



WOLKITE UNIVERSITY

COLLEGE OF COMPUTING AND INFORMATICS

DEPARTMENT OF INFORMATION TECHNOLOGY

PROJECT TITLE: AUTOMATED BIDDING (AUCTION) SYSTEM

FOR WOLKITE UNIVERSITY

By

NAME

ID

1. Temesgen Walle-----CIR/294/09

2. Belete Siyum-----CIR/060/09

3. Chalie Teshager-----CIR/086/09

Project Advisor: Mr. Teshome Yihunie

Wolkite University, Wolkite, Ethiopia

January 04, 2020

TITLE PAGE
WOLKITE UNIVERSITY
COLLEGE OF COMPUTING AND INFORMATICS
DEPARTMENT OF INFORMATION TECHNOLOGY
PROJECT TITLE: AUTOMATED BIDDING (AUCTION) SYSTEM
FOR WOLKITE UNIVERSITY
SUBMITTED TO DEPARTMENT OF INFORMATION TECHNOLOGY
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR
THE DEGREE OF BACHLER OF SCIENCE IN
INFORMATION TECHNOLOGY

BY

NAME	ID
1. Temesgen Walle-----	CIR/294/09
2. Belete Siyum-----	CIR/060/09
3. Chalie Teshager-----	CIR/086/09

Wolkite University, Wolkite, Ethiopia

January 04 , 2020

DECLARATION

This is to declare that this project work which is done under the supervision of Mr. Teshome Yihunie and having the title Automated Bidding (Auction) System for Wolkite University is the sole contribution of **Temesgen Walle, Belete Siyum, and Chalie Teshager**. No part of the project proposal 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 the violation of this declaration is proven.

Date: _____

Group Member:

Student Name

Student Signature

Temesgen Walle

Belete Siyum

Chalie Teshager

APPROVAL FORM

This is to confirm that the project report entitled Automated Bidding (Auction) System for Wolkite University 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 **Temesgen Wale, Belete Siyum, and Charlie Teshager** is approved for submission.

Advisor Approval Form

Advisor Name

Advisor Signature

Department head Approval Form

Department Head Name

Department Head Signature

Examiner Approval Form

Examiner Name

1. _____

2. _____

3. _____

Examiner Signature

ACKNOWLEDGMENT

First of all our gratitude thanks to God for his help throughout our stay in the university. Next, we would like to extend our thanks to our advisor Mr. Teshome Yihunie for his heartfelt advice and help to shape up our project proposal through review and criticism thoroughly. We would also like to thank Wolkite finance workers for their willingness for any interview to the achievement of the project proposal. Finally, we would like to express our deep gratitude to our instructors and our trust and closest friends for constant support and goodwill.

Table of Contents

TITLE PAGE i

DECLARATION ii

APPROVAL FORM iii

ACKNOWLEDGMENT..... iv

LIST OF TABLES viii

LIST OF FIGURES ix

LIST OF ABBREVIATIONS x

ABSTRACTS xi

CHAPTER ONE 1

1. INTRODUCTION 1

 1.1. Background of the Project..... 2

 1.2. Statement of Problem..... 3

 1.3. Objective of the Project..... 4

 1.3.1 General Objective 4

 1.3.2. Specific Objective 4

 1.4. Feasibility Study 4

 1.4.1. Economic Feasibility..... 4

 1.4.2. Technical Feasibility 5

 1.4.3. Operational Feasibility 5

 1.4.4. Legal Feasibility..... 6

 1.5. Scope and Limitation of the Project..... 6

 1.5.1. Scope of the Project 6

 1.5.2. Limitation of the Project 6

 1.6. Significance of the Project 6

 1.7. Beneficiaries of the Project..... 7

 1.8. Methodology of the Project..... 7

 1.8.1. Methodologies for Data Collection..... 7

 1.8.2. System Analysis and Design..... 7

 1.8.3. System Development Model..... 8

 1.8.4. System Testing Methodology 9

AUTOMATED BIDDING (AUCTION) SYSTEM

1.8.5. Development Tools and Technologies.....	9
1.9. Document Organization.....	11
CHAPTER TWO.....	12
2. DESCRIPTION OF THE EXISTING SYSTEM.....	12
2.1. Introduction of Existing System.....	12
2.2. Users of Existing System.....	12
2.3. Major Functions of the Existing System.....	13
2.4. Drawbacks of the Existing System.....	13
2.5. Business Rules of the Existing System.....	14
CHAPTER THREE.....	15
3. PROPOSED SYSTEM.....	15
3.1. Introduction to Proposed System.....	15
3.2. Functional Requirements.....	15
3.3. Non-functional Requirements.....	17
3.3.1. User Interface and Human Factors.....	17
3.3.2. Hardware Consideration.....	17
3.3.3. Security Issues.....	18
3.3.4. Performance Consideration.....	18
3.3.5. Error Handling and Validation.....	18
3.3.6. Quality Issues.....	18
3.3.7. Backup and Recovery.....	19
3.3.8. Accessibility Issues.....	19
3.3.9. Reliability and Availability.....	19
3.3.10. Usability and Visibility.....	19
3.3.11. Documentation.....	19
CHAPTER FOUR.....	20
4. SYSTEM ANALYSIS.....	20
4.1. System Model.....	20
4.2.1. Use Case Model.....	20
4.3. Object Models.....	41
4.4.1. Class diagrams.....	41
4.4.2. Data dictionary.....	42

AUTOMATED BIDDING (AUCTION) SYSTEM

4.5. Dynamic Model	45
4.5.1. Sequence Diagram	45
4.5.2. Activity Diagram.....	50
4.5.3. State Chart Diagram.....	57
CHAPTER FIVE	60
5. SYSTEM DESIGN	60
5.1. Introduction to System Design.....	60
5.2. Purpose and Goals of Design	60
5.2.1. Performance	60
5.2.2. Maintenance	61
5.2.4. Reliability.....	61
5.2.5. End-user	61
5.3. Current Software Architecture	62
5.3 Proposed Software Architecture	62
5.3.1 Subsystem decomposition.....	64
5.3.2. Hardware and software mapping	66
5.3.3. Detailed Class Diagram	68
5.3.4 Persistent Data Management.....	69
5.3.5 Access Control and Security	71
5.4. Packages.....	72
5.5. Algorithm Design.....	73
5.6. User Interface Design	73
CHAPTER SIX.....	75
6. IMPLEMENTATION AND TESTING.....	75
6.1. Implementation	75
6.2. Testing.....	75
6.2.1. Features to be tested and not to be tested.....	75
CHAPTER SEVEN	77
7. Conclusion and Recommendation	77
7.1. Conclusion	77
7.2. Recommendation	77
REFERENCES	79

LIST OF TABLES

Table 1: Business Rules	14
Table 2: Use case Identification.....	21
Table 3: Actor description	22
Table 4: Use case Documentation Login	23
Table 5: Use Case Documentation for Create Account	24
Table 6: Use case Documentation for Activate Account	25
Table 7: Use case Documentation for Deactivate Account	26
Table 8: Use case Documentation for View paid Bidders	27
Table 9: Use case Documentation for View Registered Bidders	28
Table 10: Use case Documentation for Upload bid Document.....	29
Table 11: Use case Documentation Buy auction Payment	30
Table 12: Use case Documentation Item Payment	31
Table 13: Use case Documentation Post Auction	32
Table 14: Use case Documentation Create Bid Document.....	33
Table 15: Use case Documentation View Auction	34
Table 16: Use case Documentation Bidder Registration	35
Table 17: Use case Documentation Bid on Items	36
Table 18: Use case Documentation View Winners.....	37
Table 19: Use case Documentation Check Items.....	38
Table 20: Use Case Scenario for Login	39
Table 21: Use Case Scenario for Create Account.....	39
Table 22: Use Case Scenario for Bid on Items	40
Table 23: Use Case Scenario for Check Items.....	40
Table 24: Use Case Scenario for Item Payment.....	41
Table 25: Data Dictionary of Bidder Registration	43
Table 26: Data Dictionary of Post Auction.....	43
Table 27: Data Dictionary of Create Bid Form.....	44
Table 28: Data Dictionary of Create Account for User	44
Table 29: Access Control Information.....	71

LIST OF FIGURES

<i>Figure 1: Use case Diagram.....</i>	22
<i>Figure 2: Class Diagram.....</i>	42
<i>Figure 3: Sequence diagram for Login.....</i>	46
<i>Figure 4: Sequence diagram for Post Auction.....</i>	47
<i>Figure 5: Sequence diagram for Bidder registration</i>	48
<i>Figure 6: Sequence diagram for Bid on Items</i>	49
<i>Figure 7: Sequence diagram for Logout.....</i>	50
<i>Figure 8: Activity diagram for Login.....</i>	51
<i>Figure 9: Activity diagram for Create Account</i>	52
<i>Figure 10: Activity diagram for Create bid form</i>	53
<i>Figure 11: Activity diagram for Post Auction</i>	54
<i>Figure 12: Activity diagram for Bidder Registration</i>	55
<i>Figure 13: Activity diagram for Bid on Items.....</i>	56
<i>Figure 14: State chart for Login.....</i>	57
<i>Figure 15: State chart diagram for manage Account</i>	58
<i>Figure 16: State chart for Post Auction.....</i>	58
<i>Figure 17: State chart diagram for Bidder Registration</i>	59
<i>Figure 18: Proposed system architecture diagram</i>	63
<i>Figure 19: Subsystem decomposition diagram.....</i>	65
<i>Figure 20: Component diagram</i>	66
<i>Figure 21: Hardware/Software mapping.....</i>	67
<i>Figure 22: Deployment Diagram.....</i>	68
<i>Figure 23: Detailed Class Diagram</i>	69
<i>Figure 24: Persistent diagram.....</i>	70
<i>Figure 25: Package Diagram</i>	72
<i>Figure 26: User interface for Home Page</i>	73
<i>Figure 27: User interface for Login page.....</i>	74

LIST OF ABBREVIATIONS

- Admin:** Administrator
- BR:** Business Rule
- CSS:** Cascade Style Sheet
- CPO:** Customer payment order
- FK:** Foreign Key
- GUI:** Graphical User Interface
- HTML:** Hyper Text Markup Language
- HTTP:** Hypertext Transfer Protocol
- ID:** Identification
- MySQL:** Open source relational database management
- OOSAD:** Object Oriented System Analysis Design
- OOA:** Object Oriented Analysis
- OOD:** Object Oriented Design
- PHP:** Hypertext Preprocessor
- RAM:** Random Access Memory
- PK:** Primary Key
- UC:** Use Case
- UI:** User Interface
- UML:** Unified Modeling Language
- WKU:** Wolkite University
- XAMPP:** platform apache MySQL Perl PHP

ABSTRACTS

An automated bidding and auction system of Wolkite University for Wolkite University is a web based application which aim to change the manual system into a computerized one which overcome the difficulties of the manual system and make the campus beneficiary. An automated bid and auction system of Wolkite University is the way of the change existing system into online and it used for online bidding between the customer or bidders to participate on the auction process online without time consuming, the host organization identifies the winner of the auction and also in which technical committee checks either the materials comes depend on the specification that the organization will need or not comes.

CHAPTER ONE

1. INTRODUCTION

The term auction means the process of placing items on an auction and letting people compete on the item by bidding, then based on the business rule the winners will get the auction. It is all about getting the right price for the product and the services offered by the companies or individuals. Automated bidding is an offer of setting a price one is willing to pay something [1]. Bidding can also be in order to receive a competitive low price and quality service for a product and have to check products by technical committee and service offered by a vendor to an organization in order to win the bid and so as to get to contract. The bidding process define on how the winner is determined and the final agreement.

In Wolkite University automated bidding is processing manually or offline. This study will come out with a mode of automated bidding can be in bid a computerized environment. Participants can make bidding strategy to maximize their profits. Hence, it is a great value to study on automated bidding strategy in business market for participants to realize profit maximization. The frame work is designed to be change the manual system in a simple and easy to use the system. It provides user with real time information during the bidding so, it could help bidder or seller to obtain a fair price through an open bidding process.

The primary objective of our project is to acquire and sell/bid the right product with the right price as well as a qualified service and also at right time in a fair and finally in a transparent manner. However, mostly auction processes are known for being highly vulnerable to corruption and the processes is tedious and slow [2]. In this regard, our automated bidding system is designed to store profile of bidders in their respective area, advertise new bids, accept bid proposal and notify winners about bid evaluation result. The use of this automated online bidding system reduces errors and also it ensures greater transparency and accountability in public auction of goods and services through bidding process with great efficiency. It ensures greater participation as well as security of bid and related documents.

1.1. Background of the Project

Wolkite University is one of the third generation higher institutions that have been founded in 2004 E.C. It is established for the purpose of providing and promoting higher education learning, research, and outreach programs in the country. The university is located in the southern nation nationalities regional state, in Gurage Zone, 158 km south west of the capital city, Addis Ababa, on the way to Jima and 12km far from Wolkite up to main Gubre campus.

In WKU bid processing system is one of the processes that will be done to be participate in bid from the campus. The system gives its function to buyers/sellers of the University. The bid is processed or performed by the purchase team. Finally the winners of the bid will be selected and notified also other services they need to be checked. The current system of bidding system performs the activity of buying and selling items process. When we see current bidding system in Wolkite University it wants to acquire goods or service by bid. While the organization is try to announce this auction, it pays money for media and newspaper.

The organizations have unified set of bidding regulations. Bidders to contract with organization face different set of bidding rules and regulations. Thus are, both bidders and organizations are often faced with different key bidding requirements such as timing, advertising bid content for instance quality and quantity of product are taken into consideration. From these, often conflicting, requirements cause's challenges and results in delays to organization bidding process. Errors are most commonly made by bidders when submitting bid proposals issued by public invitations. The most common mistakes that bidders make when submitting a proposal are failing to include all forms (requirements) at the time of submission to possess the required licensing and registration required by the bidding document and not respecting submission deadline.

Besides, organization may not have information about potential bidders specializing on the context of the auction and the number of bidders is very limited caused mainly due to shortcoming of traditional information dissemination mechanism. The problem of the current bidding system in the University is a little bit have a problem to manage the corruption on the items that are supposed to bid in the organization and problems around payment so that we will try to automate the current payment system as much as possible. The team members designed to address these issues replacing the existing paper-based system by computerized or automated system.

1.2. Statement of Problem

The current auction or bidding system involves man power and it is tedious, and also needs more cost to accomplish the activity. The customer wants to compute in the auction or bidding item he/she must attends the place of bidding by coming on the place or area of bidding takes place. In addition to this the organization face the problem of time, cost, printing the bid document and media promotion, announce the auction and bid. So process covers limited area and also bidders to be participate is limited in number, vulnerable to corruption, requires many number of man power, poor coordination between the bidders and organization.

At present in WKU have no an automated system for bidders/auctioneers. Because of these manual operations of bidders face many problems. Therefore the main problems on the existing system are the following ones.

- ✓ **Time consuming and more enervating:** from the posting up to selecting the right winner each process is going on manually. The person must go to many places to post the notice of the vacancy. The notice must be available for a long time to in order to be read by many applicants this is wastage of time. The applicant must come to the campus or the district to register and put their CPO as well as for bid.
- ✓ **Needs more human resource:** Human resource is needed even to select a single bidders. Human resource is needed to perform process of posting the notice, auction date, customer or applicants register, to conduct the bid, to evaluate the result, etc.
- ✓ **It is not cost effective:** In regard to the bidder, must come to the campus to be registered and again he/she comes to participate on the auction/bid. There are much expenditure that the bidder expends like transport, food, bed and the like. In regard to the organization, time consuming, printing bid document and newspaper are the consumption of more human resource is wastage of cost and more wastage of paper and like materials.
- ✓ **Not all inclusive:** The notice may be visible only for nearby bidders. Therefore, the organization may not have good to search efficient man power. When there are many bidders have not the chance of participating on the auction process.

1.3. Objective of the Project

1.3.1 General Objective

The general objective of the project is to develop an automated bidding system specifically for Wolkite University.

1.3.2. Specific Objective

- ✓ To analyze the current system.
- ✓ To identify and gather requirements for the proposed system.
- ✓ To analyze and specify the requirement of the current system.
- ✓ To design and model using object-oriented approach.
- ✓ To design and implement the proposed system.
- ✓ To develop and test the system.
- ✓ To maintain the system.
- ✓ To having high security payment mechanism.

1.4. Feasibility Study

A feasibility study is an evaluation or analysis of the potential impact of a proposed project or program. It is based on extensive research on both the current practices and the proposed project/program. It will contain extensive data related to financial and operational impact and will include advantages and disadvantages of both the current situation and the proposed plan. The extensive research, conducted in a non-biased manner, will provide data upon which to base a decision. The objective is determining whether or not the proposed system is feasible toward its users and should consider the following feasibility which includes:-

1.4.1. Economic Feasibility

This stage determines the cost or value analysis. It can be software, hardware and others. The new proposed system would be economically feasible and to identify the economic feasibility of the project the team has done cost-benefit analyses which enable the team to specify the benefits and costs associated with the project. In short, it uses less capital as compared as the existing system.

