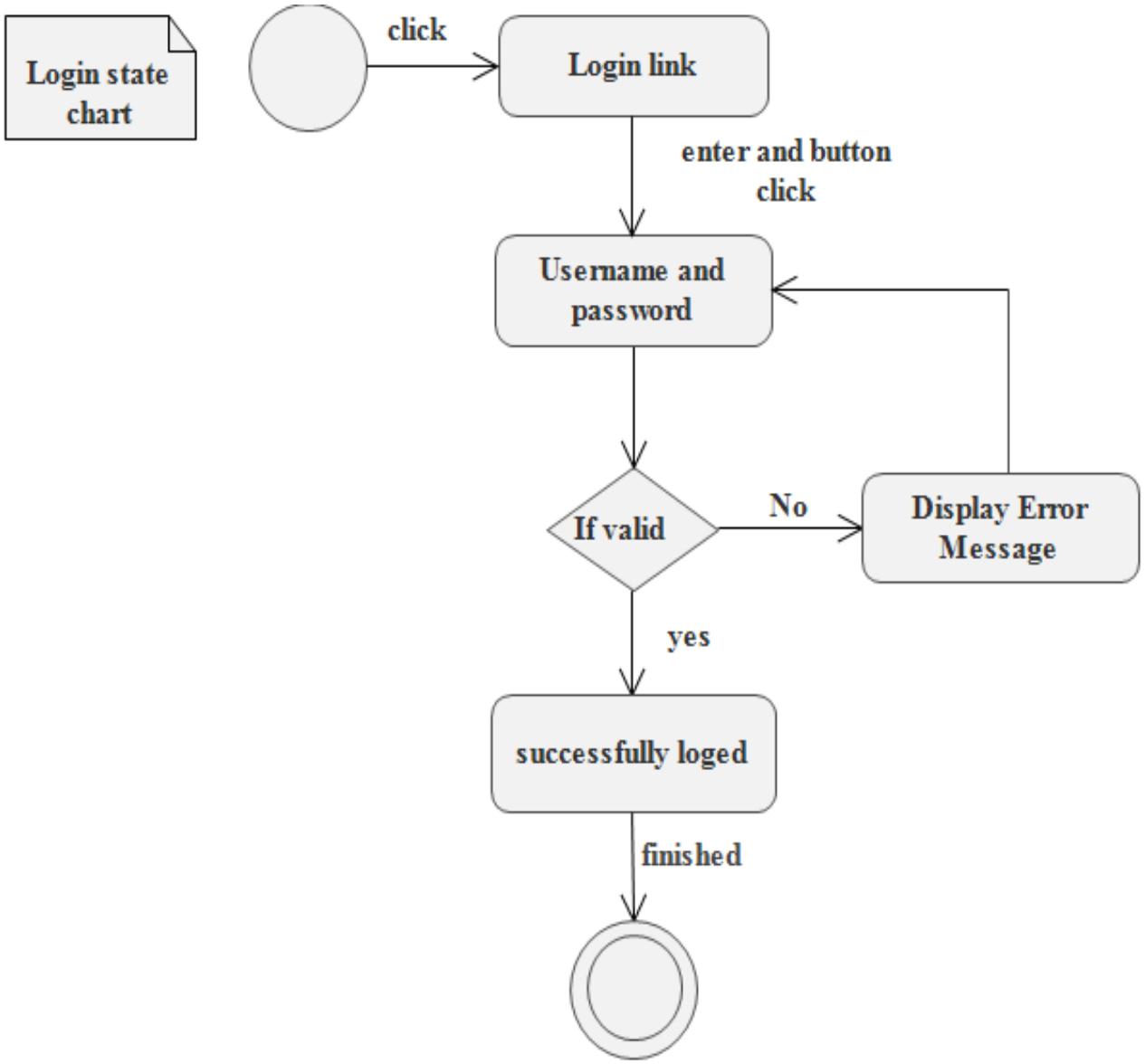


Figure 4.21 login state chart diagram

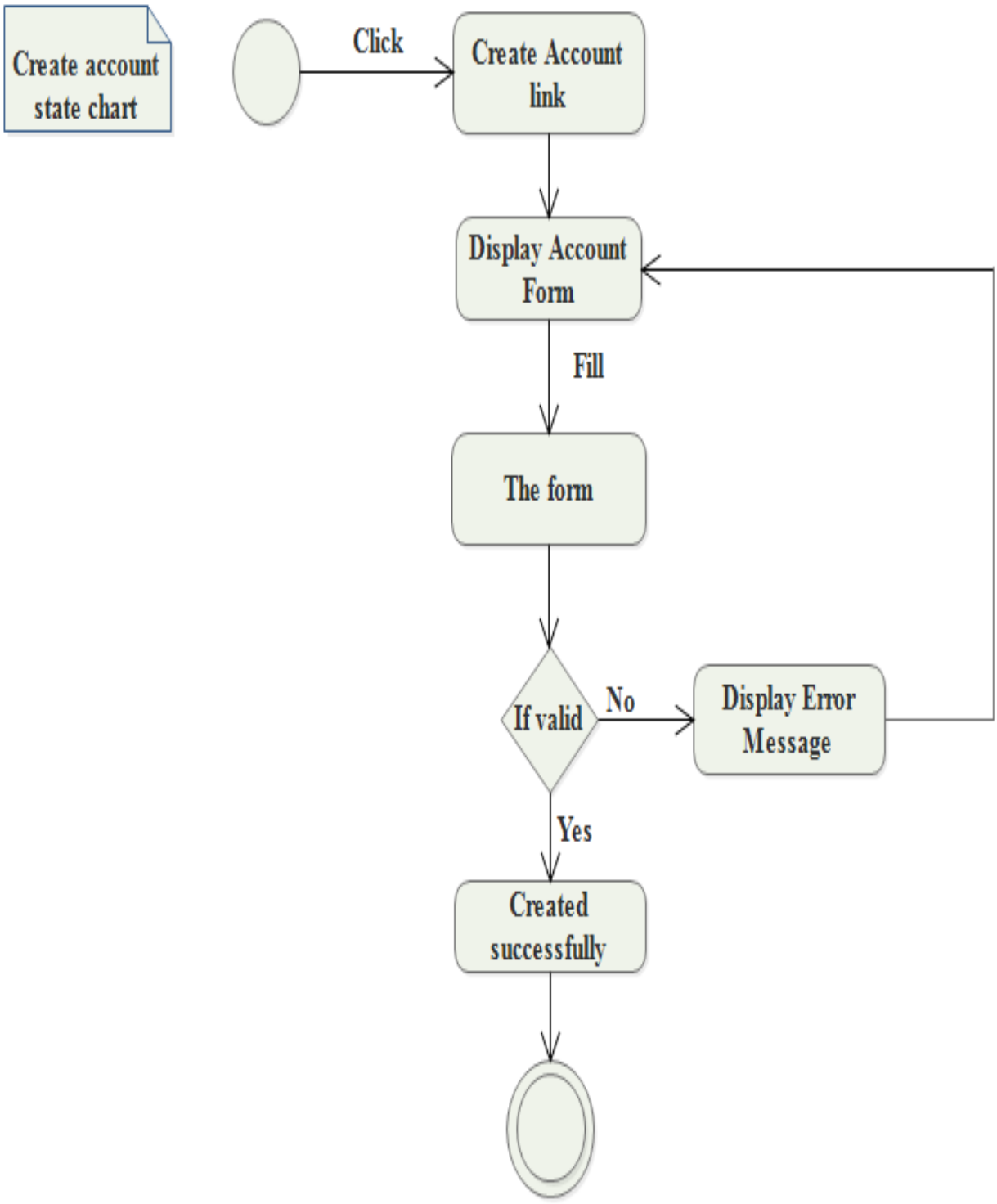


Figure 4.22 create account state chart diagram

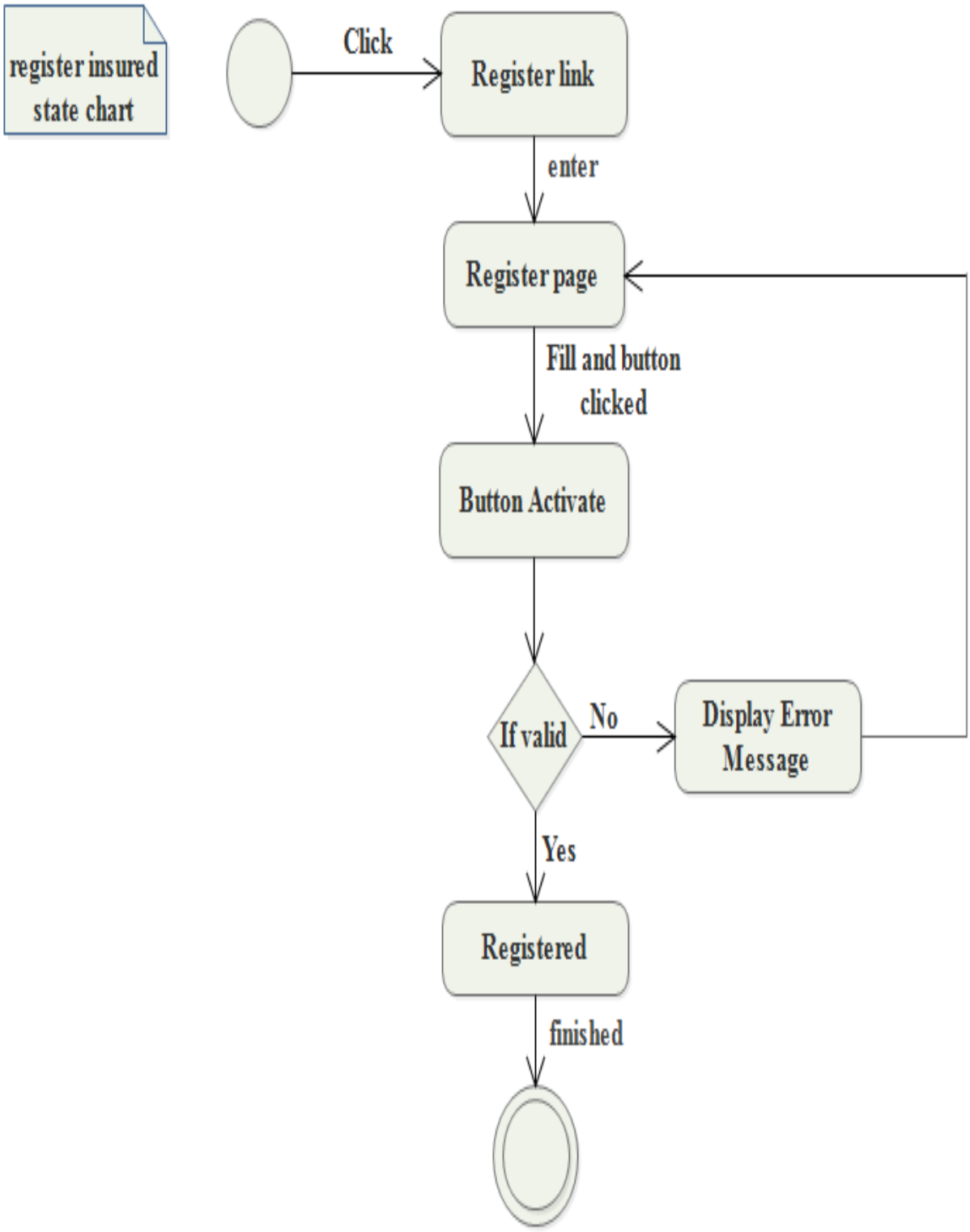


Figure 4.23 register insured state chart diagram

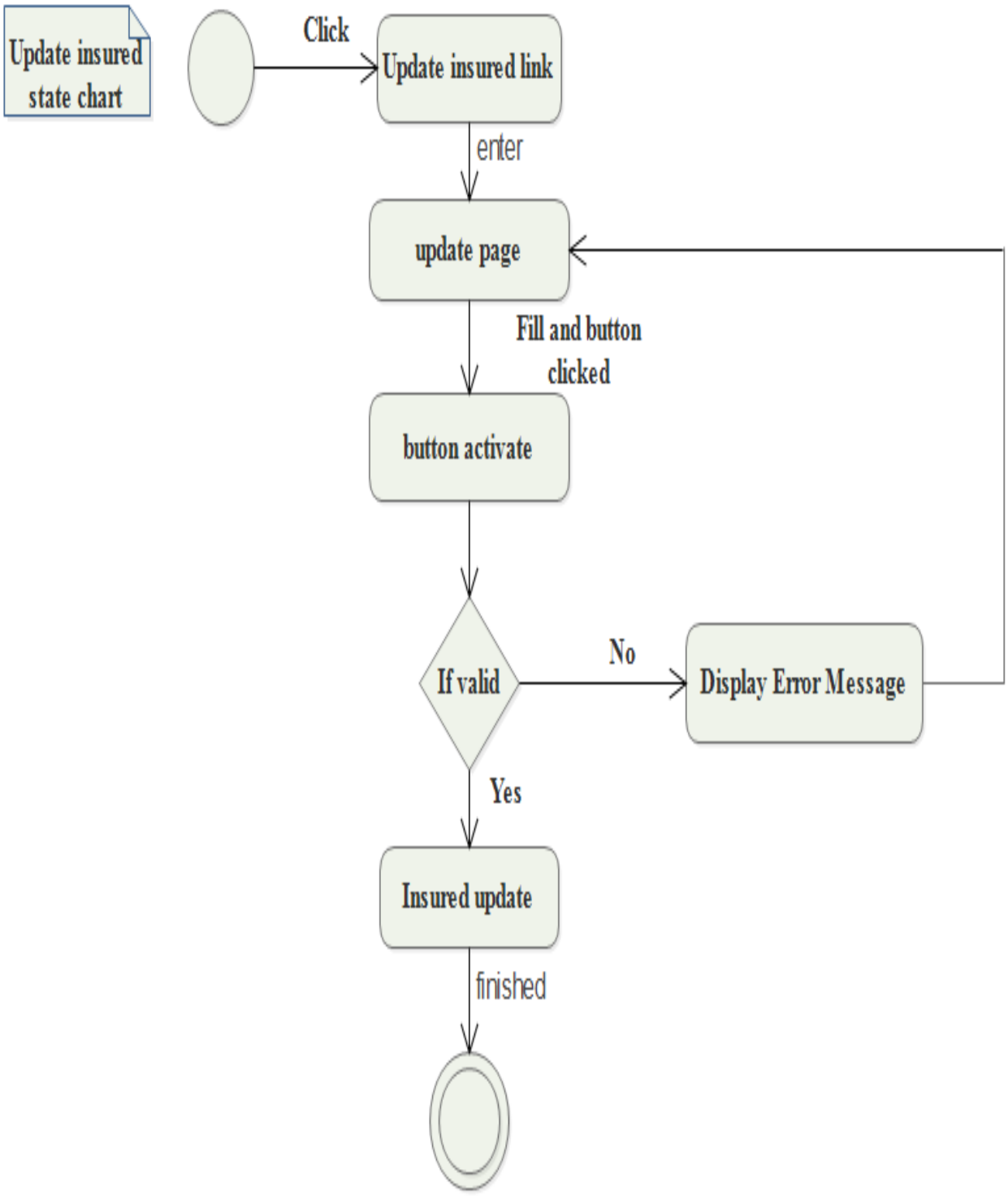


Figure 4.24 update insured state chart diagram

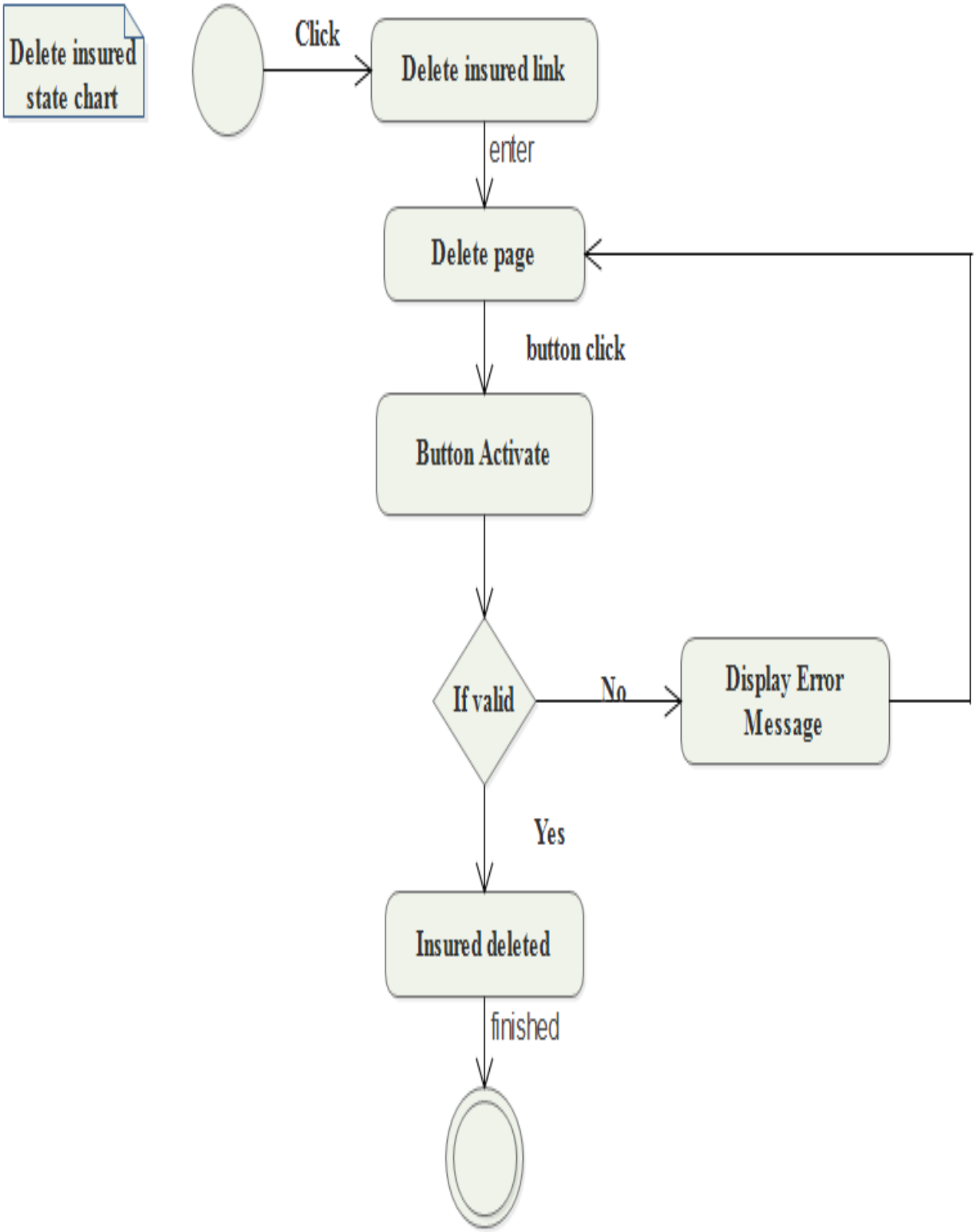


Figure 4.25 delete insured state chart diagram

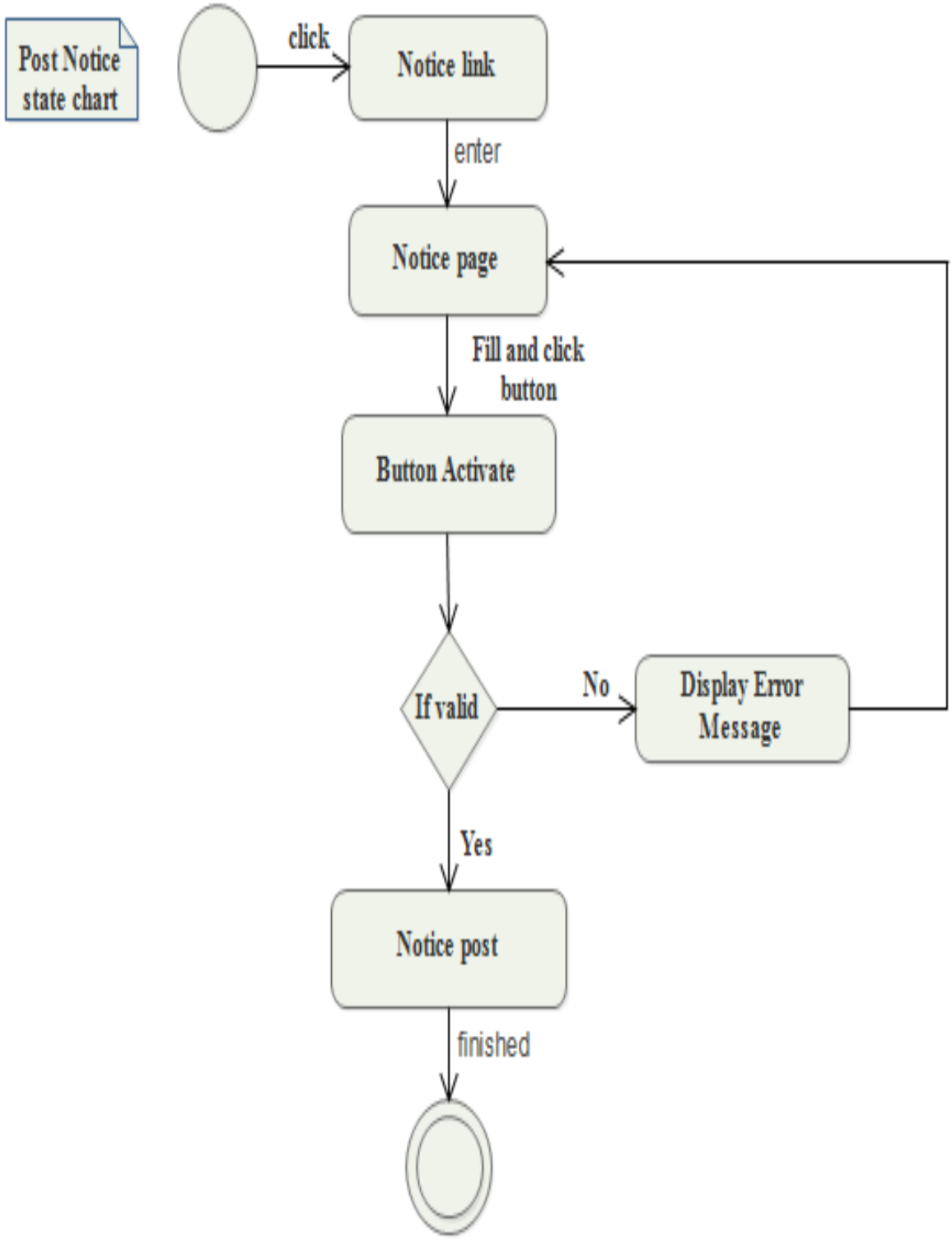


Figure 4.26 post notice state chart diagram

CHAPTER FIVE

5. SYSTEM DESIGN

System design is the transformation of the analysis model into a system design model. System design is the first part to get into the design model that takes into account the nonfunctional requirements and constraints described in the problem statement and requirement analysis section discussed earlier. In addition to this, we describe a brief overview of the design goals, current and proposed software architecture, hardware/software mapping, persistent data management, access control and security.

5.1. Design goals