Tangible benefits:-

- ✓ To minimize cost of printing documents.
- ✓ Minimizing cost of transportation for the customer to register and participate in the bidding/auction.
- ✓ The cost to conduct a full system investigation
- ✓ Payment cost for media and newspaper to announce the auction is reduced.
- ✓ The cost of hardware and software for the system implementation and application being considered.

✓ **Intangible benefits:-**

- ✓ Increase speed of activity to be performed and Reduce Resource Consumption
- ✓ Increase Management flexibility and punctual/on time information.
- ✓ Satisfying customer requirements/needs and increase employees morale

1.4.2. Technical Feasibility

The proposed system can be easily maintained, portable, modifiable, extensible available and reliable. It is also support multi user, data handling system and easy to install. Generally the system is technical feasible, it does not require much technical expertise. As part of technology and system feasibility study we have investigated the technological resources necessary for the project and our systems familiar with technology. Our focus is to develop well organized dynamic web application that is technically efficient and effective to manage the bidding process online system. So an application is not complex to users to interact with. Therefore it can be concluded that the system is technically feasible.

1.4.3. Operational Feasibility

The proposed system will be operationally feasible because as we will develop a system that is easy to use and maintain. The admin can operate the system with little training. Measure how much the proposed system solves the existing system problems. With a little training that anyone will be able to understand and will be able to handle the system easily. The users of this system are the bidders/an auctioneer, so the user should be knowledgeable/familiar to English language, familiar for using internet and able to use and do according to the graphical user interface (GUI) on the website.

1.4.4. Legal Feasibility

.Legal feasibility determines whether the proposed system conflicts with the legal requirement or not. The system to be developed is not conflict with any government directives, because it gives services for governmental and non-governmental organization. Therefore our system will be legally feasible

1.5. Scope and Limitation of the Project

1.5.1. Scope of the Project

The scope of the project covers the area of the project and activities, operations done by the system and also our project will cover organization in Wolkite University to sell/buy goods and service by auction system. Bidders participate on the auction by visiting Wolkite university site and reviewing the item online. In our system, can create and post auction, and specify start and closed date, register users, manage bid, customer information and filter auction. As well as the system collect and distributed goods and services that is implement only in Wolkite University district. The customer can bid on auction item by filling the necessary information. In order to apply bidding process correctly an admin checks the bidder's trade license number and also check the bidders are paid or not. After the end of the auction, the system responsible to notify the winner. Then project team will be able to perform the above activity and give efficient service to the user of the system.

1.5.2. Limitation of the Project

Before identify the limitation we should categorize the technical committee responsibilities, in our system there are two types. Technical committee for verify and identify the winner and other is purchase committee for check items and validate the item quality, but our system is not verify or validate the item quality.

1.6. Significance of the Project

The significant of the system is to facilitate and give short and precise and honest bidding service for the customer of the system or organizations. The project has the following significance:-

- ✓ Satisfying customer needs.
- ✓ Give full information about auction and bidding content and process.
- ✓ Improve the communication between auctioneers and bidders.

- ✓ Cover large number of bidders and reduce cost for paying to media, newspaper.
- ✓ Reduce cost of transportation to register by appearing at the place.
- ✓ Reduce cost for paper-based work.
- ✓ It saves manpower just you watch everything online and easy comparison of bid.
- ✓ Reduce time waste, reduce corruption and better efficiency.
- ✓ Proffered bidders are all contain within single database.

1.7. Beneficiaries of the Project

The project provides many benefits for the users and the organization:-

- ✓ Bidders/customers: Users minimize time and place limitation, easy to access service and organized information, and minimize transport and material costs.
- ✓ WKU (organization): Easy to handle and reduce number of copies and printing material cost.

1.8. Methodology of the Project

1.8.1. Methodologies for Data Collection

✓ Interview

Our teams use this method by orally asks different peoples who have some knowledge regarding to auction. We orally discuss and interview WKU finance workers for necessary information's regarding about the process of bid/auction. This information helps us to identify the main actors that participate on the bid/auction and also about the way that how the system works.

✓ Document Analysis

This technique provides information on how the existing system works. Therefore, documents related to the existing system of the organization will be assessed and also to understand the existing system, we collect more information by referring internet, documents, newspaper and other reading materials about the general information of the auction. It helps us to analysis, design and organizes our project.

1.8.2. System Analysis and Design

Analysis and design the system using object oriented approach. We need a method for analyzing a problem to be solved, a plan for the design of the solution and a construction method that

minimizes the risk of error. It is best way to construct, manage, and assemble objects to implements our system. Object oriented design methodology has two phases:-

- ✓ **Object Oriented Analysis (OOA):** During this phase the team will look at the problem domain and with the aim of producing a conceptual model of the information that exists in the area which will be analyzed.
- ✓ **Object Oriented Design (OOD):** During this phase the model interactions and behaviors that support the use case scenario, and finally update object model to reflect the implementation environment. We have to use Object Oriented System Analysis and Design (OOSAD) using Unified Modeling Language (UML). In object oriented thinking, a system is considered as a collection of classes and objects and the relationships that tie them together, because of the following reasons:-
 - ✓ These techniques enable to reduce communication gap between user and designers.
 - ✓ These techniques enable designer to model real world accurately.
 - ✓ These techniques have usability features that allows to use codes repeatedly.

1.8.3. System Development Model

We will use Object Oriented System Analysis and Design (OOSAD) approach to designing modular reusable software systems. Because web based sites like our bid system is developed in PHP that uses the concept of object with inheritance and polymorphism class's concepts. We use **Agile Software Development Methodology**, as an innovative approach, the agile software development methodology is used for articulating a well-organized project management procedure allowing for recurrent alterations. Certainly, such type of a methodology is one theoretical outline for undertaking several software engineering projects.

- ✓ Adaptive approach that responds to changes favorably.
- ✓ Allows for direct communication to maintain transparency.
- ✓ Improved quality by finding and fixing defects quickly and identifying expectation mismatches early.
- ✓ Used to work in groups and favorable to add features if new requirements present.

1.8.4. System Testing Methodology

- ✓ **Testing** is a process of executing a program with the goal of finding an error. The purpose of testing is to identify and correct debugs in the developed system.
- ✓ **Unit testing:** In this level, we examine each functional requirements are done and focuses first on the modules in the proposed system to locate errors and each module has to be checked separately.
- ✓ **Integration testing:** In this level, we examine our system modules are integrated each other and we have examined how the different procedures work together to achieve the goal of the subsystem and used to verify the combining of the software modules.
- ✓ **System testing:** In this level, we have examined how the whole subsystems came together to achieve the desired goal. The goals of system testing are to detect faults that can only be exposed by testing the entire integrated system. It is used to verify, whether the developed system meets the requirements.

1.8.5. Development Tools and Technologies

1.7.5.1. Frontend Technologies

- ✓ **HTML:** - fundamental coding language that creates and organizes web content to be displayed on browser.
- ✓ **CSS:** - is client side front-end language that accompanies html, and define the style of web content, such as layout, color, font etc. It's browser compatible. Why we use for the formatting of the system.
- ✓ **Java Script:** - is client side front-end language programming language used for more interactive element like dropdown menus, modal windows, and contact forms. Interpreted languages, easy to learn, platform independence. Why we use for animation purpose and to display boxes.
- ✓ **Bootstrap:** - is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains CSS and JavaScript based design for forms, buttons, navigation and other interface components.
- ✓ **JQuery:** - is a lightweight java script library. The purpose of jQuery is to make it much easier to use JavaScript on your website.

1.8.5.2. Backend Technologies

- ✓ **XAMPP Server:** - manage servers setting and the reason why we choose XAMPP server is its own database design and its cross platform and support current Maria DB MySQL.
- ✓ **PHP:** - is server side back-end programming languages. Simple and easy to learn, speed, easier to fix problem, optimized of making application.

1.8.5.3. Documentation and Modeling Tools

- ✓ **Microsoft word 2013:** This is used to write the document of proposed system from the starting to the end of project.
- ✓ **Power Point 2013:** To presentation purpose for the project.
- ✓ **Edrawmax:** Used to draw different UML diagram those are necessary to structure the system diagram and UML paradigm for UML community edition.
- ✓ **Text editor:** used to write the code of the project. This are like sublime and notepad ++.

1.8.5.4. Deployment consideration

Hardware Requirement

- ✓ Computer: - used to write the proposal, documentation, develop online auction management system. The computer specifications have followed:-
- ✓ Processor, RAM and CD used for the backup.
- ✓ Hard Drive: - used to store data permanently.
- ✓ 8GB flash: - use back up data and store data.
- ✓ Text editor: - used to write the code of the project. Like notepad, notepad ++.
- ✓ MySQL: - used to database connection.
- ✓ Pen and paper: - used to design the system before typing on the computer.

Software Requirement

- ✓ MS word 2013
- ✓ MS power point 2013
- ✓ Text editor(Notepad++, Sublime)
- ✓ Draw.io or Edrawmax.

1.9. Document Organization

Our project in chapter one mainly includes introduction, background or project area of the organization, statement of the problem, objective, feasibility, significance, scope, beneficiaries, and methodology of the project. In chapter two deals about a description of the current system that discuss about the current system, users and major functions of existing system, and the drawbacks of the existing system . We identify the business rule that the existing system follows. In chapter three deals about we explain what the proposed system is and identify functional requirement, nonfunctional requirement. In chapter four deals about system analysis for our projects using the system-designing the model and we use UML modeling system. Our system designed by system model in use case diagram, and use case description, class diagram that define and put out our project scenarios. The other will have discussed dynamic model of our system and this includes sequence diagram, activity diagram, and state diagram and normalization. In chapter five deals about by using the system-designing model and we use UML modeling system for our projects.

CHAPTER TWO

2. DESCRIPTION OF THE EXISTING SYSTEM

2.1. Introduction of Existing System

The current system of auction in Wolkite University until now is paper-based system. It means that the system is managing manually. The people who wish to participate in the auction have to be presented on the auction place on a specific time. The number of participants are limited due to the area of auction which leads to join a smaller number of participants. The smaller number of participants have a direct impact on the selling items, because fewer number of participants means having less bids to the items. Sometimes the seller sells his/her item in small value. In this traditional auction auctioneer has to follow each bidding process and record each seller and bidder until the end of the auction which is very exhausted and takes too much time.

In the existing bid and auction system are takes place in traditional way a person must be there exist physically to participate on the auction. In existing auction system auctions announce by media, newspaper, and notice board. To participate in existing auction system bidders must have a valid trade license number and VAT registration number. Bidders fulfill in the above information first buy a document which contains the bids information about product or item and bids form. Bidders read the bid document and fill the required data after this, bidder return the form or bid proposal to the admin. At this time the bidder pays some money or if bidders have a bank account he or she transfers to the organizations managers account at this time bank workers write a bill bond to bidder. The bidders give the bill bond with the bid proposal form to the administrator. The host organizations administrator stores this information in the box up to the auction end date. After the end of the auction date administrator open the box and identifying the winner of bid. The winner of the bid announces by phone or notice board.

2.2. Users of Existing System

- ✓ **Bidder:** is a customer that is selling an item and buying used materials by placing a bid is functional to the bid and auction process. This users of the existing system wish to participate in the bid process have to be presented on the auction place on a specific time.
- ✓ **Technical and purchase Committee:** is a customer to organize all the system information

and identify and check the winner materials in order to perform the functionality since organizing reports.

- ✓ **Financial Team:** is a customer that is the functionality to withdraw money or budget for buying goods and services that accessible to the university. This user of the existing system in which the final money payment will be performed. Based on the auction rule and regulation the financial team must pay money for the winner of the auction.
- ✓ **Prospective Manager:** is a customer that request to organization manager for acquiring goods and services by bid and auction process.
- ✓ **Manager Directorate:** is a customer that is acquiring service or buying an item by auction process. The person who manage the process of auctions by arranging optimum schedule time and place.

2.3. Major Functions of the Existing System

- ✓ It provides a bidding system by distributing bid document about the auction specification for bidder in the auction process.
- ✓ The paper-based auction system register bidders if they are given prepayments for bid document in bid processing.
- ✓ In order to participate bidders in the bid processing, the system checks the requirements being expected from bidders bid information.
- ✓ It must be available for only the specified days on which the auction process starts and until the last date of the auction process.
- ✓ The exchange of goods and services between participants are enable in this existing system
- ✓ In the last, announce the winners of bid and auction system.

2.4. Drawbacks of the Existing System

The main drawbacks are that the current system is time wasting, enervating, economically not efficient not well-organized information handling. Generally the current system is not efficient and effective that facing the following disadvantages.

- ✓ Present delay of activities, because of when the document can be mange with manual way it takes much time, many resource. It is time and energy consuming since no use of technology.

- ✓ The collected data all the records associated with the manual system are records and stored manually, as a result there is no security mechanism to protect. The security that the system provides for the privacy of those record is not a good manner.
- ✓ Due to manual operation most of the functions are wastage of resources likely time, manpower, and paper.

2.5. Business Rules of the Existing System

Business rules are statements about the system ways of doing business or is rule effectively an operating principle or polices that we try to specify for both the existing system and the new system must satisfy. The business rule is a principle or a policy in which the proposed system operates accordingly. It deals with access control issues also they reflect business policies. System have policies in order to satisfy the business objective, satisfy customers, make good use resource and conform to laws or general business conventions. It often relates to access control issues, operating policies and principles of the organization. The organization has the following principles:

Table 1: Business Rules

ID	Description
BR-1	You must have to come on time with your items while you win auction.
BR-2	Must never bid if you do not intend to pay, you will be banned.
BR-3	When winners is not coming with the items they punished by CPO
BR-4	When the first winner doesn't come across with the bid items within specified time, give to the chance for the second winner.
BR-5	Extend the deadline of the auction when there is no participant with the specified schedule.
BR-6	Must buy the Performa before bid on the items.
BR-7	Bidder has not trade license can't be not accepted or registered.
BR-8	In order to bid, bidders first pay to bid on the auction.
BR-9	Bidders to bid on the items their Performa must include the following things BR-9.1: Bidders must have the trade license that was approved that year. BR-9.2: Bidder can have a clearance certificate that makes sure the bidders are free from governmental tax. BR-9.3: Bidders must put their CPO before they bid on the items for guarantee.
BR-10	The university has the governmental right to cancel the bid all in all or partially.
BR-11	Financial team performs final payment to the bidder who wins the auction.

CHAPTER THREE

3. PROPOSED SYSTEM

3.1. Introduction to Proposed System

The proposed system is creating online auction system for Wolkite University that allows everyone using the system. The system, no matter where they are or when they use is considerable and there is no need to go anywhere to participate in auction process. The only thing that users have to do to take part in bidding process is registering online. In proposed system the users require to provide detail descriptions of items which they upload them for auctioning. Giving detail information about items leads to increase the sureness of bidders to seller's item. It is trying to achieve is to produce a higher level of confidence among users, the type of sellers, and items that they choose for bidding. By making the seller give the efficient information like visible and textual description of items. The outcome of implementing this system successfully will be an online auction system. It provides the evaluation of the item that is far much effective and that come close or equal the physical evaluation of the item in the auction system.

3.2. Functional Requirements

Functional requirements are fundamental building blocks of requirements. It is a statement of exactly what the system must do. The new system being the following functional requirements.

- ✓ **The system asks the user to login:**
 - ✓ Based on their accounts users can access resources of the system by entering their username as well as password first on the entire system.
 - ✓ It is for authentication purpose in the system functionality and every user can be login to the system by its own created account must be functional.
- ✓ **The system shall to allow manage the user:**
 - ✓ **Create account:** The admin shall be able to create account for employee in the system.
 - ✓ **Activate account:** Admin shall be able to activate the bidders account whenever the bidders went participate on the auction at any time if there is bid.
 - ✓ **Deactivate account:** Admin shall be able to deactivate the bidders account if bidders are

not went to participate on the auction any time.

✓ **The system shall to allow the bidders:**

- ✓ **Register and apply:** The bidder can register online to participate on the auction, no need for phone call and notice board, so numbers of bidders can participate and apply online.
- ✓ The system should allow bidders to download a bidding. The bidder buy the full bid document/senad which contains the bid specification after registered to bid in the system. Also the bidder pay for the bid document means they pay to the financial team.
- ✓ **Submit bid document:** The bidder can bid on the auction and submit the bid proposal online by filling the required information.

✓ **The system shall allow the administrator:**

The role to view user's information which includes, view paid bidders, registers bidders and bided items on the system.

- ✓ **Posting auction:** Auctioneer posts the auction if there is auction and bidders shall be able to view posted auction page whenever they went to bid on the items if there is newly posted auction on the site. Auctioneer can update the auction date when there is no bidders in the specified time.
- ✓ **Create bid form:** This form is required to upload. The auctioneer fill the necessary information and upload the form on the auction site that was downloaded by the bidders to view full content of auction.
- ✓ **View bidders information:** Auctioneer shall be able to view bidders until the auction end date to activate or deactivate to select the exact participant numbers on the site. Once bidders registered and paid for bid document payment also have the renewed trade license.