The objective of the design are to model the system with high quality. The design goals are derived from non-functional 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 solution. The design goals specify the qualities of the system that should be achieved and addressed during the design of the system like:

5.1.1. Performance:

The system is programmed with PHP and MYSQL that reduce the complexity of the algorithm such as amount of space that the algorithm needs and running time that replies in a minimum amount of time.

5.1.2. Dependability:

The user's 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. 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: -** Is long there is an internet connection the system will be available 24/7.
- ✓ **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.

5.1.3. Maintenance:

In time of failure or need modification the system needs to be maintained. To be maintainable the system should meet the following maintenance criteria.

- ✓ **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.
- ✓ **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.

5.1.4. End User Criteria

The system should have simple and understandable graphical user Interface such as forms and buttons, which have descriptive names.

5.1.5. 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.

5.2. Current system architecture

The current system is not design and there is no software architecture for the current software of this project is not existed and the users are using the manual way to get the information.

5.3. Proposed System Architecture

The project team selected three tier system architecture because Three-tier architecture allows any one of the three tiers to be upgraded or replaced independently [5]. The reason why three tier architecture is selected for this project is the following:

- It gives us the ability to update the technology stack of one tier, without impacting other areas of the application.
- It allows for different development teams to each work on their own areas of expertise. Today's developers are more likely to have deep competency in one area, like coding the front end of an application, instead of working on the full stack.
- **Scalability:** - you are able to scale the application up and out. A separate backend tier, for example, allows you to deploy to a variety of databases instead of being locked into one particular technology. It also allows you to scale up by adding multiple web servers.
- **Reliability:** - It adds reliability and more independence of the underlying servers or services.

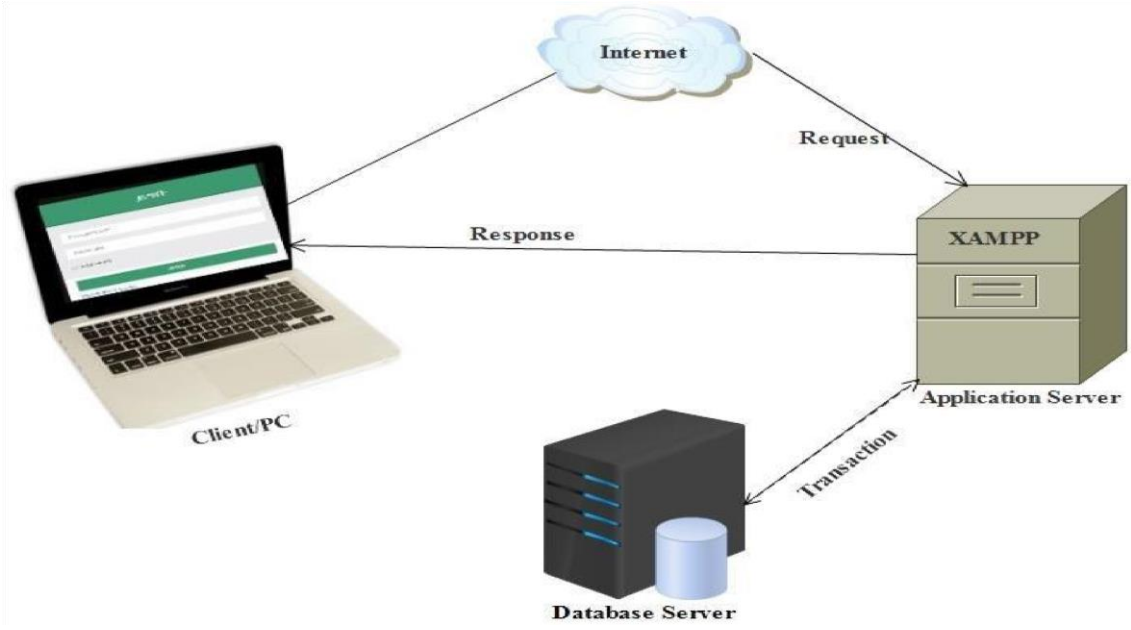


Figure 5.1 proposed system architecture

5.3.1. Subsystem Decomposition and Description

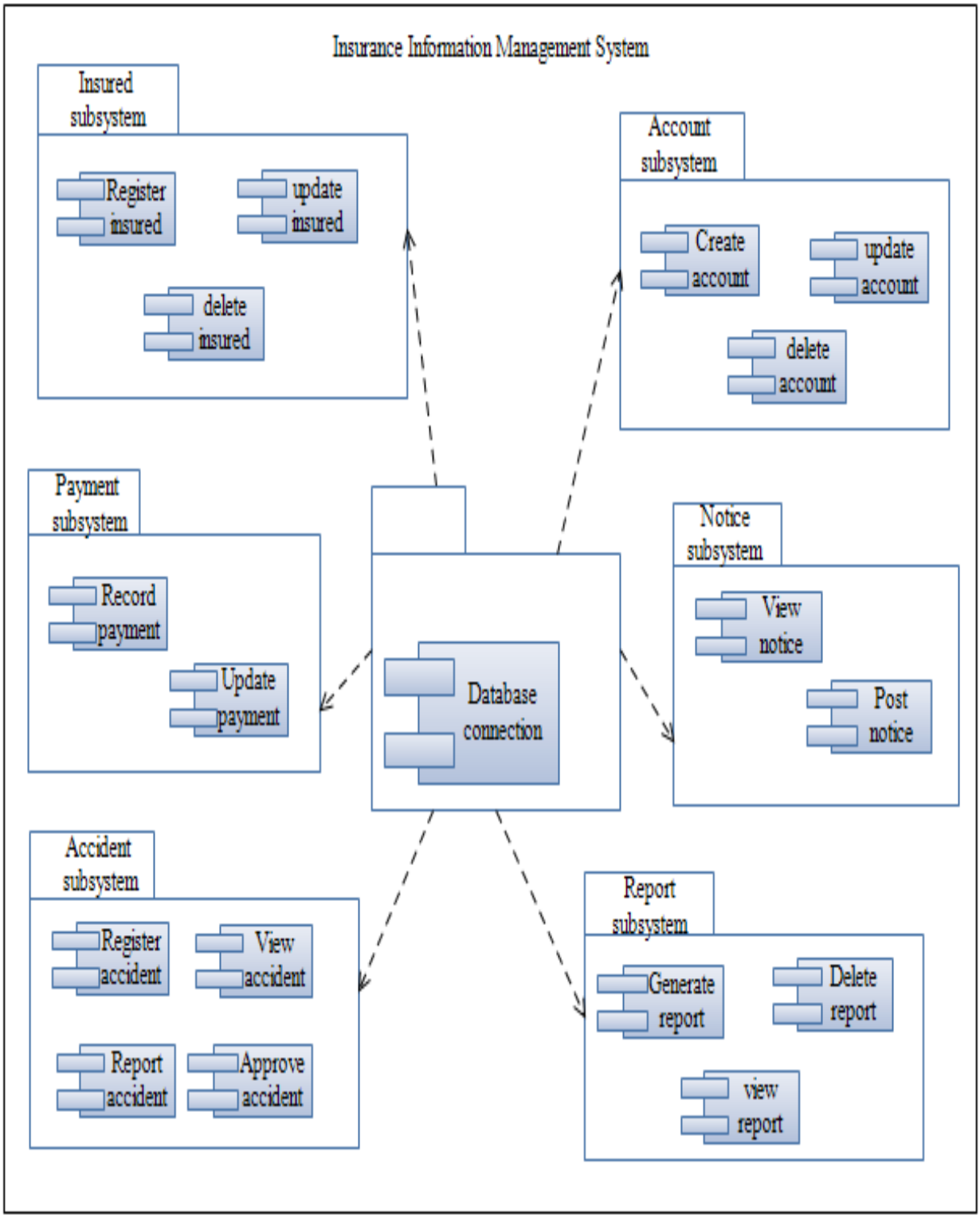


Figure 5.2 Subsystem decomposition diagram

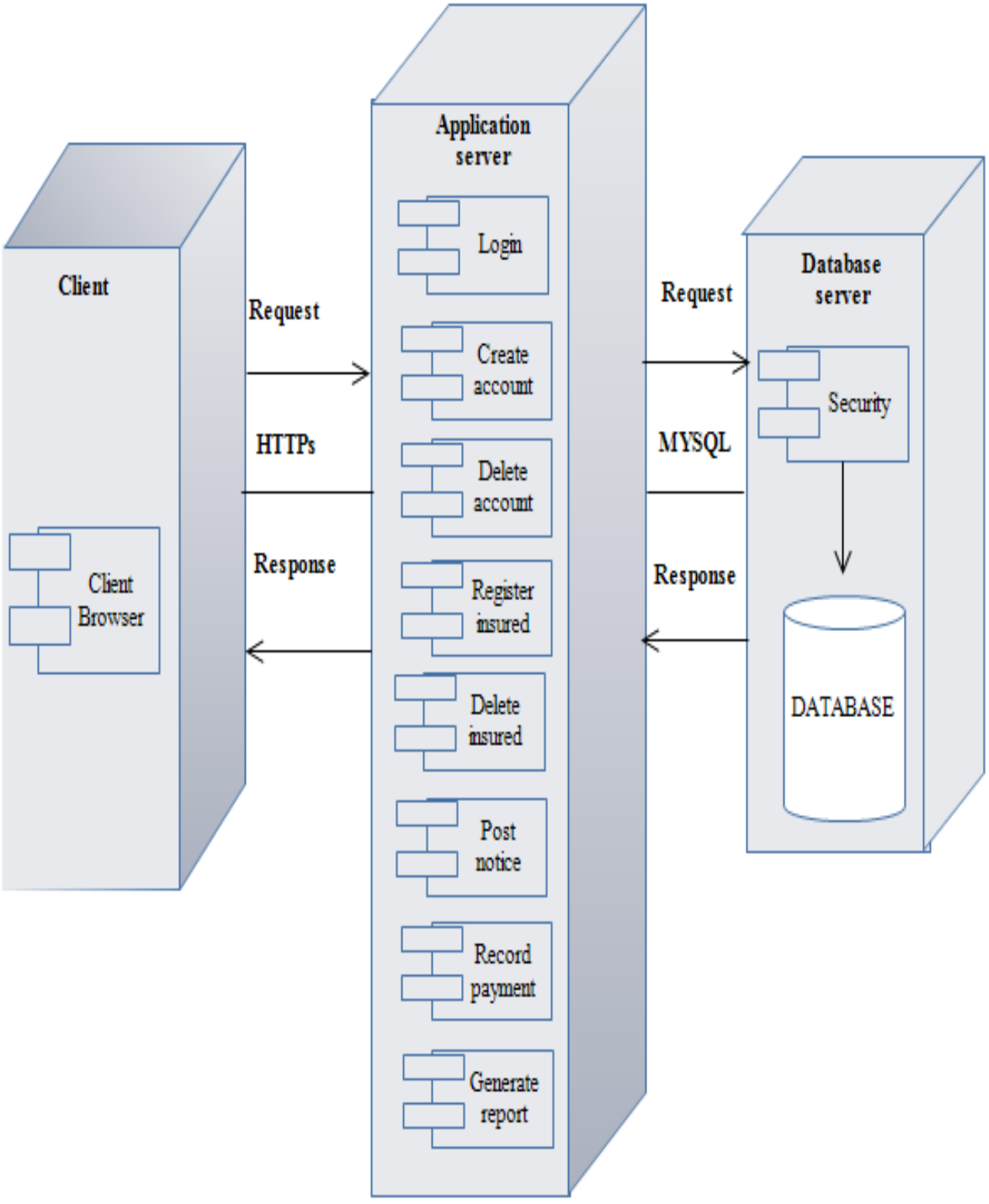


Figure 5.3 Deployment diagram

5.3.2. Detailed Class Diagram