✓ **The system shall allow the technical Committee:**

- ✓ Accept and check the winner materials and perform other functionality like: view bided items, check items, upload bid document to the admin, verify and identify winner.

✓ **The system shall allow check and make payment:** While bidders register to the site they are buy bid document so this time they perform bid document payment to financial

team and bidders put their CPO before the auction date. After auction is complete bidders can take their final payment from the auctioneer. Payment in our system will be done through putting money to the sample bank account and that means the money putted the bank is then transferred to the organization or auctioneer account.

- ✓ **The system shall allow account setting for users:** Users can change their own accounts username and password whenever they want in the system.
- ✓ **The system shall allow users to logout:** Once every user finishes his task in the system, finally logging out from the account is followed.

3.3. Non-functional Requirements

Non-functional requirements describe visible aspects of the system that are not directly related to the system. Unlike functional requirements, it deals with additional quality of the system. It is the detail constraints and quality standards that the system we are building should adhere functionality to the proposed system.

3.3.1. User Interface and Human Factors

The user of the system will get user oriented and easily accessible user interface system that provide easy and user friendly, graphical user interfaces which in turn helps the user to have simple communication. User of the system will be provided with the graphical user interface, proposed system should be easy to use for users. The user interface will have a single access portal where the user can sign-in and have access to the entire system. The system should be consider the human factor that is natural that users make mistakes when they use new interface software and things like alarms or messages might picnic the user and will become the reason for more mistakes. In order to our system more effective the design which includes interface design with proper colors, objects, and information design which presents information properly. The other is interactive design means things to be consideration due to the background of the user and its computer knowledge to be assessed and users' ability to adopt to the system.

3.3.2. Hardware Consideration

The developing system that is required the system hardware which includes RAM, CPU, flash disk, desktop computer and hard disk and this application can use any computer having any browser. In the software tools, we use MySQL that is platform independent as a result there is absent of problem of hardware compatibility on this application. Since the system is developed

by PHP language which is platform independent. Therefore, the system is more compatible with hardware.

3.3.3. Security Issues

This system is provided without authentication which no user can pass. So only the legitimate users are allowed to use the services. In addition, the system will enforce authentication to admit every user in to the system before he/she starts any activity on the system. This protects the system from any unauthorized access. The system should use encryption algorithm like MD5. Every users of the system must get security number before going to use the system even if not with the help of security number no one be able to create their own account and can do any activities they need to get the help of the system.

3.3.4. Performance Consideration

Performance details the way the system will perform for users. The system will have efficient response time for its entire user request. Moreover, it handles parallel processing technique in order to let a lot of users to have access right within microsecond. To make all task request time fast the system hardware requirement also matter so as it is described in the hardware requirement all task processed on period of time. These should be considered as external character that has some effect on the system efficiency.

3.3.5. Error Handling and Validation

The system handles all its error in short and clears way to precede the required task. This system will protect invalid input which could be made by user. The system is validated for any text-input value and any error considered being an error when users misses to enter their input. The system based on the user input the system provides notification. The one notification is engage the user its success input and another is to provide the user what he/she missed the input and recommend to correct the mistakes in the system.

3.3.6. Quality Issues

The system should be always reliable and the user can access it using a browser. This only restricted during dawn time of the server. It will be executed by using any type of web browser, which area consistent. The system will guide the user to solve the problem when the time of errors done by any users.

3.3.7. Backup and Recovery

The new system has the backup for the purpose of stored data. When we develop this system they must have to put use a backup mechanism by using cloud storage and removable flash disks.

3.3.8. Accessibility Issues

T Obviously, the system can be accessed only the present of internet connection. In order to perform any needed activities, it can be accessible everywhere. The system use a server machine which is accessed from different client computers based on windows client-server architecture. The application software could run using any internet browser in order to be accessible.

3.3.9. Reliability and Availability

System reliability is the chance that the system processes work correctly without being aborted. Some of the potential resulting losses that you should consider the complete or partial loss of the ability to perform a mission-critical function and corruption of data loss of user productivity. System availability is the time when the application must be available for use. Required system availability is used in determining when maintenance, which think about how much time we need to do maintenance, and how and when we will notify users, may be performed.

3.3.10. Usability and Visibility

Visibility discusses how the system looks to user. It is easy for them to see the font, screens, reports etc. The usability of the system shall be very easy to learn, needs basic computer knowledge to use and have a help menu to guide the user. Usability is the system support of the execution of user tasks which are presentation of information and management of user interaction.

3.3.11. Documentation

The documentation will be prepared in the way for user to understand easily because each and every activity of the system is listed in the documentation part. The system might be modified to include additional features and it can be maintained for the future. The proposed system does not have any user manual which means users only needs basic computer skill and know how to use the internet is enough because of the proposed system is a web application.

CHAPTER FOUR

4. SYSTEM ANALYSIS

This chapter describes what the proposed system does and how it carries out its activities. These include use case diagrams, use case documentation, sequence diagram, activity diagram, and analysis level class diagram of conceptual modeling. Also in this chapter, we discuss about the use case model, object model and dynamic models.

4.1. System Model

We construct the use case which graphically represents the interaction of the system with the external environment. This model helps analyst to understand the functionality of the system. We develop abstract model of the system, with each model presenting a different view or perspective of that system. It is used to communicate with customers and explain the proposed requirements to others stakeholders. We present a system using graphical notation which is now almost always based on notations in the UML.

4.2.1. Use Case Model

Use case model is composed of a use case diagram and the accompanying documentation describing the use cases, actors, and associations. Also it is the representation of the system intended functions and its environment. The functionalities are specified by the use case and the actor specified for the environment.

- ✓ **Use case:** It's the identification and representation of a sequence of actions that the user takes for a system to get particular target. It can be identified and represented by ellipses with a respective descriptive name. A use case defines a goal-oriented set of interactions between external users and the system under consideration or development.
- ✓ **An actor:** A person, system, or real object that plays a role in one or more interactions with the system. The purpose of actor analysis is to identify all of the actors that interact with the system. An actor has a role in that interacting with the system. In order to create relevant use cases for the system, the following actors for the system have been identified. The administrator, bidders, committee (Technical and purchase) and financial team are major actors in the proposed system.

✓ **Use cases Identification**

Each use cases describes the functionality to be built in a proposed system, which can include another use case functionality or extend other use case’s functionality or extend other use case with its own behavior. The most important and basic use case of this system are:

Table 2: Use case Identification

Use Case ID	Use Case Name	Include	Extend	Exclude
UC1	Login			
UC2	Create account	UC1		
UC3	Activate account	UC1		
UC4	Deactivate account	UC1		
UC5	View paid bidders	UC1		
UC6	View registered bidder	UC1		
UC7	Upload bid document	UC1		
UC8	Buy bid document	UC1		
UC9	CPO payment	UC1		
UC10	Item payment	UC1		
UC11	Post auction	UC1		
UC12	Create bid document	UC1		
UC13	Download bid document		UC7	
UC13	View auction			
UC15	Bid on item	UC1		
UC16	View winner	UC1		
UC17	Check item	UC1		
UC18	Send Document		UC17	
UC19	Logout			UC1

Actor Description

Table 3: Actor description

Actor Name	Description
Administrator	Manage user, post auction, view registered and paid bidder, create and upload bid document.
Bidder	View auction, register, buy bid document, download and submit bid document, bid on item and view winner.
Technical committee	Download bid document, check items and send document.
Financial team	Make payment which are document, CPO and item payment.

4.2.1.1. Use Case Diagram

Use case diagram is created to show interactions between systems with the external environment. It is a diagram that shows system boundary, use cases, actors and their relationships by using include or extend.

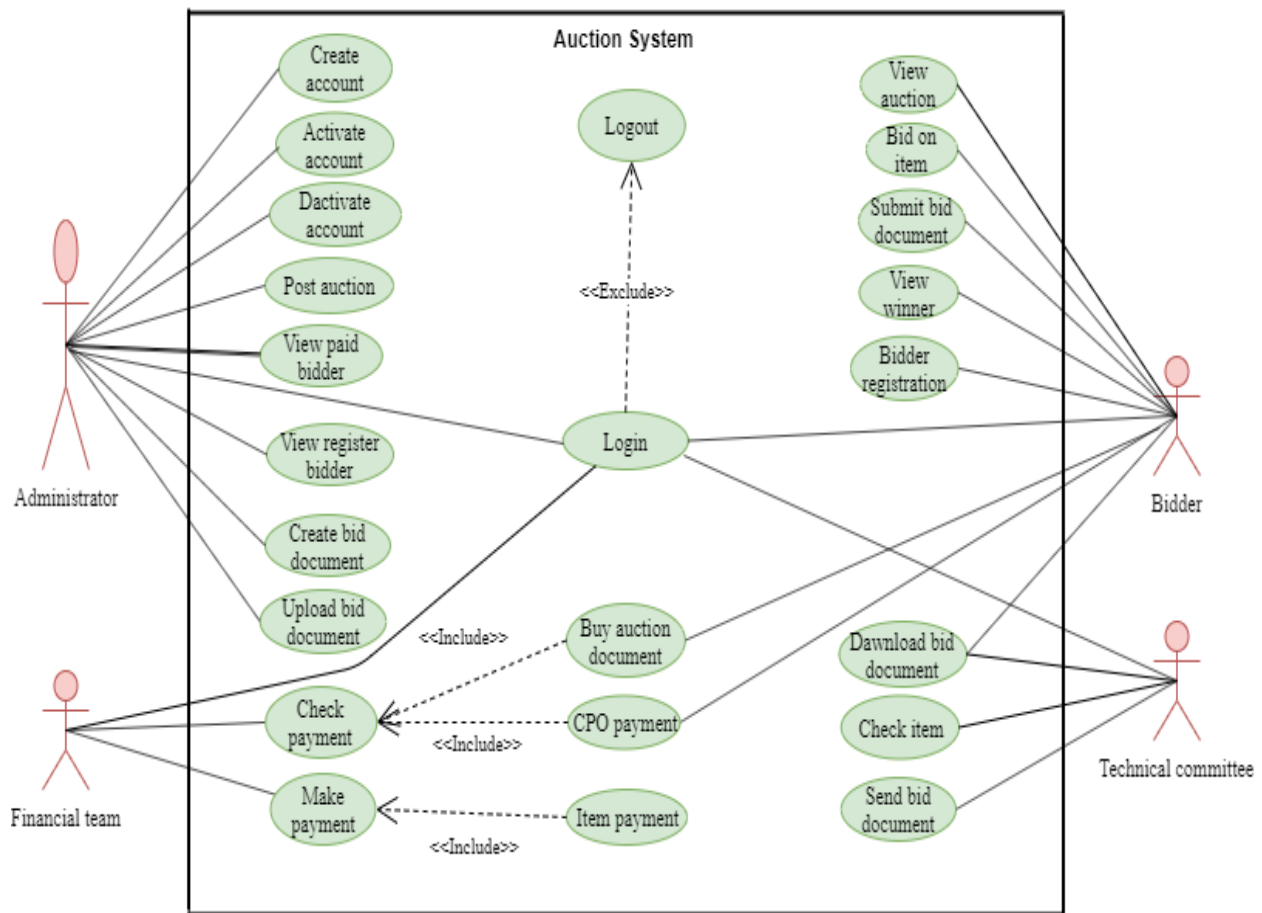


Figure 1: Use case Diagram

4.2.1.2. Use Case Description

Table 4: Use case Documentation Login

Use case ID:	UC-1	
Use case Name:	Login	
Actors:	Administrator, bidder, financial team and technical committee.	
Description:	It's required for login to access the system.	
Preconditions:	Users must have a valid user name and password to login in to his/her account.	
Post conditions:	Administrator, bidder, financial team and technical committee successfully login to his page.	
Basic course of action:	<p><u>Login Action</u></p> <p>Step 1. The users want to log into the system.</p> <p>Step 2. Open the page.</p> <p>Step 4. User fills all the necessary information.</p> <p>Step 6. Submit the form.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays the login form.</p> <p>Step 5. System validates the form on form controller check in the database.</p> <p>Step 7. The system notify about the status of login (i.e. success or failure).</p> <p>Step 8. The use case ends.</p>
Alternative course of action:	<p>Alternate A: The system display error message when the inputted data to the form is incorrect or account not exists.</p> <p>A .4. The system redirects to step 4 again.</p>	

Table 5: Use Case Documentation for Create Account

Use case ID:	UC-2	
Use case Name:	Create account	
Actors:	Administrator	
Description:	This use case describes the administrator create account by entering basic information for the technical committee and financial team those who login into the system.	
Preconditions:	The administrator must have login account and new user wants to create an account.	
Post conditions:	The technical committee and financial team can get their user name and password i.e. account is created successfully.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Admin login into his page.</p> <p>Step 2. Click creates account button.</p> <p>Step 4. The admin fill all or necessary information on the form to create user account.</p> <p>Step 6. Submit the form.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays create account form.</p> <p>Step 5. The system should notify when the actor inserted the invalid data in the form.</p> <p>Step 7. The system notifies about the status of (success or failure).</p> <p>Step 8. Use case end.</p>
Alternative course of action:	<p>Alternative A: The system display error message when the customer information is incorrect.</p> <p>A.4. If the filled information to create account is incorrect the system goes to step 4.</p>	

Table 6: Use case Documentation for Activate Account

Use case ID:	UC-3	
Use case Name:	Activate account	
Actors:	Administrator	
Description:	Once bidders can have account admin can have authority to activate accounts that exists prior for bidders while they are register for the auction and buy bid document.	
Preconditions:	Bidders must have buy bid document from financial team when register and get verification code and submit to the admin.	
Post conditions:	Admin activate the existing account for bidders to precede the bidding process.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Admin login into the system.</p> <p>Step 2. The admin should search the bidder account first then take an action after filling some formalities why account was deactivated.</p> <p>Step 4. Admin clicks on the update buttons.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays user account.</p> <p>Step 5. System notifies about the status that is either successful or failures message.</p> <p>Step 6. Use case end.</p>
Alternative course of action:	<p>Alternative A: The system display error message when the users do not have the correct information.</p> <p>A.4.The system redirects to step 2.</p>	

Table 7: Use case Documentation for Deactivate Account

Use case ID:	UC-4	
Use case Name:	Deactivate account	
Actors:	Administrator	
Description:	Once bidders can have not buy and submit bid document as well as doesn't gain verification code admin can have authority to deactivate account.	
Preconditions:	Bidders must have an active account and auction must be finished or if bidder does not have full information or valid trade license.	
Post conditions:	Admin deactivate the bidders account by fill all the reason why the account is goes to deactivated.	
Normal Flow:	<p><u>Actor Action</u></p> <p>Step 1. Admin login into the system.</p> <p>Step 2. The admin should search the bidder account first then take an action after filling some formalities why account was activated.</p> <p>Step 4. Admin clicks on update button.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays user account.</p> <p>Step 5. System notifies about the status that is either successful or failures message.</p> <p>Step 6. Use case end.</p>
Alternate Flows:	<p>Alternative A: The system display error message when the user information is incorrect.</p> <p>A.3.The system redirects to step 2.</p>	

Use case ID:	UC-5	
Use case Name:	View paid bidders	
Actors:	Administrator	
Description:	Once bidders registered and buy bid document admin can have authority to view paid bidders then after admin allow to activate bidder account.	
Preconditions:	Bidders must have to pay money.	
Post conditions:	Admin makes paid bidders account active.	
Normal Flow:	<p><u>Actor Action</u></p> <p>Step 1. Admin login into the system.</p> <p>Step 2. Clicks on the view user information.</p> <p>Step 4. Admin clicks view paid bidders page.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays user information page.</p> <p>Step 5. The system displays the paid bidders.</p> <p>Step 6. Use case end.</p>
Alternate Flows:	None	

Table 8: Use case Documentation for View paid Bidders

Table 9: Use case Documentation for View Registered Bidders

Use case ID:	UC-6	
Use case Name:	View registered bidders	
Actors:	Administrator	
Description:	Once bidders registered and buy bid document admin can have authority to activate or deactivate accounts unless if they are activated they do get their own account and login to bid on the items by filling the bid document that are uploaded by admin.	
Preconditions:	Bidders must have valid trade license and pay Performa payment.	
Post conditions:	Admin activate or deactivate bidders account.	
Basic course action:	<p><u>Actor action</u></p> <p>Step 1. Admin login into page.</p> <p>Step 2. Admin clicks on the view user information.</p> <p>Step 4. Admin clicks registered bidder.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays user information page.</p> <p>Step 5. System displays the registered bidders.</p> <p>Step 6. Use case end.</p>
Alternative course of action:	None	