The Class modeling diagram describes the attributes and operations of a class and also the constraints imposed on the system.

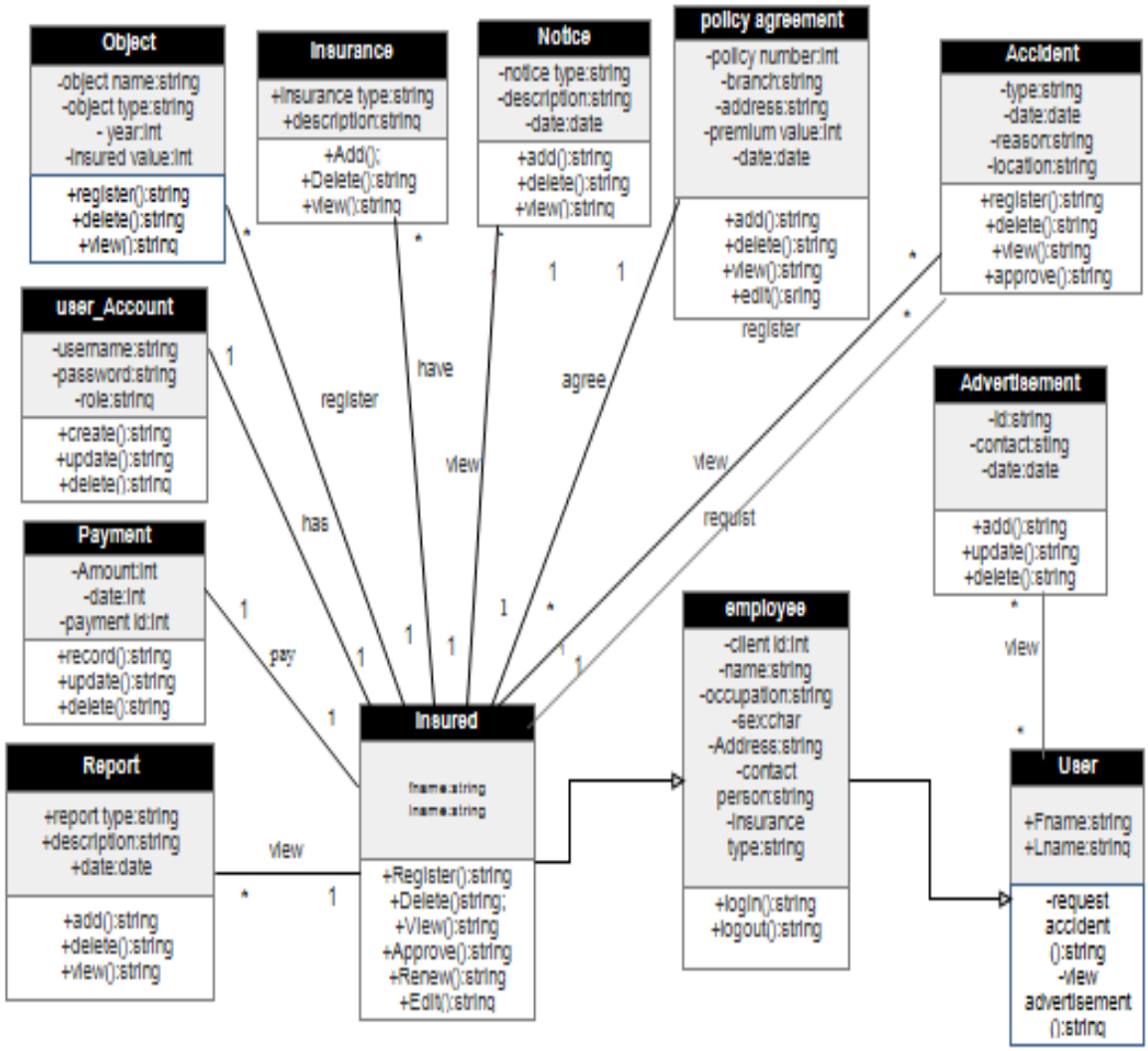


Figure 5.4 Detailed Class Diagram

5.2.3. Persistent Data Management

For persistent data management, we use MYSQL, a popular open source RDBMS. This database keeps track of detailed information of the Ethiopian insurance management system.