Table 10: Use case Documentation for Upload bid Document

Use case ID:	UC-7	
Use case Name:	Upload bid document	
Actor:	Administrator	
Description	The administrator has role to upload the document to the bidder and technical committee.	
Precondition:	Administrator must login into the system in order to upload bid document. The validated bidders should have active account.	
Post condition	The technical committee and bidder download the bid document.	
Basic course of action	<p><u>Actor Action</u></p> <p>Step 1. Admin login into the system.</p> <p>Step 2. The admin must create the bid document for the bidders.</p> <p>Step 3. Click upload button.</p>	<p><u>System Response</u></p> <p>Step 4. System notifies about status of (failure or success).</p> <p>Step 5. Use case end.</p>
Alternative course of action	<p>Alternate A: If the system display error message while document is not uploaded successfully.</p> <p>A.4. The system redirects to step 2 fill again and upload.</p>	

Table 11: Use case Documentation Buy auction Payment

Use case ID:	UC-8	
Use case Name:	Buy auction document	
Actors:	Bidders	
Description:	While bidders register to the auction they are buy document/senad so this time they perform payment to financial team.	
Preconditions:	Bidders went register to the bid and the bidder should have an active valid account.	
Post conditions:	Bidder performs payment for document and gets verification code.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Bidder login into the system.</p> <p>Step 2. Bidder clicks on make payment.</p> <p>Step 4. Bidder select document payment and clicks on it.</p> <p>Step 6. Bidders buy document/senad.</p>	<p><u>System Response</u></p> <p>Step 3. System displays auction senad.</p> <p>Step 5. The system display document payment.</p> <p>Step 7. Use case end.</p>
Alternative course of action:	<p>Alternate A: If bidders do not buy Performa admin deactivate the bidders from auction process.</p> <p>A.5. System redirects to step 5 to buy again.</p>	

Table 12: Use case Documentation Item Payment

Use case ID:	UC-10	
Use case Name:	Item payment	
Actors:	Financial Team	
Description:	After auction is complete bidders can takes their item payment from the financial team.	
Preconditions:	Bidders have on bid on the items and delivered the items, the technical committee report should submitted to the financial team.	
Post conditions:	Bidders who win finally get payment for items.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Financial Team login into the system.</p> <p>Step 2. Verify the technical committee document and auction listed items and specification.</p> <p>Step 3. The Financial team clicks on make payment.</p> <p>Step 6. Financial team select the item payment and clicks on it.</p> <p>Step 6. Financial team gives the payment to winners depend on the message comes from the technical committee.</p>	<p><u>System Response</u></p> <p>Step 4. System displays make payment.</p> <p>Step 5. The system display item payment page.</p> <p>Step 8. The use case end.</p>
Alternate flow	None	

Table 13: Use case Documentation Post Auction

Use case ID:	UC-11	
Use case Name:	Post auction	
Actors:	Administrator	
Description:	Required to post auction.	
Preconditions:	Administrator has a valid user name and password to login into the system.	
Post conditions:	Auction registered to the database and display to the home page in the view auction link.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Admin login into page.</p> <p>Step 3. Admin clicks post auction link.</p> <p>Step 5. Administrator fill necessary information on forms.</p> <p>Step 6. Clicks post button.</p>	<p><u>System Response</u></p> <p>Step 2. System displays admin page.</p> <p>Step 4. System displays post auction page.</p> <p>Step 7. The system notifies about the status of the auction that either success or failure).</p> <p>Step 8. The use case end.</p>
Alternate course of action:	<p>Alternate A: The system display error message if the input data are incorrect.</p> <p>A .4. The system redirects to step 5 again.</p>	

Table 14: Use case Documentation Create Bid Document

Use case ID: UC-12

Use case Name: Create bid document

Actors: Administrator

Description: Required to upload bid document.

Preconditions: Administrator has a valid user name and password to login in to his/her account.

Post conditions: Admin fill the necessary information and upload the form on the auction site that was downloaded by the bidders to view full content of auction.

Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Administrator login into page.</p> <p>Step 3. Admin clicks create bid document.</p> <p>Step 5. Admin fill necessary information to the form.</p> <p>Step 6. Clicking on create button.</p>	<p><u>System Response</u></p> <p>Step 2. System display admin page.</p> <p>Step 4. The system displays the created bid form.</p> <p>Step 7. The system notifies about the status that is either success or failure.</p> <p>Step 8. Use case ends.</p>
Alternate course of action:	<p>Alternate A: The system display error message when the uploaded form is not reached.</p> <p>A .5 The system redirects to step 5 again.</p>	

Table 15: Use case Documentation View Auction

Use case ID:	UC-13	
Use case Name:	View Auction	
Actors:	Bidder	
Description:	If new auction is posted bidder can be able to view posted auction whenever went to participate on the bid.	
Preconditions:	Bidder first view newly posted auction.	
Post conditions:	Bidder bid on the items after view posted auction.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Bidders open the WKU auction page.</p> <p>Step 2. Bidder click to view auction.</p> <p>Step 4. Bidder went view detail auction information's by click on view auction link.</p>	<p><u>System Response</u></p> <p>Step 3. The system displays view auction page.</p> <p>Step 5. System display auction detail.</p> <p>Step 9. Use case end.</p>
Alternate course of action:	None	

Table 16: Use case Documentation Bidder Registration

Use case ID: UC-14

Use case Name: Bidder Registration

Actors: Bidder

Description: Required to register bidders.

Preconditions: Bidder must have valid trade license to register.

Post condition: The bidder information registered to the database in order to participate in the auction or bidder registration proceed.

Basic course of action:	<u>Actor Action</u>	<u>Stem Response</u>
	Step 1. Bidder wants to register in the auction.	Step 3. The system display bidder registration form.
	Step 2. Click bidders register.	Step 6. System Validate on the form controller and check the input data in the database.
	Step 4. Bidders fill all necessary information to the form.	Step 7. System notifies about the status of registration (success or failure).
	Step 5. Bidder submit the form.	Step 8. Use case ends.

Alternate course of action: **Alternate A:** If the bidder suddenly enters false or incorrect information system displays error message.

A .4 The system redirects to step 4 again.

Table 17: Use case Documentation Bid on Items

Use case ID:	UC-15	
Use case Name:	Bid on items	
Actors:	Bidder	
Description:	Required to bid on the items.	
Preconditions:	Bidder first registers to bid on the items and have bid document.	
Post conditions:	Bidder properly filled bid document with valid username, password and trade license.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Bidder login into the page.</p> <p>Step 2. Bidder select bid on the item link.</p> <p>Step 4. Bidder fills the bid form</p> <p>Step 6. Bidders Submits the bid form.</p>	<p><u>System Response</u></p> <p>Step 3. The system display bid on item form which contains document form posted by admin.</p> <p>Step 5. System validate the given input in the form controller and database.</p> <p>Step 7. System notifies about the status of success or failure.</p> <p>Step 8. Use case ends</p>
Alternate course of action:	<p>Alternate A: If the bidder suddenly enters false or incorrect information system displays error message.</p> <p>A .4. The system redirects to step 4 again.</p>	

Table 18: Use case Documentation View Winners

Use case ID:	UC-16	
Use case Name:	View winner	
Actors:	Bidder	
Description:	Required to view winner of the bid after auction compilation.	
Preconditions:	Bidder bid on the item.	
Post conditions:	Bidders view winner of the auction after completion of bid.	
Basic course of action:	<u>Actor Action</u> Step 1. Bidders open the auction site. Step 2. Bidder clicks on the view winners. Step 4. Bidder views the winner.	<u>System Response</u> Step 3. System displays winner bidder. Step 5. Use case end.
Alternative course of action	Alternate A. If complain, person and write compliant if he/she have.	

Table 19: Use case Documentation Check Items

Use case ID:	UC-17	
Use case Name:	Check Items	
Actors:	Technical committee	
Description:	When items arrived at organization technical committee checks items by comparing with document that can have all items description.	
Preconditions:	Technical committee login into the system and view bided items from bid document.	
Post conditions:	Technical committee checks the items from bid document.	
Basic course of action:	<p><u>Actor Action</u></p> <p>Step 1. Technical committee login into page</p> <p>Step 2. Technical committee clicks on the download bid document.</p> <p>Step 4. Technical committee upload verified document to financial team.</p>	<p><u>System Response</u></p> <p>Step 3. System verifies the bid document.</p> <p>Step 5. Use case end.</p>
Alternate course of action:	<p>Alternate A: If the system display error message while sending the bid document to financial team.</p> <p>A.4. System redirects to step 4.</p>	

4.2.1.3. Use Case Scenario

Thus a use case scenario is a description that illustrates, step by step, how a user is intending to use a system, essentially capturing the system behavior from the user's point of view.

Table 20: Use Case Scenario for Login

Scenario	1
Scenario Name	Login
Participating actor	Administrator, Bidder, Technical committee and financial team
Actor name	Mr. Xyz
Flow	<ol style="list-style-type: none">1. MR. Xyz as a manager if he wants to login to the system first the system displays home page.2. Then click login link from home page.3. After that the system display login form.4. Fill the form with username and password and lick login button again.5. Perform his authenticated operation and finally logout.

Table 21: Use Case Scenario for Create Account

Scenario	2
Scenario Name	Create Account
Participating actor	Administrator
Actor name	Mr. Xyz
Flow	<ol style="list-style-type: none">1. Mr. Xyz as an admin if he wants to create account for user he must login into the system.2. The system displays the main page3. Admin click create account link4. The system displays account form5. Admin fills required information on the form and press create button6. If all information's are valid, the system display account

created successfully

7. After finishing his work, he presses “Logout” button.

Table 22: Use Case Scenario for Bid on Items

Scenario	3
Scenario Name	Create Bid on items
Participating actor	Bidder
Actor name	Mr. Xyz
Flow	<ol style="list-style-type: none">1. Mr. Xyz as a Bidder if he wants to bid on items he must login into the system.2. Bidder select bid on the item link.3. The system display bid on the item form which contains document form posted by admin.4. Bidder fills the bid form after pay document payment and administrator activated his/her account.5. Bidders Submits the bid form.6. System Validate the given input in the form controller and database.7. System notifies about the status of entered information successfully.8. After finishing his work, he presses “Logout” button.

Table 23: Use Case Scenario for Check Items

Scenario	4
Scenario Name	Check items
Participating actor	Technical committee
Actor name	Mr. Xyz
Flow	<ol style="list-style-type: none">1. Mr. Xyz as a Technical committee if he wants to check items he must login into the system.2. System verifies the entered username and password.3. Technical committee clicks on the check items.4. System displays check items form.5. Technical committee ticks on items checked one by one on the form.6. Send the form to financial committee to pay money for

winners.

7. After finishing his work, he presses “Logout” button.

Table 24: Use Case Scenario for Item Payment

Scenario	5
Scenario Name	Item payment
Participating actor	Financial team
Actor name	Mr. Xyz
Flow	<ol style="list-style-type: none">1. Mr. Xyz as a financial team login into his account.2. Financial team clicks on make payment.3. System displays document payment and final payment.4. Financial teams select final payment and clicks on it.5. The system display final payment page.6. Financial team gives the payment to winners depend on the message comes from the technical committee.7. After finishing his work, he presses “Logout” button.

4.3. Object Models

The overview of object model, especially class diagram which is a static diagram represents the static view of an application, it describes the attributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object oriented systems because they are UML diagrams which can be mapped directly with object oriented languages.

4.4.1. Class diagrams

UML class diagram are the mainstay of object oriented modeling. Class models show the classes of the system, their interrelationships including inheritance, aggregation, and association, and the operation and attributes of the class. It shows the static structure of the model, in particular, the things that exist such as classes and types, their internal structure, and their relationships to other things. These Class diagrams are developed based on the functional requirement. Show the classes of the system, their inter-relationships, and the operations and attributes of the classes [3].

Class diagrams are typically used, although not all at once to explore domain concepts in the form of a domain model, analyze requirements in the form of a conceptual/analysis model and depict the detailed design of object-oriented or object-based software.

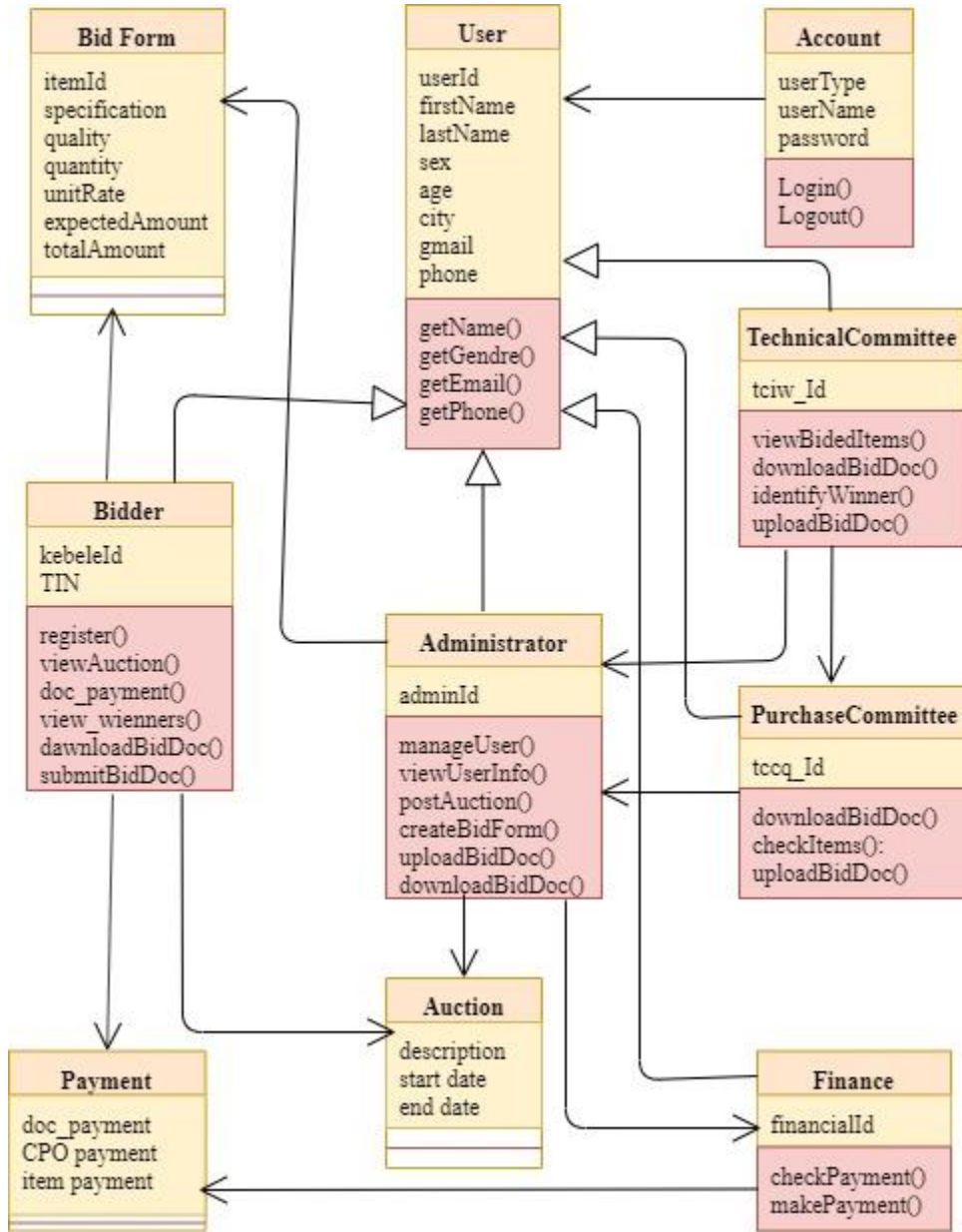


Figure 2: Class Diagram

4.4.2. Data dictionary

Data Dictionary is repositories to store information about all data items. A data dictionary contains a list of all files in the database, the number of records in each file, and the names and

types of each field. Most database management systems keep the data dictionary hidden from users to prevent them from accidentally destroying its contents.

Table 25: Data Dictionary of Bidder Registration

Field Name	Data Type	Field Size	Data Format	Description	Example
Id	VARCHAR	20		Kebele id number	18992/10
TIN Number	INTEGER	20		Trade Licensees Number so this is unique id	1222222
Trade Licenses type	VARCHAR	20		Trade type	Electronics, stationary
First Name	VARCHAR	20		Because of name is only characters	Abebe
Last Name	VARCHAR	20		>> >> >> >>>>>	Kebede
Gender	STRING	10			Male, female
Trade license image	LONGBLOB			The bidder trade license	
City	STRING	20		This is your city	Adiss Ababa
Email	VARCHAR	30		After auctions winner notify using Email Address	Ab12@gmail.com
Phone Number	INT	13		After auctions winner notify using mobile numbers	+251928552866
Username	VARCHAR	20		Help for login	Ethio12
Password	VARCHAR	20		Authenticate the bidder	12bsvas
Confirm password	VARCHAR	20		Again password	12bsvas
Registration Date	DATE	10	dd/mm/yyyy	Your register date of the site	5/11/2018

Table 26: Data Dictionary of Post Auction

Field Name	Data Type	Field Size	Date Format	Description	Example
Auction Description	STRING	100		The auction status and types	WKU organization to buy electronics materials such as...
Starting Date	DATE	10	dd/mm/yy	The starting date of auction	Start Date 1/7/2019
End Date	DATE	10	dd/mm/yy	The end date	End Date 3/7/2019

Table 27: Data Dictionary of Create Bid Form

Field Name	Data Type	Field Size	Date Format	Description	Example
Items no	INT	10		Roman number of items	1,2,3,4,5,
Specification	VARCHAR	100		To identify items type	Computer, printer
Quality	VARCHAR	20		To know quality of the materials	For computer Dell 4GB RAM etc.
Quantity	INT	20		To know quantity	10
Unit Rate	DOUBLE	20		As individual price	1234.50
Expected Amount	DOUBLE	20		Unit rate X quantity	1234.50x10=12340.50
Total Amount	DOUBLE	20		Total price	12340.50

Table 28: Data Dictionary of Create Account for User

Field Name	Data Type	Field Size	Date Format	Description	Example
First Name	VARCHAR	20		Name of employee	Abebe
Last Name	VARCHAR	20		Name of employee father	Kebede
Username	VARCHAR	20		Help for login the employees	Hayshed
Password	VARCHAR	20		Help for authenticate the employees	231trtr
Job type	VARCHAR	20		The position of employees	Technical committee

4.5. Dynamic Model

The dynamic model represents the time–dependent aspects of a system. It is concerned with the temporal changes in the states of the objects in a system. In dynamic model we describe the behavior of the object model, in terms of sequence, activity and state chart diagrams.