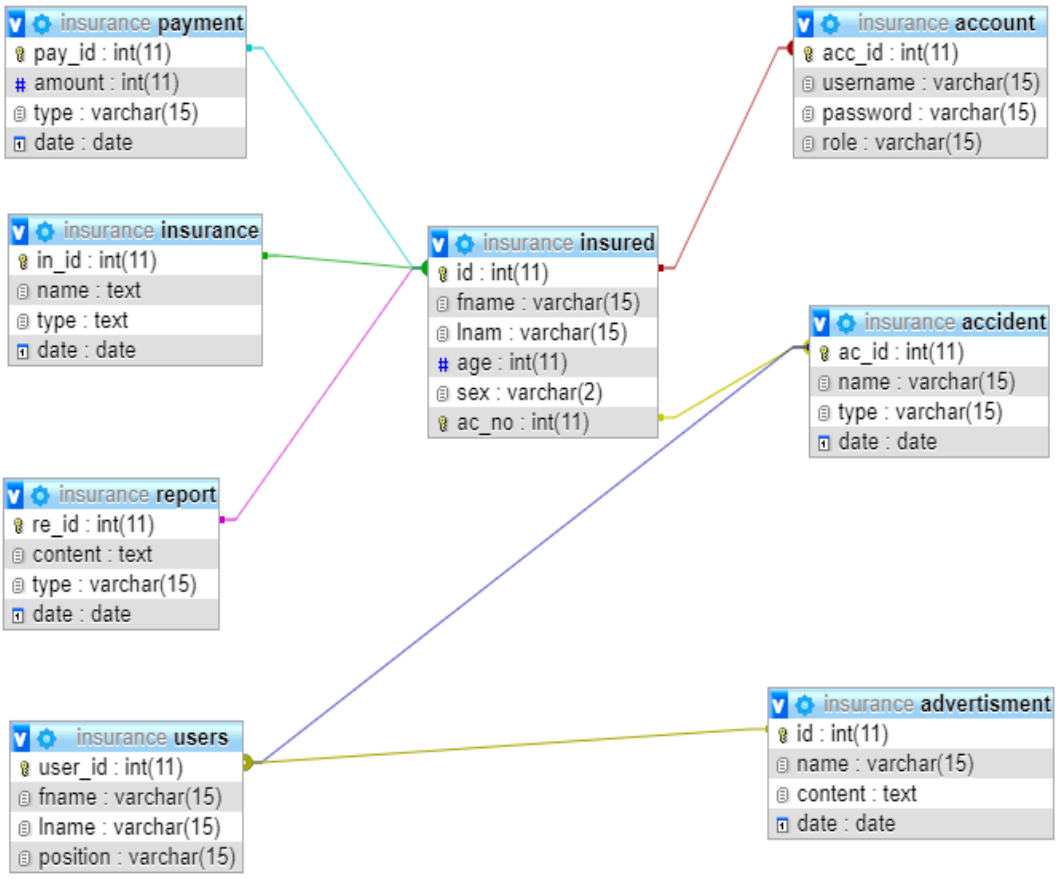


Figure 5.5 Persistent data management diagram

5.2.4. Access Control and Security

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.
- ✓ **Integrity:** There are limits on who can change the data in this system.
- ✓ **Availability:** The system is available at all times to authorized users.

Table 5. 1 Access control and security table

Operation	**Actors**			
	Admin	Operation officer	Insured	Casher
login	✓	✓	✓	✓
Create account	✓	No	No	No

Delete account	✓	No	No	No
Update account	✓	✓	✓	✓
Policy agreement	No	No	✓	No
Register insured	No	✓	No	No
Update insured	No	✓	No	No
Delete insured	No	✓	No	No
Check renew		✓		
Register accident	No	✓	No	No
Report accident	No	No	✓	No
View notice	✓	✓	✓	✓
Post notice	✓	✓	No	No
Payment record	No	No	No	✓
Update payment	No	No	No	✓
Generate report	✓	✓	No	✓
View report	✓	No	No	✓