4.5.1. Sequence Diagram

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios.

A sequence diagram shows, as parallel vertical lines (*lifelines*), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

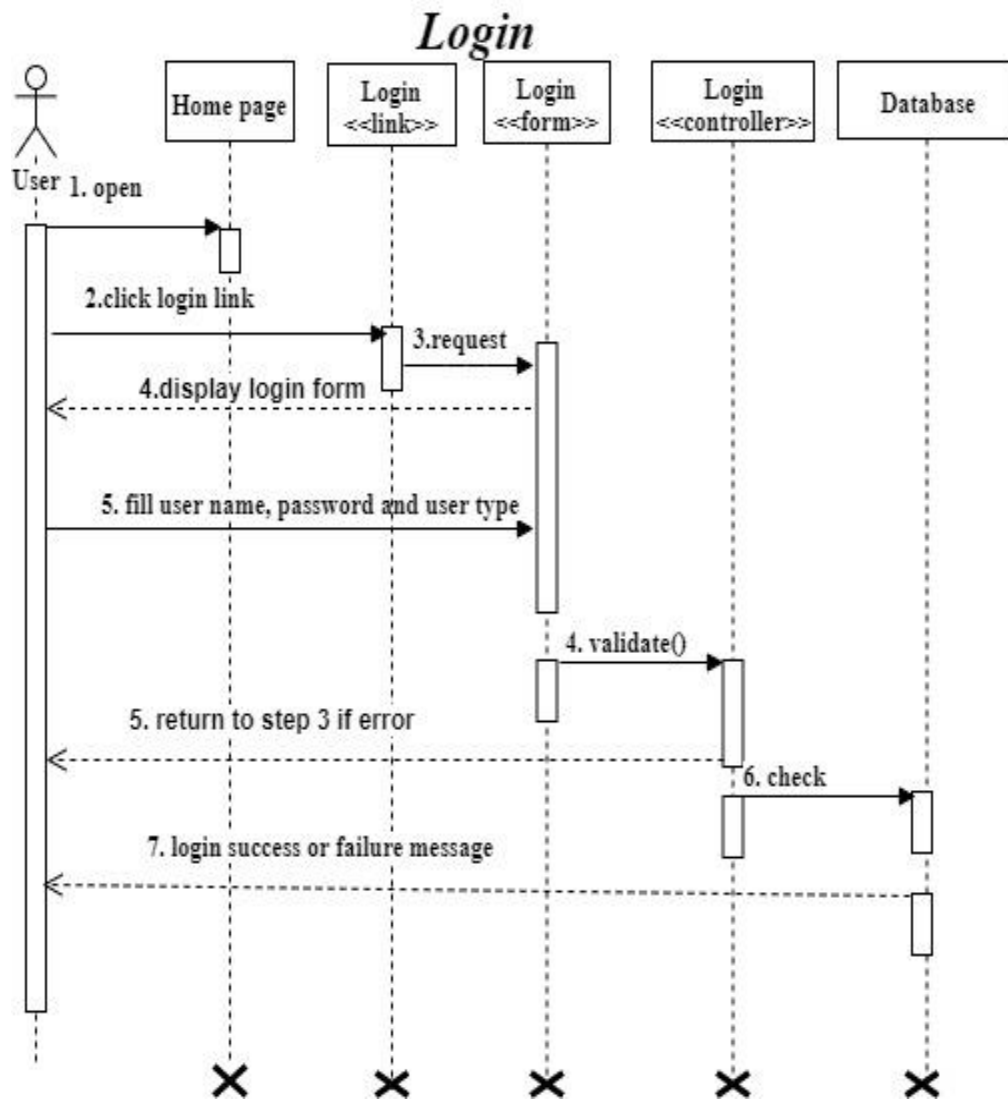


Figure 3: Sequence diagram for Login

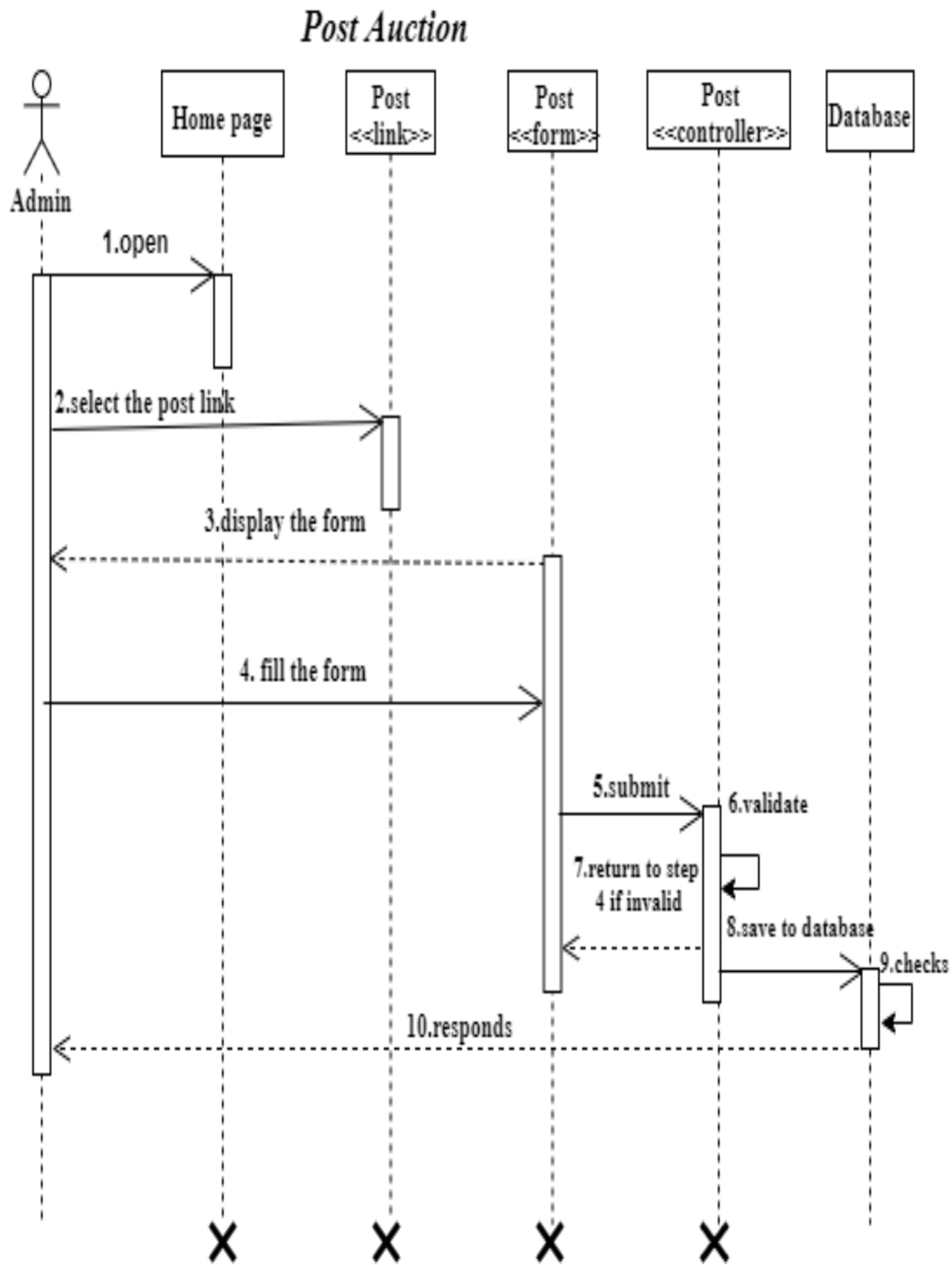


Figure 4: Sequence diagram for Post Auction

Bidder Registration

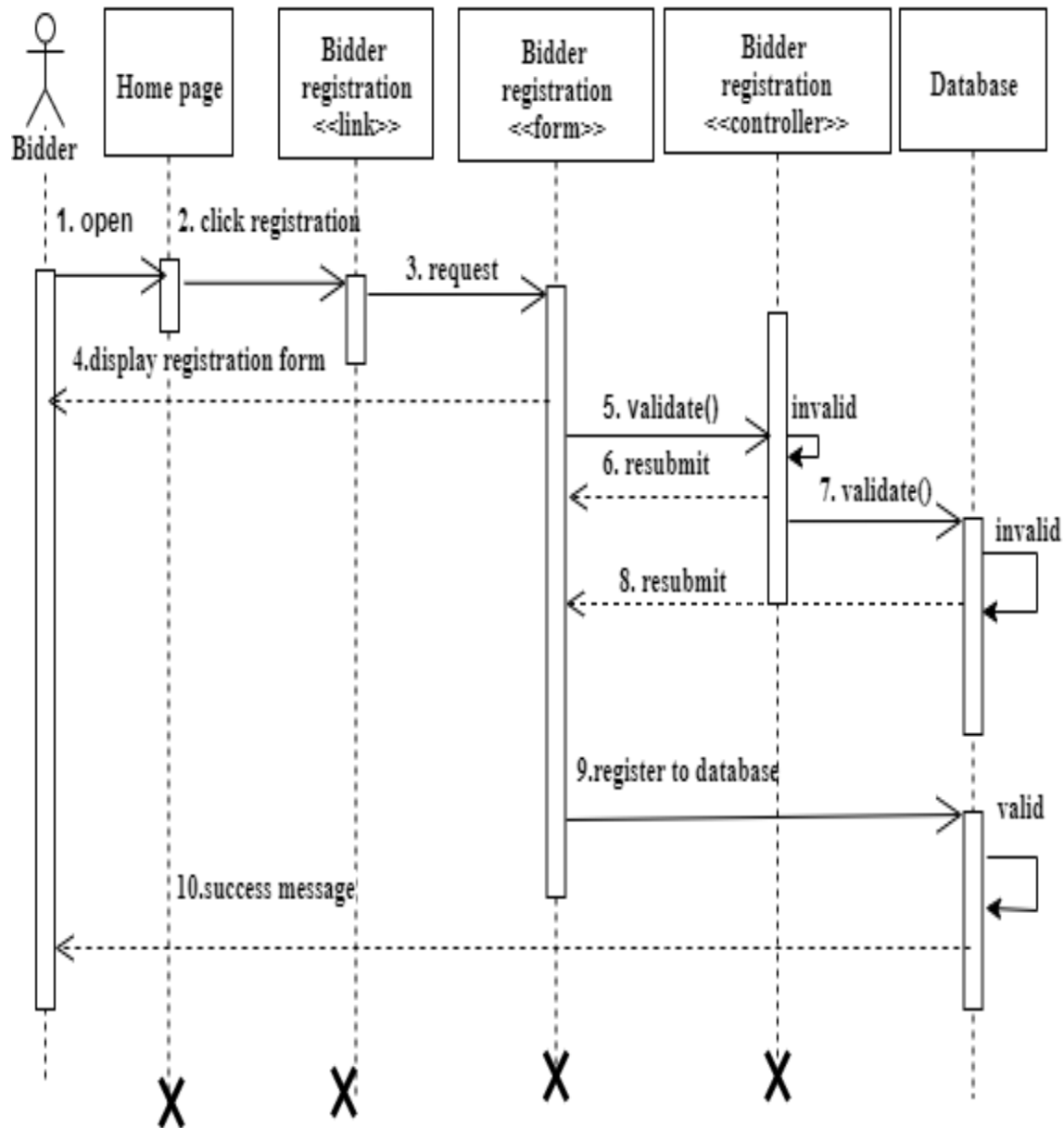


Figure 5: Sequence diagram for Bidder registration

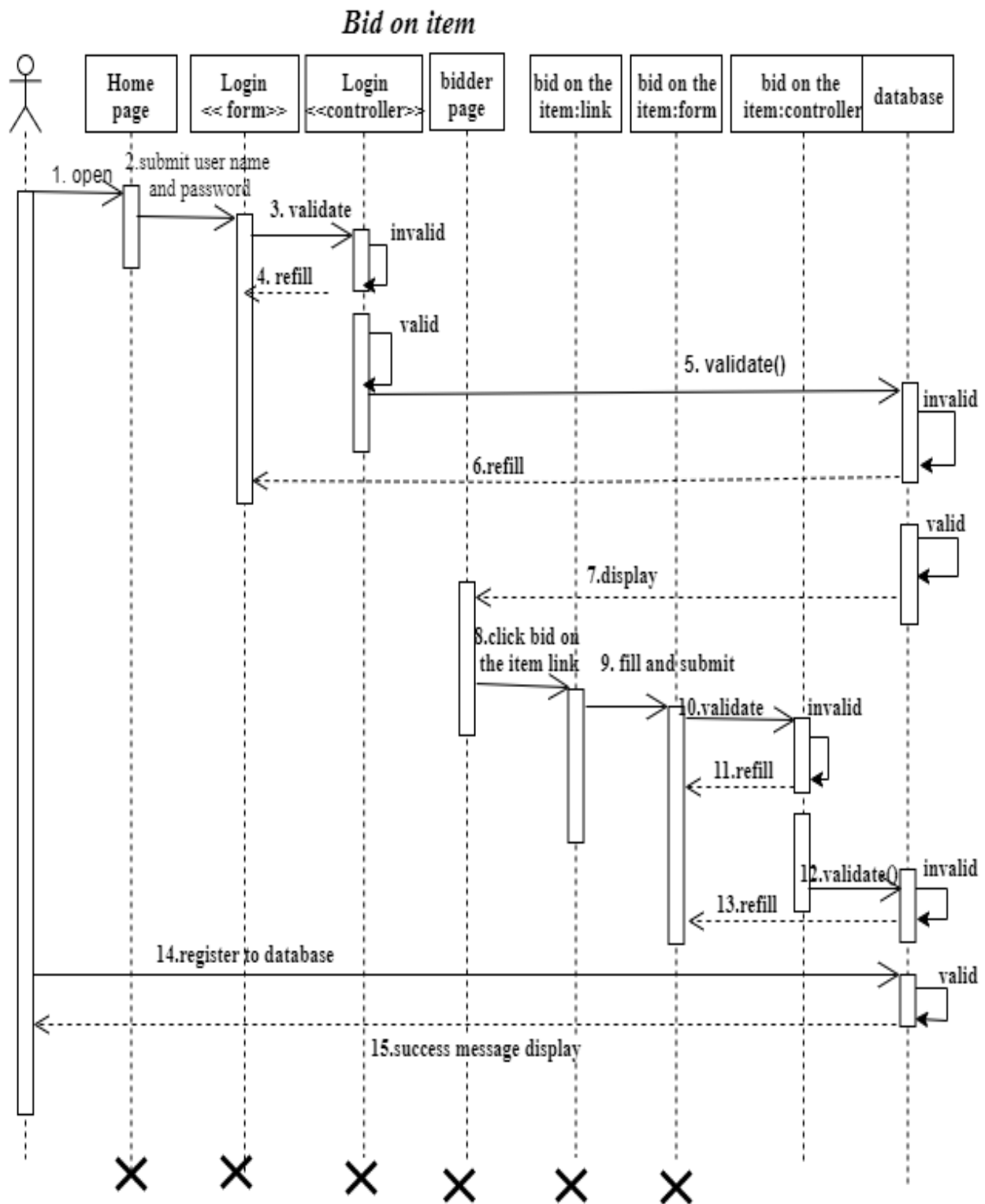


Figure 6: Sequence diagram for Bid on Items

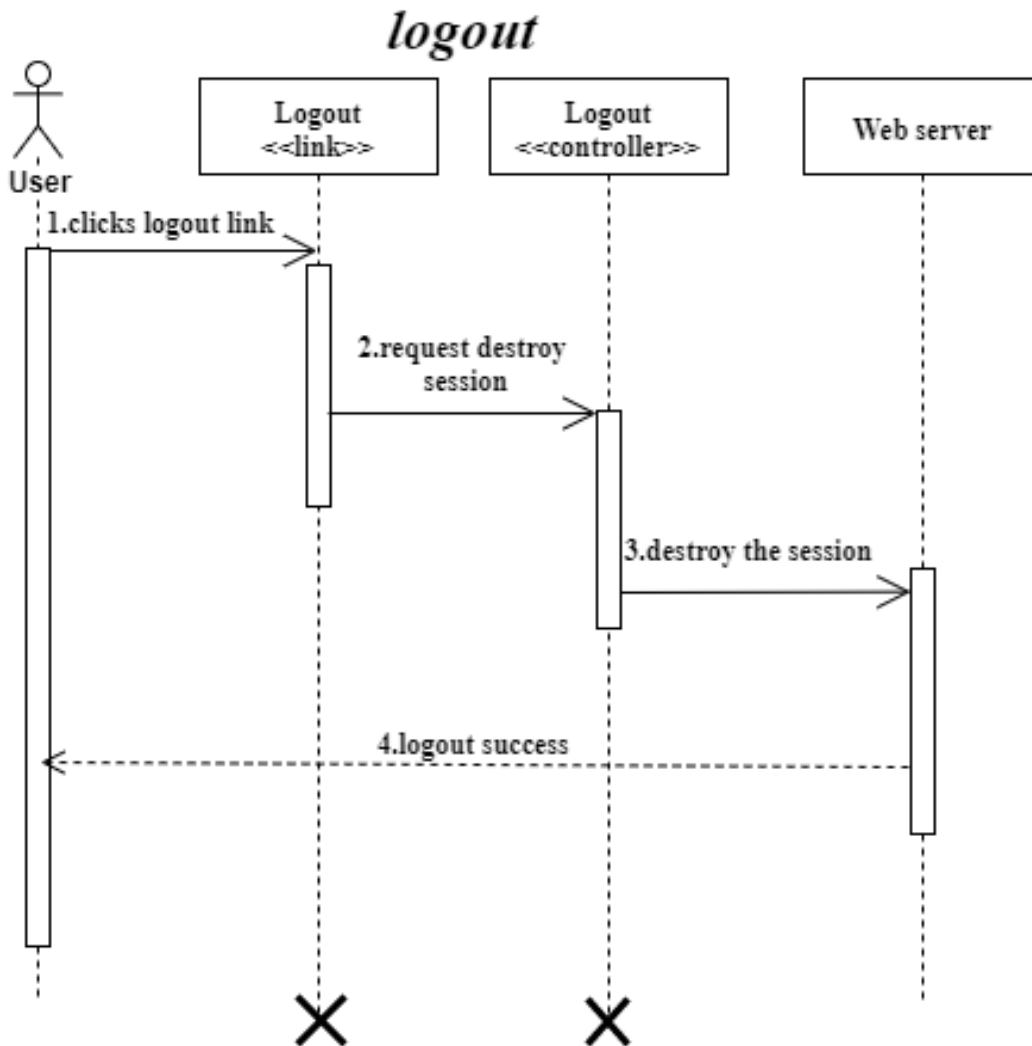


Figure 7: Sequence diagram for Logout

4.5.2. Activity Diagram

Activity diagram are best starting point to model logic of business process, use case or method. This activity diagrams are developed based on the requirement analysis which is done previously. The team members try to depict the logic of the business process and use case which was done previously. The black filled circle represents the starting point of the activity diagram effectively. A place holder and a filled circle with a border represent the ending point. The rounded circle represents a process of activities that are performed. The diamond represents decision points and arrows represent the transition between activities modeling the flow order between the various activities [4].

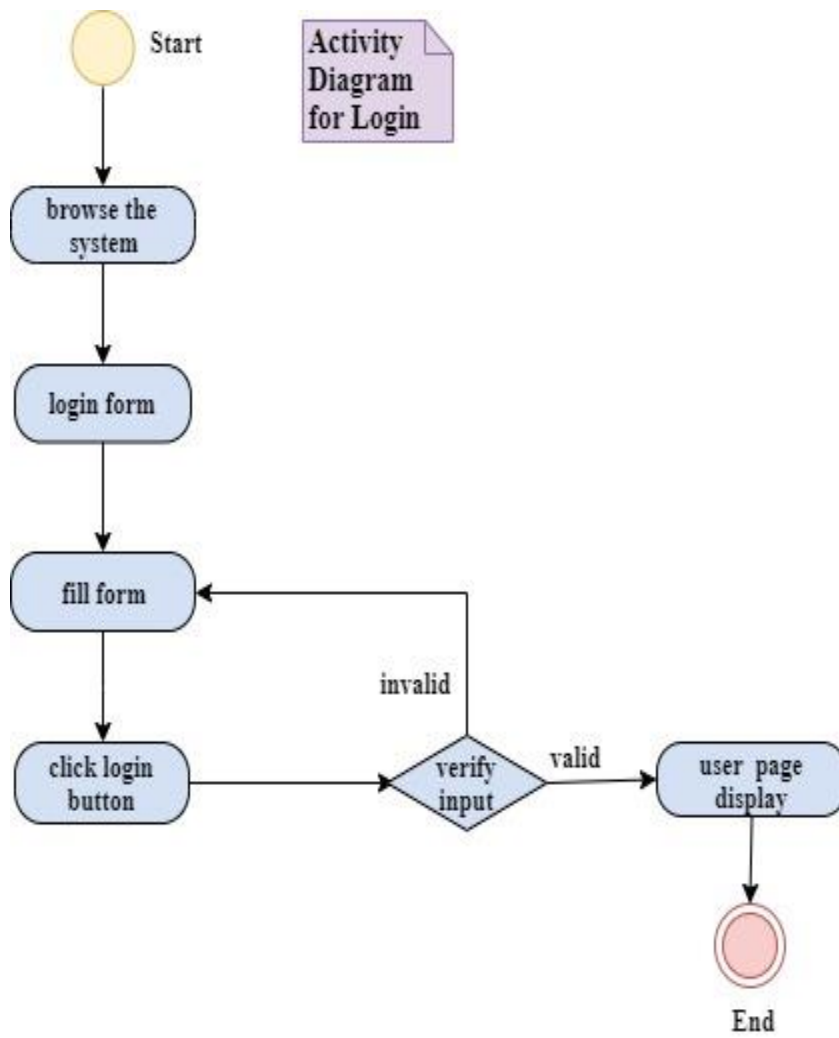


Figure 8: Activity diagram for Login

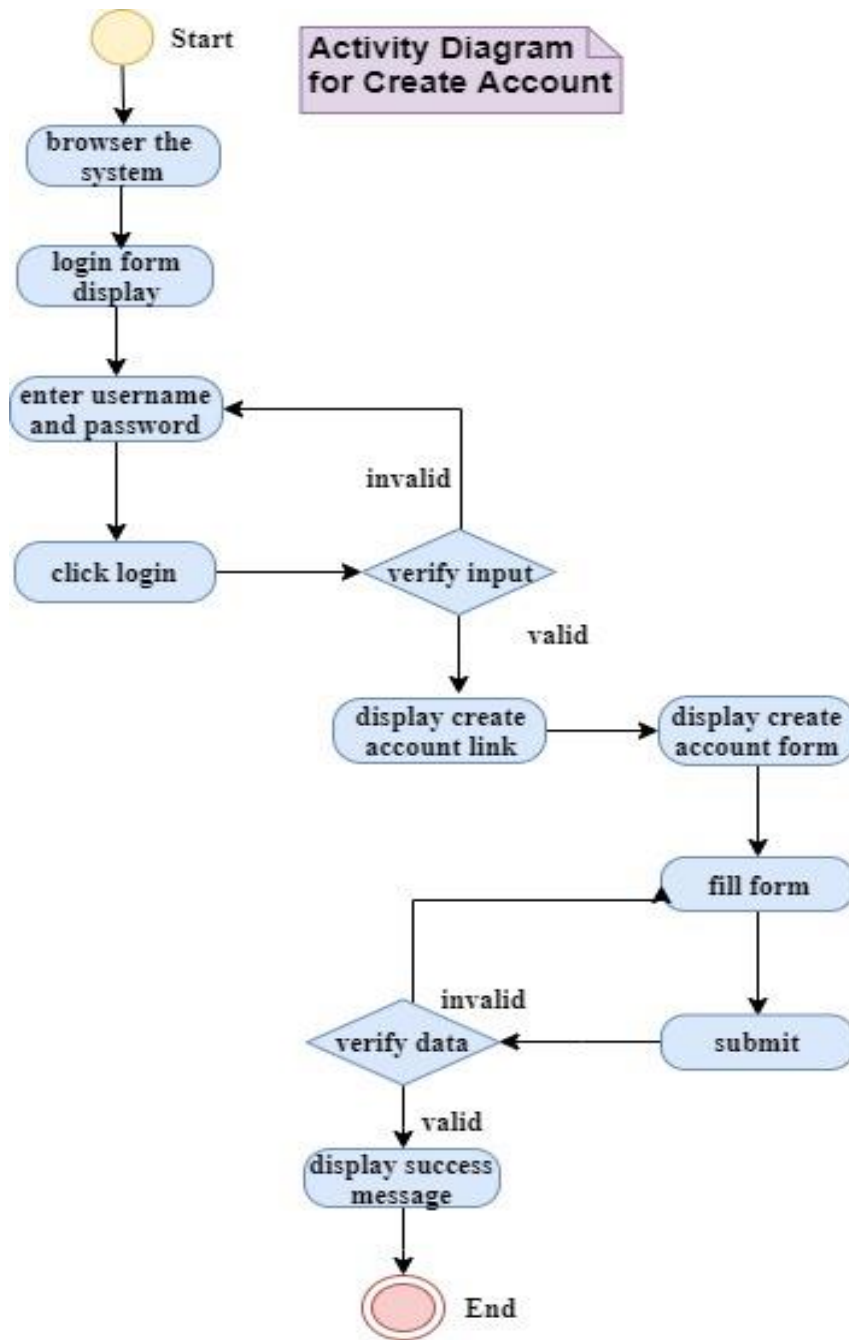


Figure 9: Activity diagram for Create Account

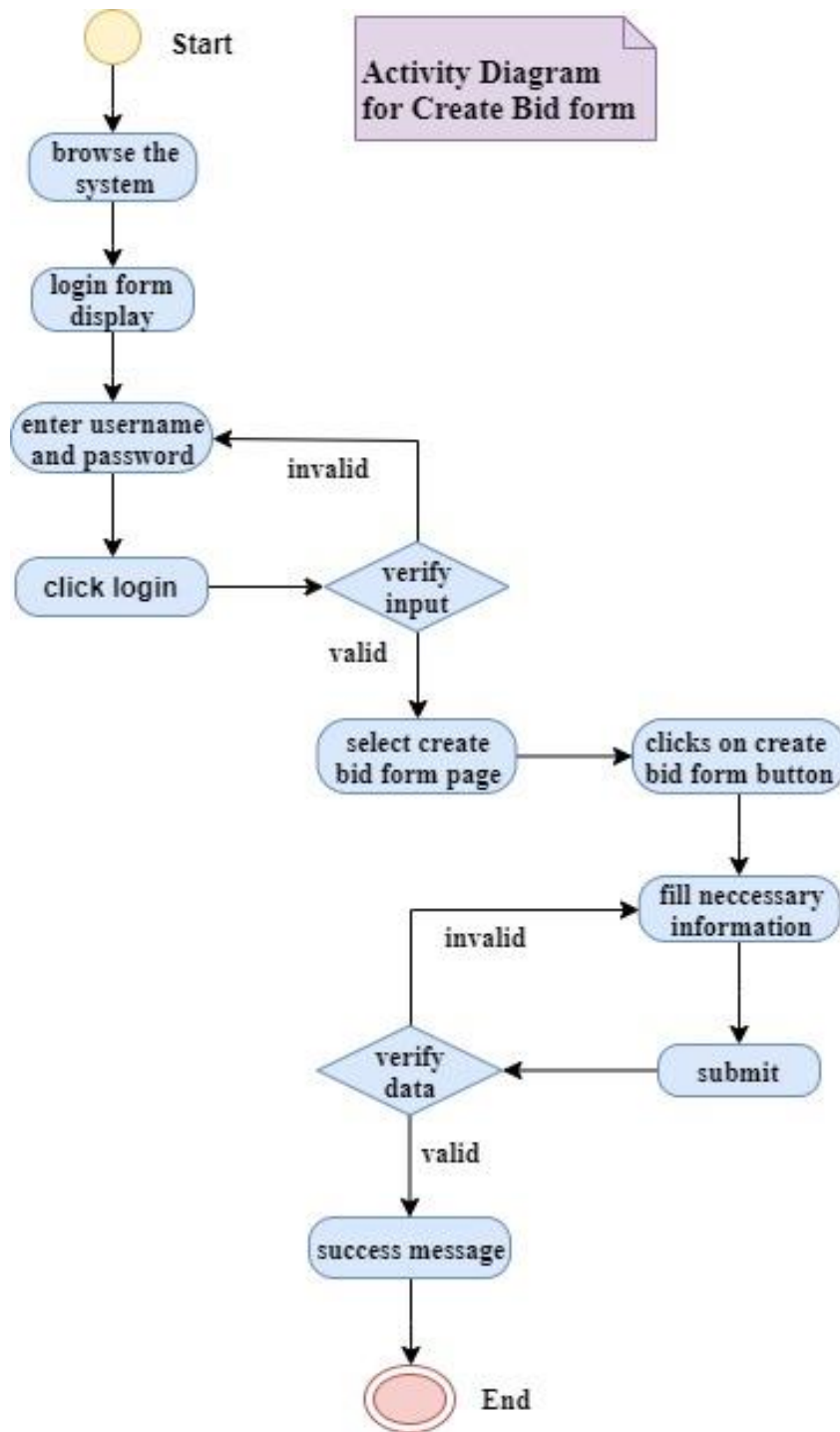


Figure 10: Activity diagram for Create bid form

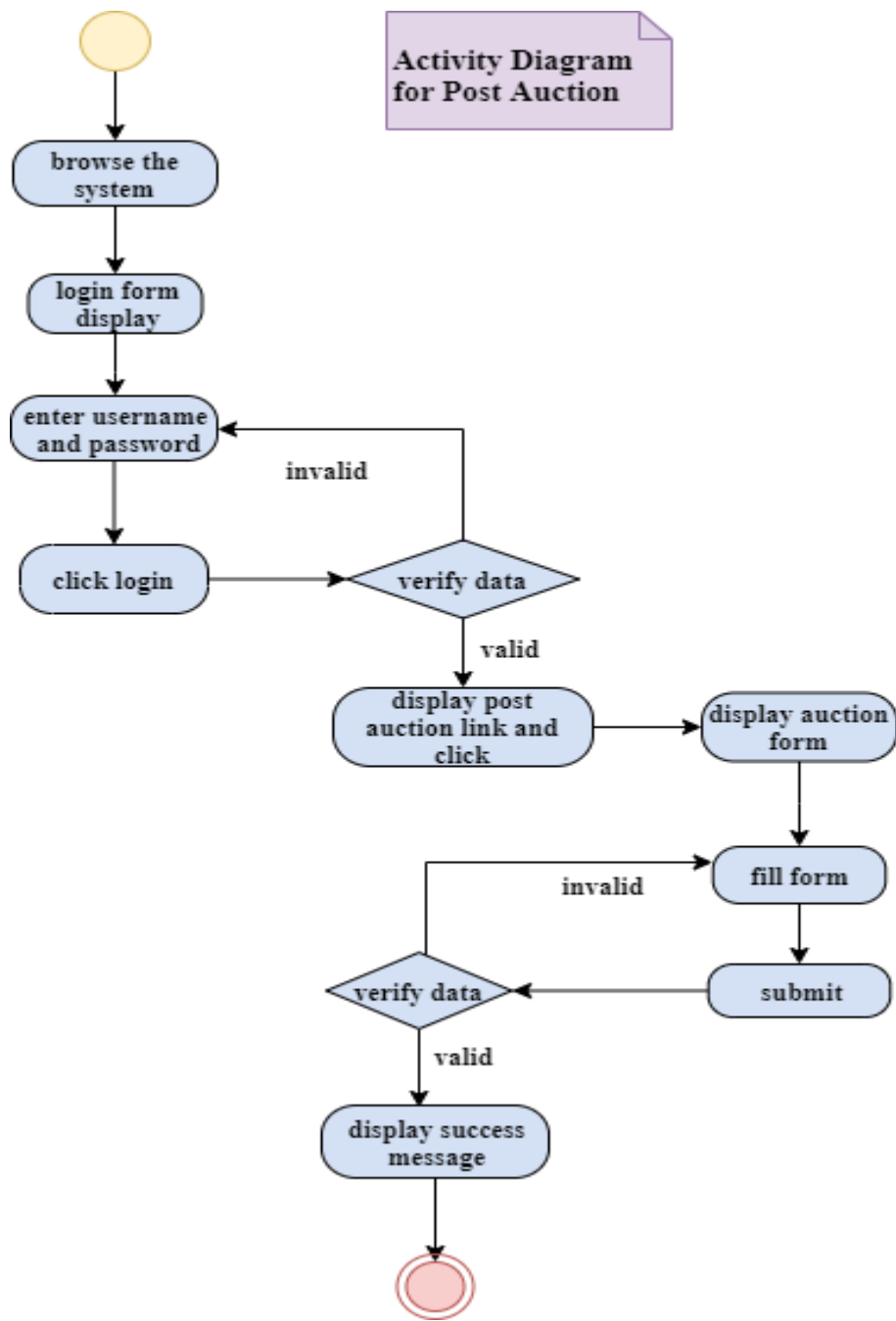


Figure 11: Activity diagram for Post Auction

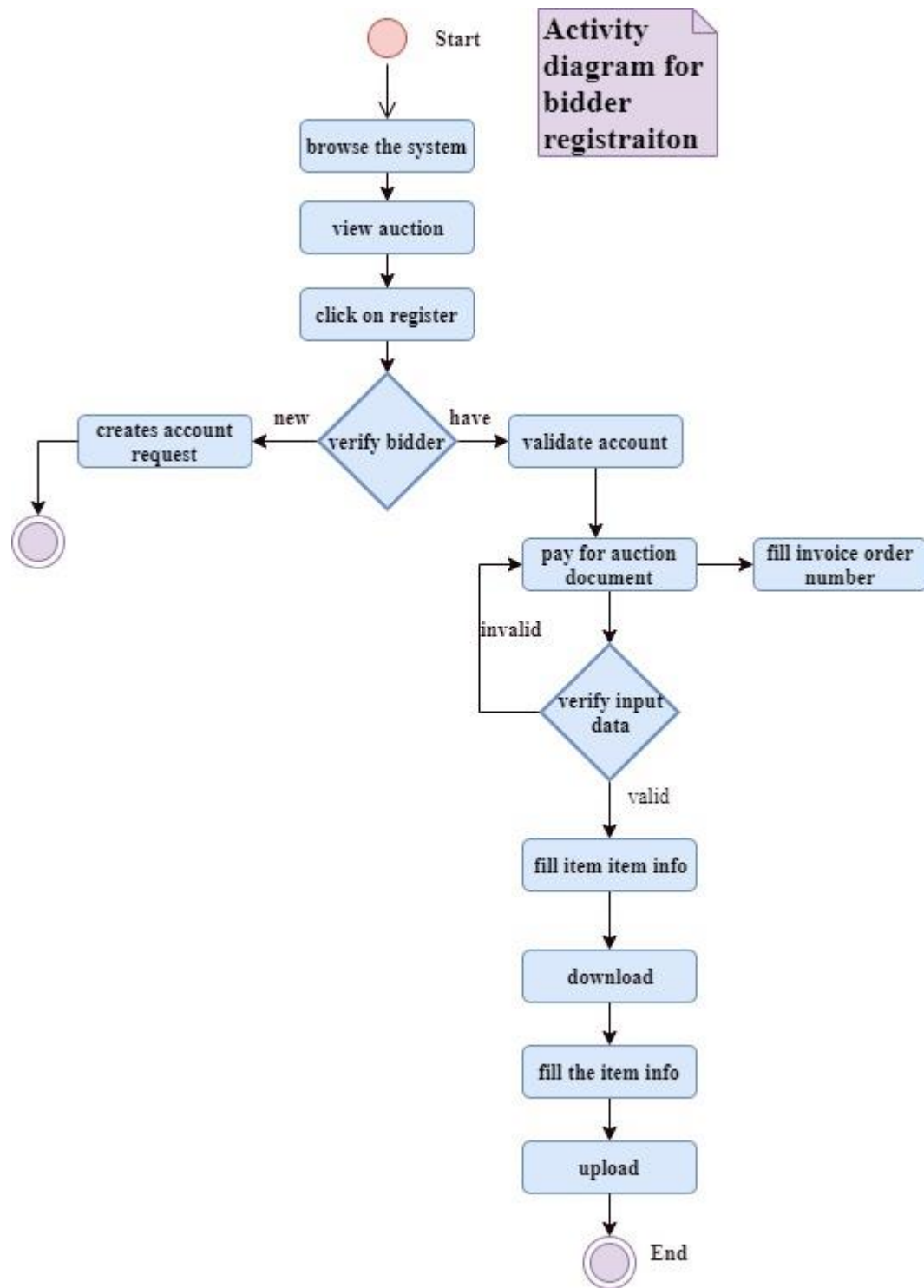


Figure 12: Activity diagram for Bidder Registration

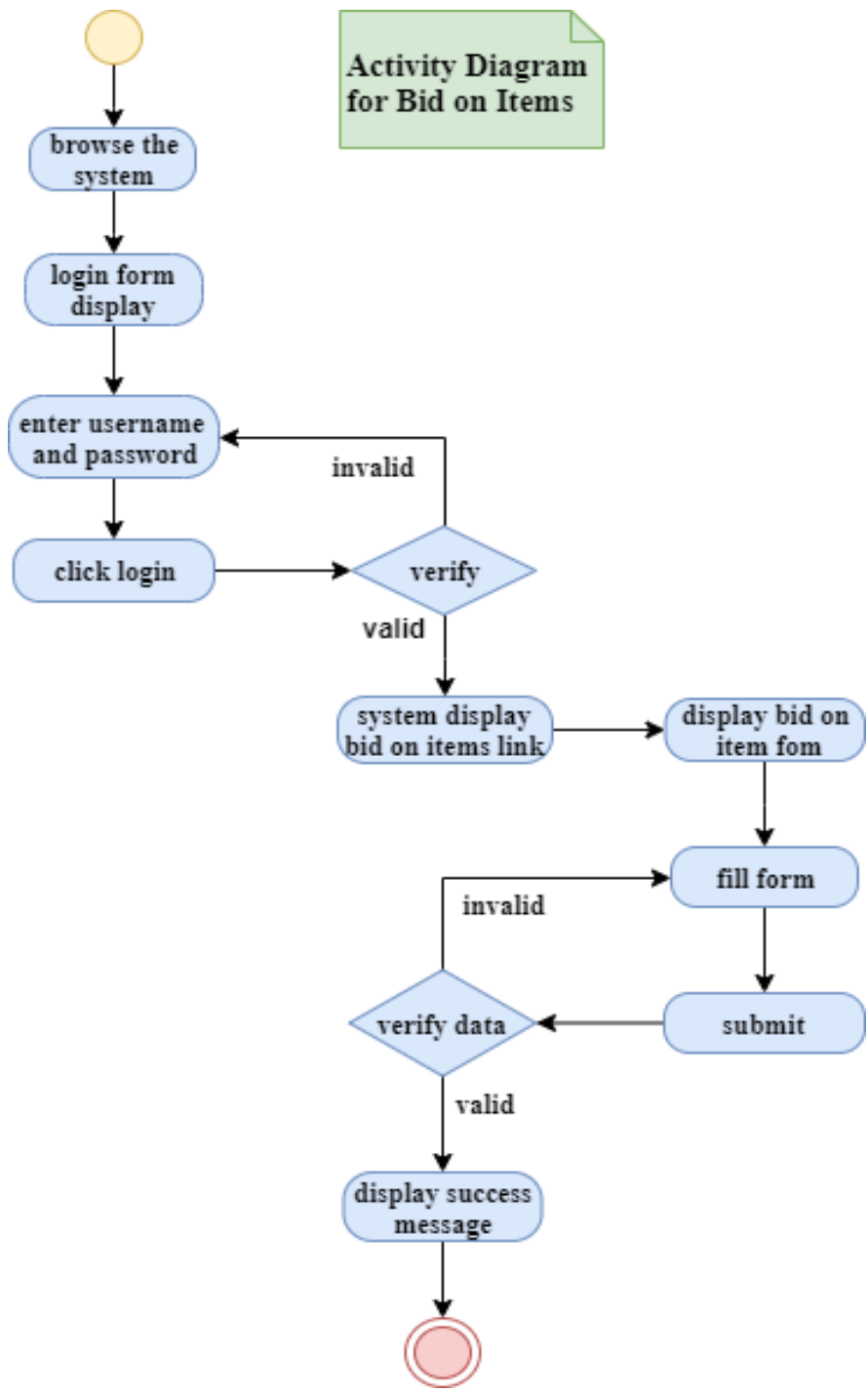


Figure 13: Activity diagram for Bid on Items

4.5.3. State Chart Diagram

A state diagram, also called a state machine diagram or state chart diagram, is an illustration of the states an object can attain as well as the transitions between those states in the Unified Modeling Language (UML). In this context, a state defines a stage in the evolution or behavior of an object, which is a specific entity in a program or the unit of code representing that entity. State diagrams are useful in all forms of object-oriented programming (OOP). State chart diagram describes the flow of control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. So the most important purpose of state chart diagram is to model life time of an object from creation to termination. Following are the main purposes of using state chart diagrams:

- ✓ To model dynamic aspect of a system.
- ✓ To model life time of a reactive system.
- ✓ To describe different states of an object during its life time.
- ✓ Define a state machine to model states of an object.