5.4. Package

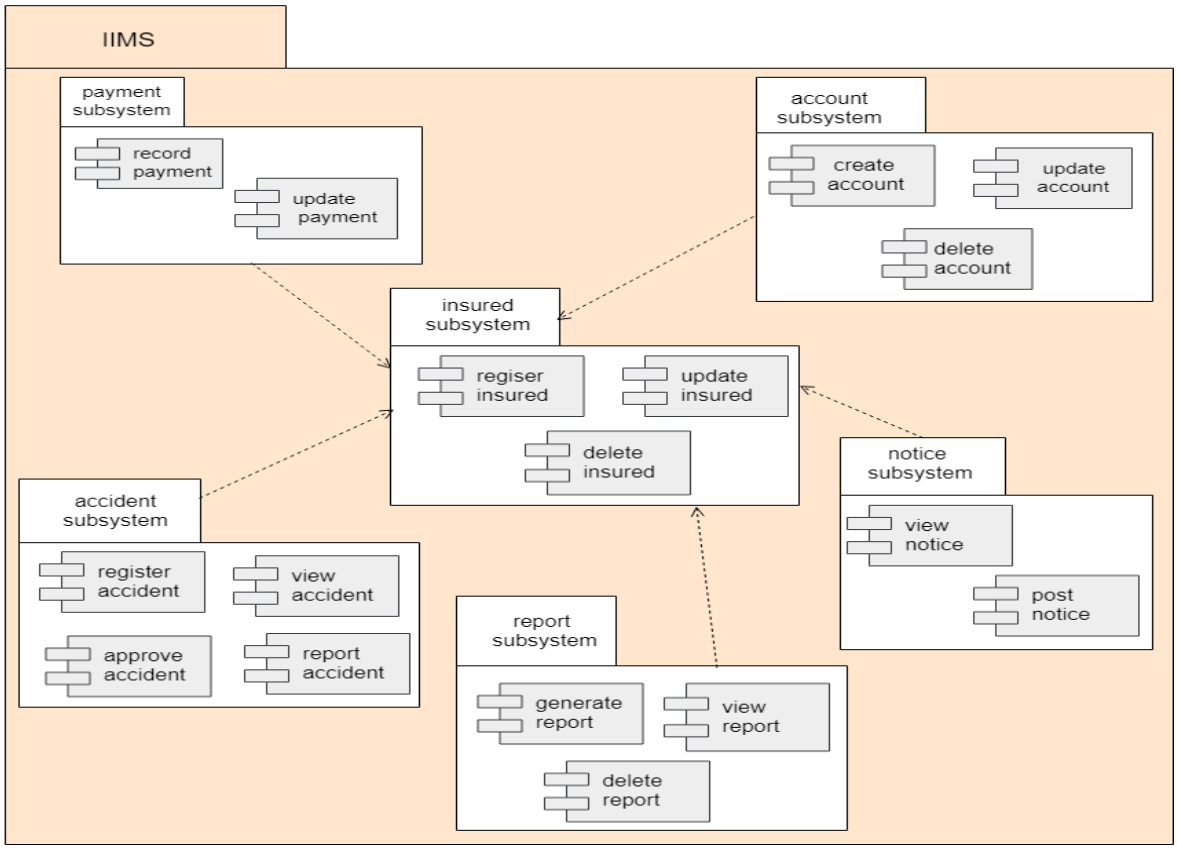


Figure 5.6 Package diagram

5.5. User Interface Design

Figure 5.7 home page User interface for all user

Figure 5.8 login page User interface

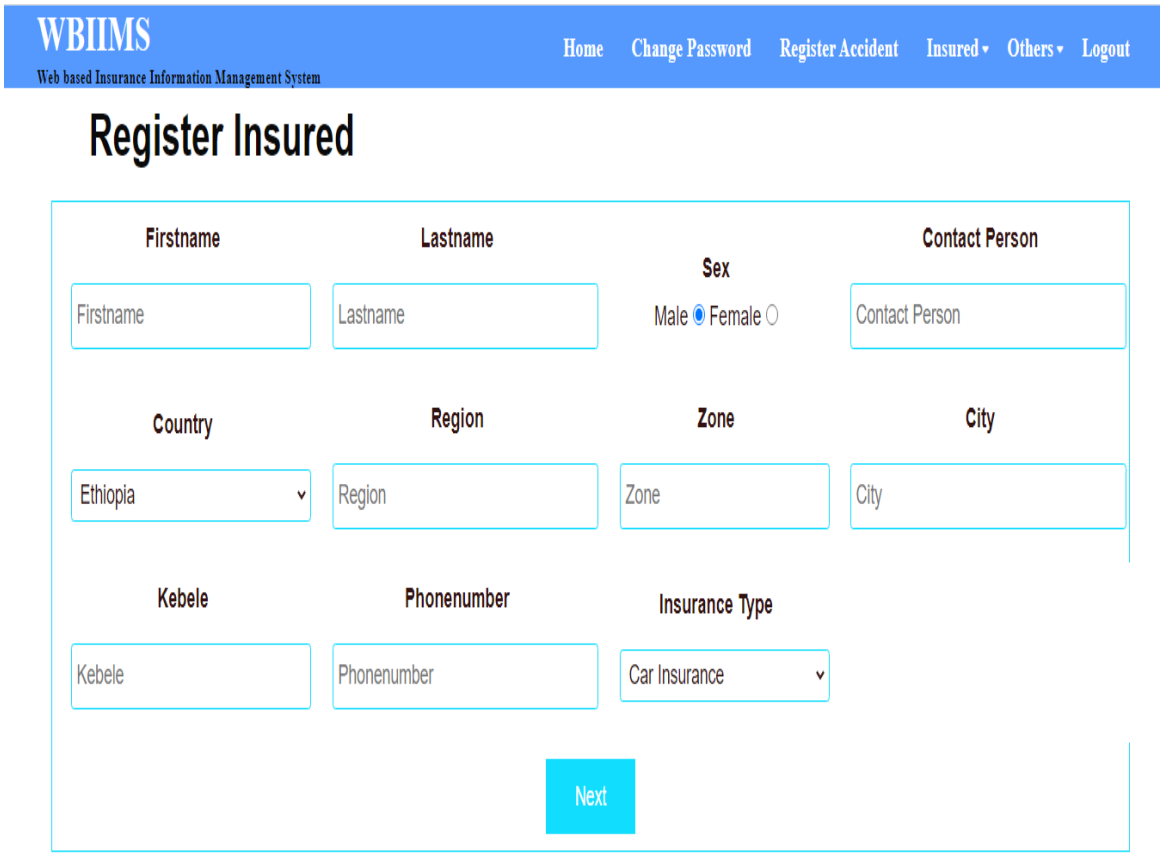


Figure 5.9 insured registration user interface

CHAPTER SIX

6. IMPLIMENTATION AND TESTING

This phase consists of implementing the requirements and design into code we used latest and simple technologies to implement this project such as PHP for script and HTML and Bootstrap to implement the beautiful interfaces and MySQL server for the database. The interfaces designed based on the use cases and the database on based our class diagram that has been designed.

6.1. Implementation of the Database

We implemented databases of the system based on the class diagram that we have designed. And used MySQL for the database implementation. The system which we implemented involves in a central database system that accessing and storing runs on the server or host computer. The foremost advantage of centralized system is centralized security and the ability to handle enormous amount of data on storage devices. The database application on the client side handles the screen input output processing. And the back end on the server-side handles data processing where the front-end application sends across the network to the server.

6.2. Configuration of the Application Server

We use XAMPP application server because XAMPP is simple and lightweight. Apache distribution it is extremely easy to create a local web server for testing and deployment purposes. Everything you needed is to set up a web server-server application (Apache), database, and scripting language (PHP). XAMPP works on different operating systems.

6.3. Configuration of Application Security

Our system validates all the input by returning error message and suggesting to try again when invalid input occur. We implement encryption for user password when the system admin creates a user account or when the user changes their password the system encrypts the password. The system has four role and the role are defined clearly and the user login to their specified page. In the system we implement session to store temporarily username and password of user's to login to the system to redirect to their specified page.

6.4. Implementation of User Interface

Our team implement the user interface by considering the user of the insurance, we implemented basic pages/interfaces of the system based on the use case diagram that have been designed. Mainly there are four interfaces for the four actors they all have one index and login pages to accessing their specific pages. Under these pages there are subpages through which subtasks are performed by the actors based on the use case modeled. These pages were included as parts of the system in order to increase its dynamicity.

6.5. Testing

Testing is the process of running a system with the intention of finding errors. It reduce the risk of failures of the system and Any newly developed system needs to be tested before being introduced or revealed to the public, before the program tested, the program must be free from any errors free from errors is a necessary testing to find errors that may occur as in the language errors, logic errors and error analysis program.

6.5.1. Testing Tools and Environment

Now days we can get lots of Software Testing Tools in the market. Selection of tools is totally based on the project requirements or free tools (Open Source Tools) you are interested. Off Course, free testing tools may have some limitations. So, it's totally based on what are you looking for & is that your requirement fulfills in free version or go for paid Software Testing Tools. Test Environment consists of elements that support test execution with software, hardware and network configured. Test environment configuration must mimic the production environment in order to uncover any environment/configuration related issues. A typical Environmental Configuration for a web-based application is given below: For web server we use Apache server, for Database MySQL, we use window operating system, and we use chromes browser.