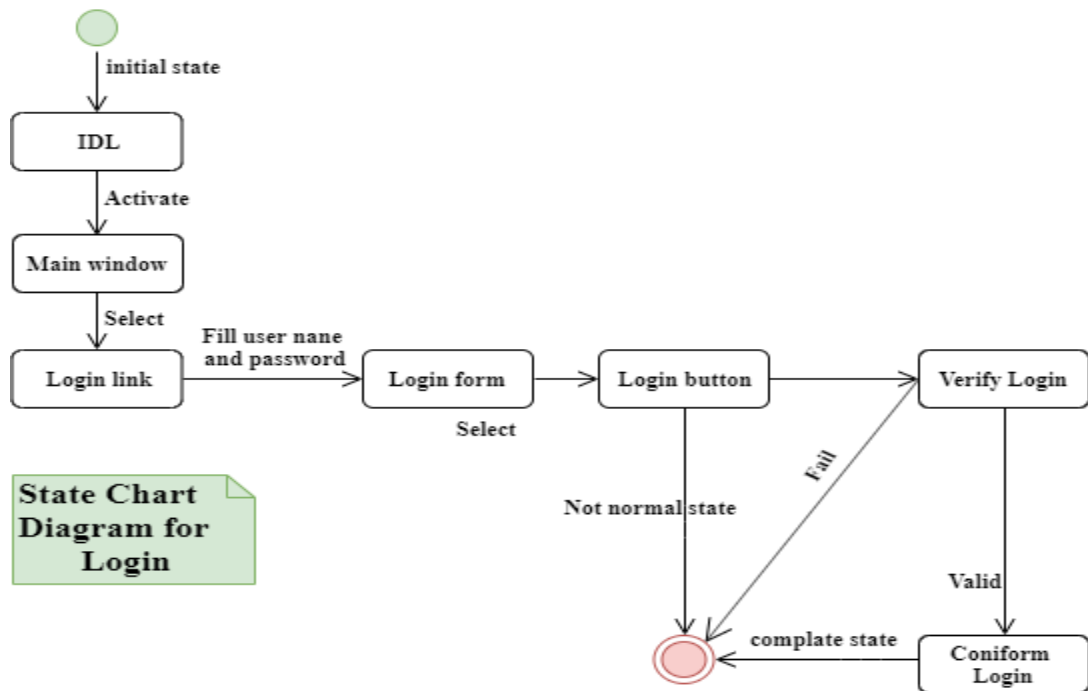


Figure 14: State chart for Login

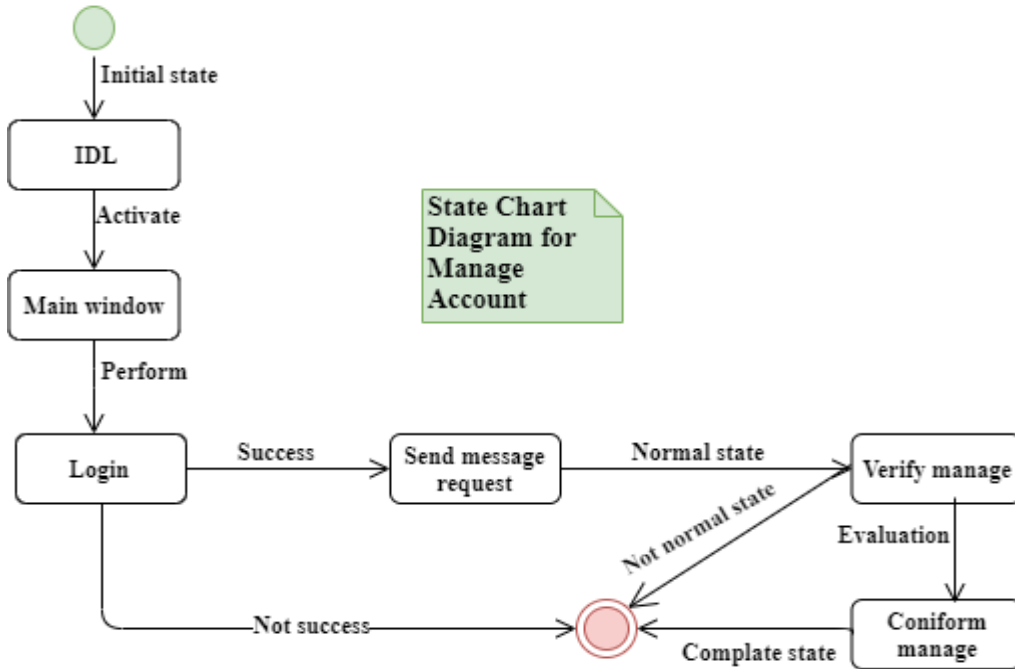


Figure 15: State chart diagram for manage Account

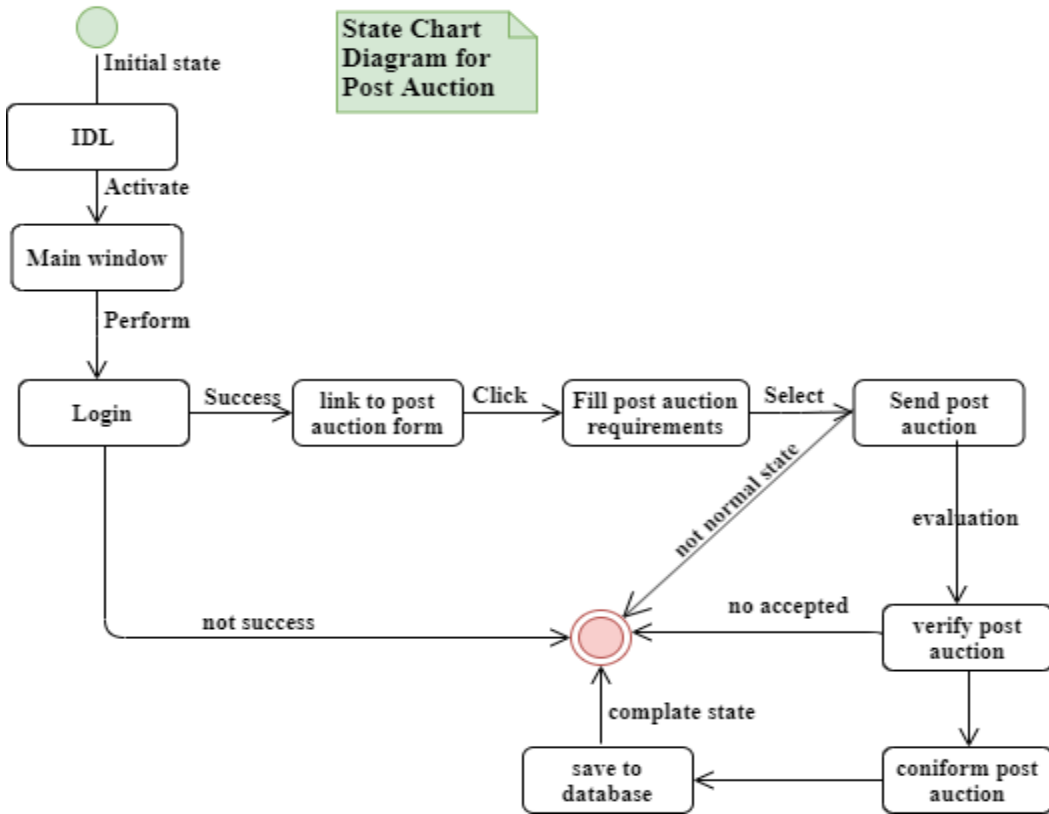


Figure 16: State chart for Post Auction

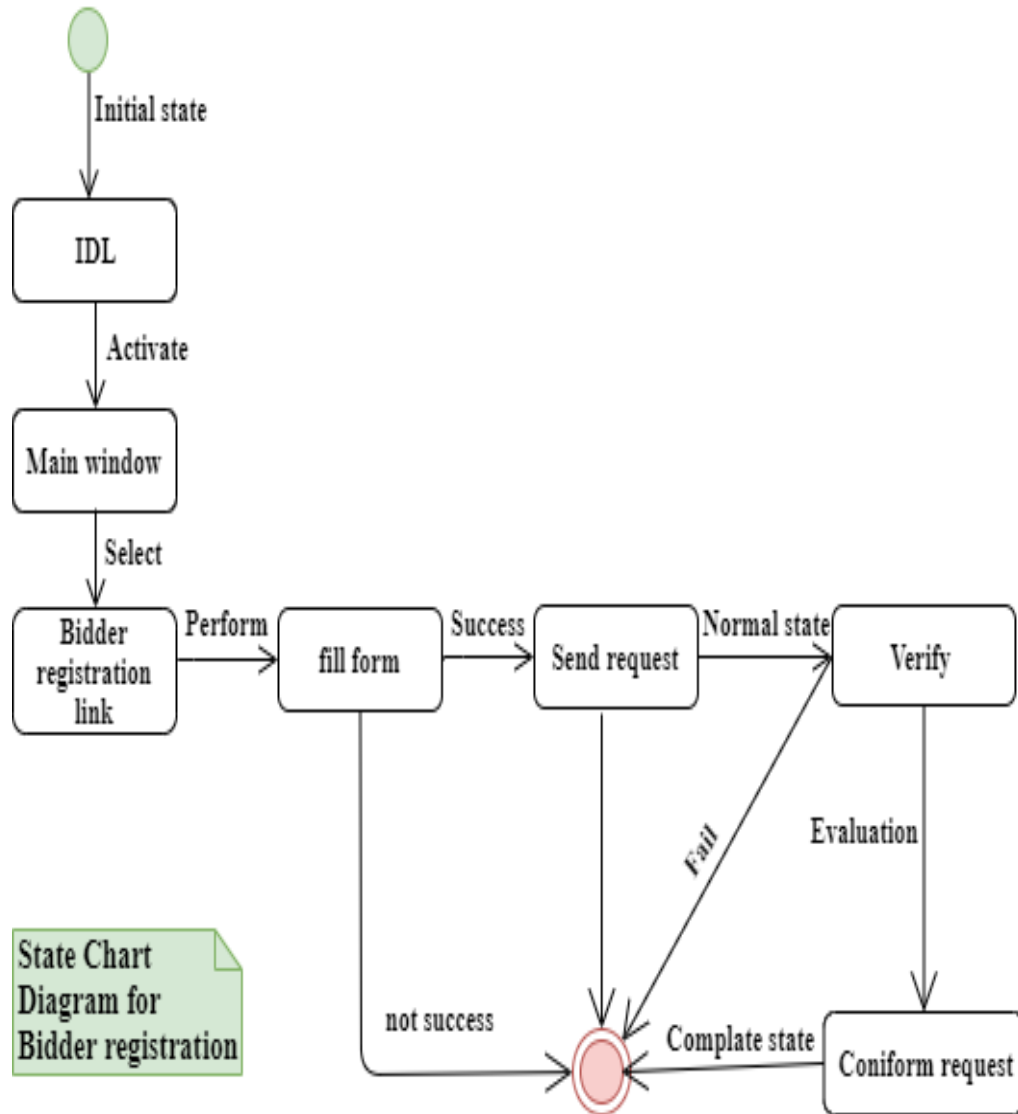


Figure 17: State chart diagram for Bidder Registration

CHAPTER FIVE

5. SYSTEM DESIGN

5.1. Introduction to System Design

Systems design is simply the design of systems which implies a systematic and rigorous approach to design, an approach demanded by the scale and complexity of many systems problems. It is the process of defining the components, modules, interfaces, and data for a system to satisfy specified requirements. System design is a process through which the requirements are translated into software. The goal of design process is to provide a blue print for implementation, testing and maintenance activities. As we tried to put the overall the objective of the property management system on the requirement analysis part, improve an access by using personal computer over the internet and to improve the quality and effectiveness of management by using a computer to support a property management process is the main goal of the system.

5.2. Purpose and Goals of Design

The purpose of designing is to show the direction how the web page is built and to obtain clear and enough information needed to drive the actual implementation of web page. It is based on understanding of the model the web page built on system design also focuses on decomposing the system in to manageable parts.

During system design we concentrate on the process of data structures and software and hardware components necessary to implement it. The objectives of designing are to model a system with high quality. Implementing of high quality system depends on the nature of the design created by the designer. If one wants to make changes to the system after it has been put in to operation depends on the quality of the system design. So if the system is designed perfectly, it will be easy to make changes to it. The goal of the system design is to manage complexity by dividing the system in to manageable pieces. Some of the goals are listed below:-

5.2.1. Performance

The part of the system should have a fast response time (real time) with maximum throughput. Furthermore, the system should not be taking up too much space in memory. The proposed

system performs its operations within a minimum amount of time and the user gets the expected result within a few seconds and the system is effective. To make our system has a high performance we will properly normalize our database, design based on three-tier architecture.

5.2.2. Maintenance

There should always be regular system maintenance. We think about how much time we need to do maintenance, and how and when we will notify users. The proposed system design based on object-oriented paradigm this provides the system modularized future, we design the system based on three-tier architecture and also use backup mechanisms this helps the system easily maintain when failure happens. It does not need expertise person instead it needs some professional person in using of computers who can use database and internet.

5.2.3. Security

The system should be secured from unauthorized user. Since the system hold important information (data), the system requires strong security features to protect that valuable information i.e. not allow other users or unauthorized users to access data that has no the right to access it.

5.2.4. Reliability

The system should maintain and perform its functionalities under any condition. It should have minimum frequency of failure and adaptable for failures. Reliability is the chance that the system processes work correctly without being aborted.

5.2.5. End-user

The system should be easy to learn, understand and operate. It should provide interactive and easy interfaces which can allow unprofessional users to deal with it. Anyone who can read English can use the system, because, to use the system only navigating through the system parts by clicking a link is the only required thing from the system users. The system usability consider the effectiveness of the system should provide services which help the user to achieve their goal, and efficiency that the users should spend minimum effort and resource to achieve their goal and the system must do what it is supposed to do efficiently without the problem.

5.3. Current Software Architecture