6.5.2. Unit Testing

Unit testing: - is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated

control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use or not.

It is done at the source or code level for language-specific programming errors such as bad syntax, logic errors, or to test particular functions or code modules. The unit test cases shall be designed to test the validity of the program's correctness. It is a way of testing each of the system functionality independently. Accordingly, the team has tested each one of the systems activities and the rest accompanying activities independently using different user input, different login mechanisms and any technique of fault finding so that an incorrect functioning of the activities was corrected at the right time.

6.5.3. System Testing

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.

6.5.4. Integration Testing

Integration testing: -By combining each individual form and report with their concerned database as tested by giving general data. From this we can understand that how the system work using separate module. It occurs after individual units are tested. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates and delivers as its output the integrated system ready for system testing.

6.5.5. Acceptance Testing

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 specifications.

CHAPTER SEVEN

7. CONCLUSION AND RECOMENDATION

7.1. Conclusion

Currently wolkite branch Ethiopian insurance is manual based information management system. Due to this many problems are there. Like to search data and, preparing reports, preparing to calculate insured and premium value of insured easy and takes time. By analyzing this problem, the group team proposed, analyze, design, and implement this computerized information management system for Wolkite branch Ethiopian insurance. The system that will provide more efficiency, and accuracy than the manual based system. The new computerized and management system perform many operations performed manually. It prevents the loss of paper documents. This system solve many problems that the organization face. It brings effectiveness to the insurance and reduce work load of employee. The new system can retrieve data in real time. From this we conclude that the project is very important in work environment of the insurance organization after implementation. We could accomplish some of the objectives. But now there is a clear and base idea how the system can be developed and integrated, this project can be seen as an initiation for students who are doing project on the same field for nationalization/generalization insurance management system.

7.2. Recommendation

While doing this system the team has faced different types of challenges. But by the cooperation of all the group members and the advisor, the team is now able to reach to the final result. All the group members strongly fought these challenge and take the turn to the front. We would like to recommend some of the extra features add to this System which we could not do due to shortage of time and unavoidable reasons and challenges. As a result we recommended for futurity if anyone who has intention to develop this system the following will be the future work:

- Online payment.
- Generate report.
- Changing this web application to mobile application for customer use easily anywhere using their phone.
- The system does not use the GPS system where the accident takes place.

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