Currently most of activities are performed manually or paper based. As we explained in chapter one the online bid and auction is posted on the official page of the university and promoted by the newspaper and press. Beyond this nothing is done online, when the bidders are went to participate on the bid process they come to the organization directly which takes too many times to be registered to the auction their information is manually put into the box that found at the front of purchasing team office. In addition the bid/auction is posted on different boards in the university and districts of the university. The bid form is also prepared and duplicated by paper. So we can conclude that current software architecture is as follows:-

- ✓ **Microsoft word:** to write and duplicate bid form or bid document, to register bidders, to write and duplicate trade license. This and other activities are performed using Microsoft word.
- ✓ **Microsoft excel:** excel is software which is applicable currently. It is used to calculate the average and rank of bidders to select winners of the auction.

5.3 Proposed Software Architecture

Proposed system uses the following software architectures:-

- ✓ **Browser :** These include Mozilla Firefox, Google Chrome, Opera Mini, Internet Explorer and some others browsers. These are used to run the system in the computer system. These operating systems can be installed in the client computers and therefore can be accessed as much as needed.
- ✓ **Web server:** It is the heart of system that has a lot of responsibilities to perform like to communicate with clients and database. Since the system is network-connected, it uses HTTPs to send and receive data. HTTPs protocol used for communication between two devices/machines over the network to interact with each other.
- ✓ **MySQL:** It is the database software deals with the storing and managing the data based on the request from the web server. It will write new records to the storage and will retrieve and deliver to the web server when needed. MySQL is one of the most popular database technologies in the world. Known for being secure and scalable, it is the go-to solution for businesses of all sizes.

In this section we design the conceptual model of automated bidding and auction system data collection system. The proposed software has three- tier architecture.

- ✓ **Presentation tier:** is the top most level of the application. It is the one the clients directly interacted. It provides GUI to allow the client gaining access of the system.
- ✓ **Application tier:** It accepts inputs from the client and performs detailed processing. It is a bridge between data access tier and presentation tier.
- ✓ **Database tier:** provides data persistence mechanism and storage to the data. It consists of a mechanism to access the database without installing data base dependent drivers and libraries on the client device.

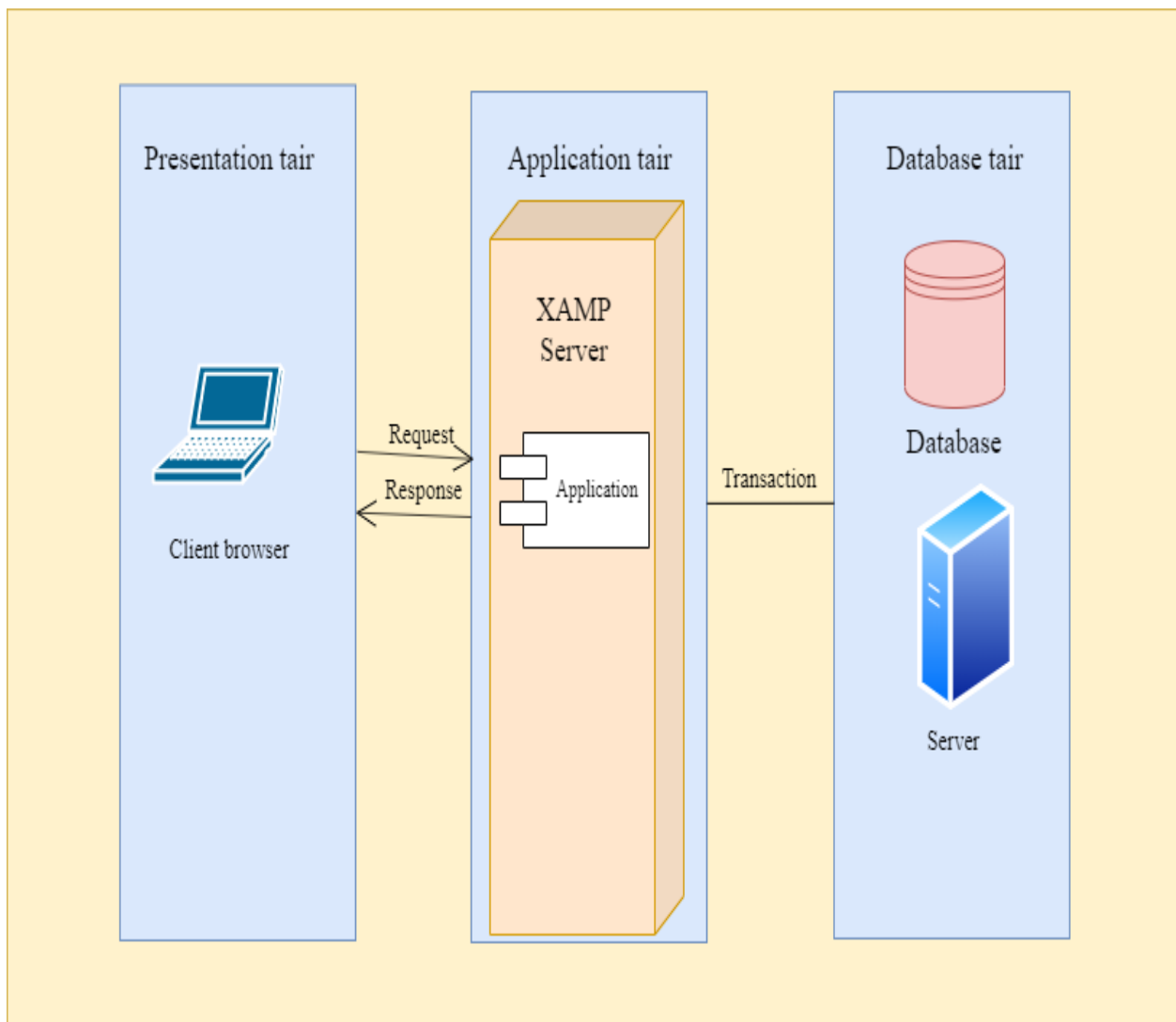


Figure 18: Proposed system architecture diagram

5.3.1 Subsystem decomposition

System decomposition is breaking down a system into its component subsystems, analyzing each separately, and aggregating them back into the complete system. During system decomposition of property management system, we break down the system into different subsystems or modules. The subsystems are with strong coherence in order to perform specific task and loosely coupled in order to solve and modify the modules separately. It is the process of separating out a module into a standalone module in and of itself. It makes the system easy to understand, design, develop and maintain. Our system decomposition shows the existence of the following subsystems. The major subsystems are post auction, manage user (create, activate and deactivate account), view bidders information (view paid, registered bidders and view bided items), view auction, bidder registration, bid on items , view winners, check items, send message, make payment (document payment, CPO payment and final payment).

- ✓ Post auction: required to post auction for the bidders.
- ✓ Manage Account: allow the admin to create, activate and deactivate to make change on their profile and password and allows the bidders to participate on the auction.
- ✓ View bidders information: allow the administrator to view information about the view paid bidders, view register bidders and bided items.
- ✓ View auction: allow to view auction generated.
- ✓ Bidder registration: allows bidders to register to the auction.
- ✓ View winners: allow to view winner of the auction.
- ✓ Check items: allows checking items that finally stored.
- ✓ Make payment: Allow the bidders and organization itself to perform payment.

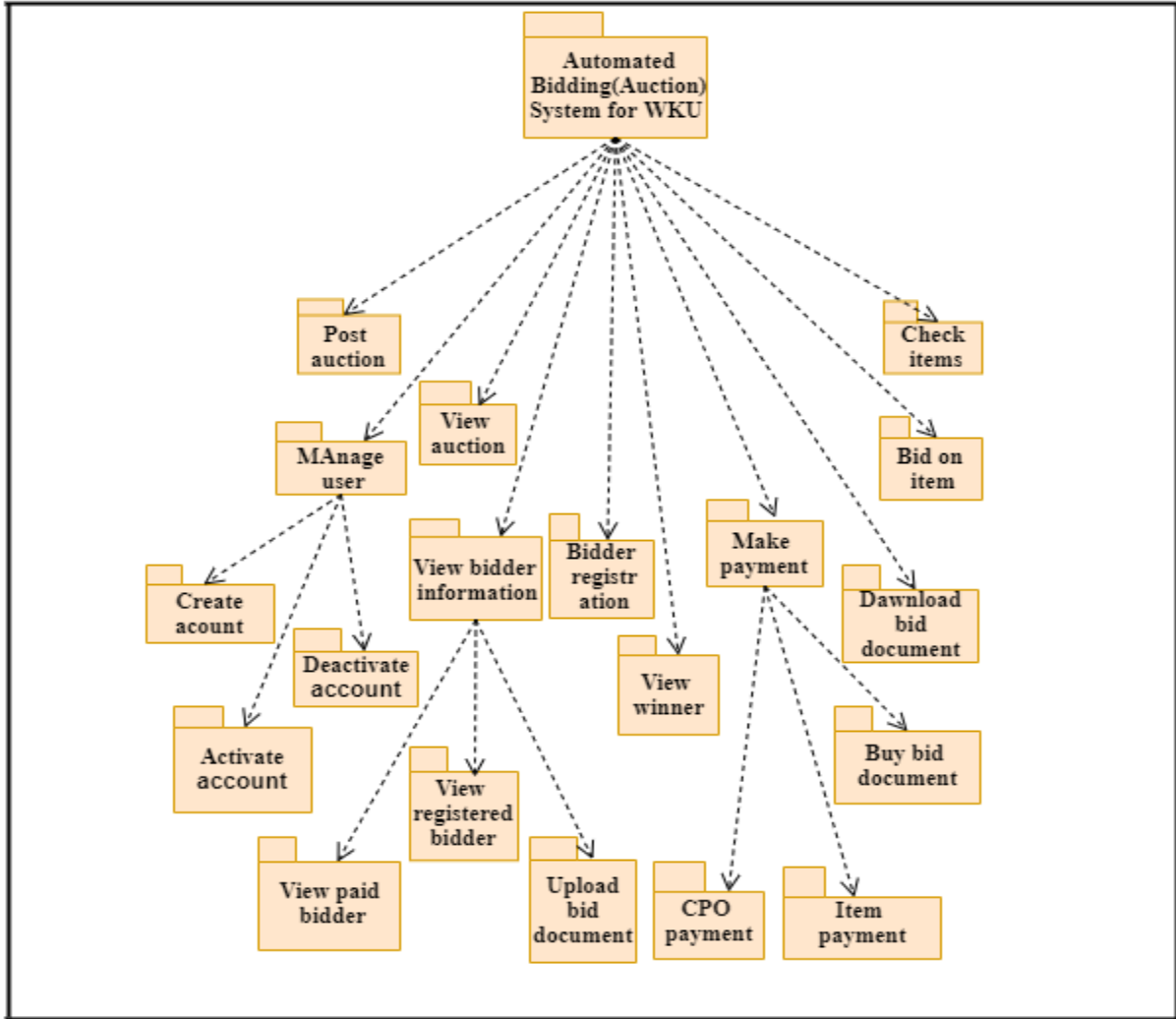


Figure 19: Subsystem decomposition diagram

5.3.1.1. Component Diagram

A component diagram depicts how components are wired together to form larger components and software systems. They are used to illustrate the structure of arbitrarily complex systems.

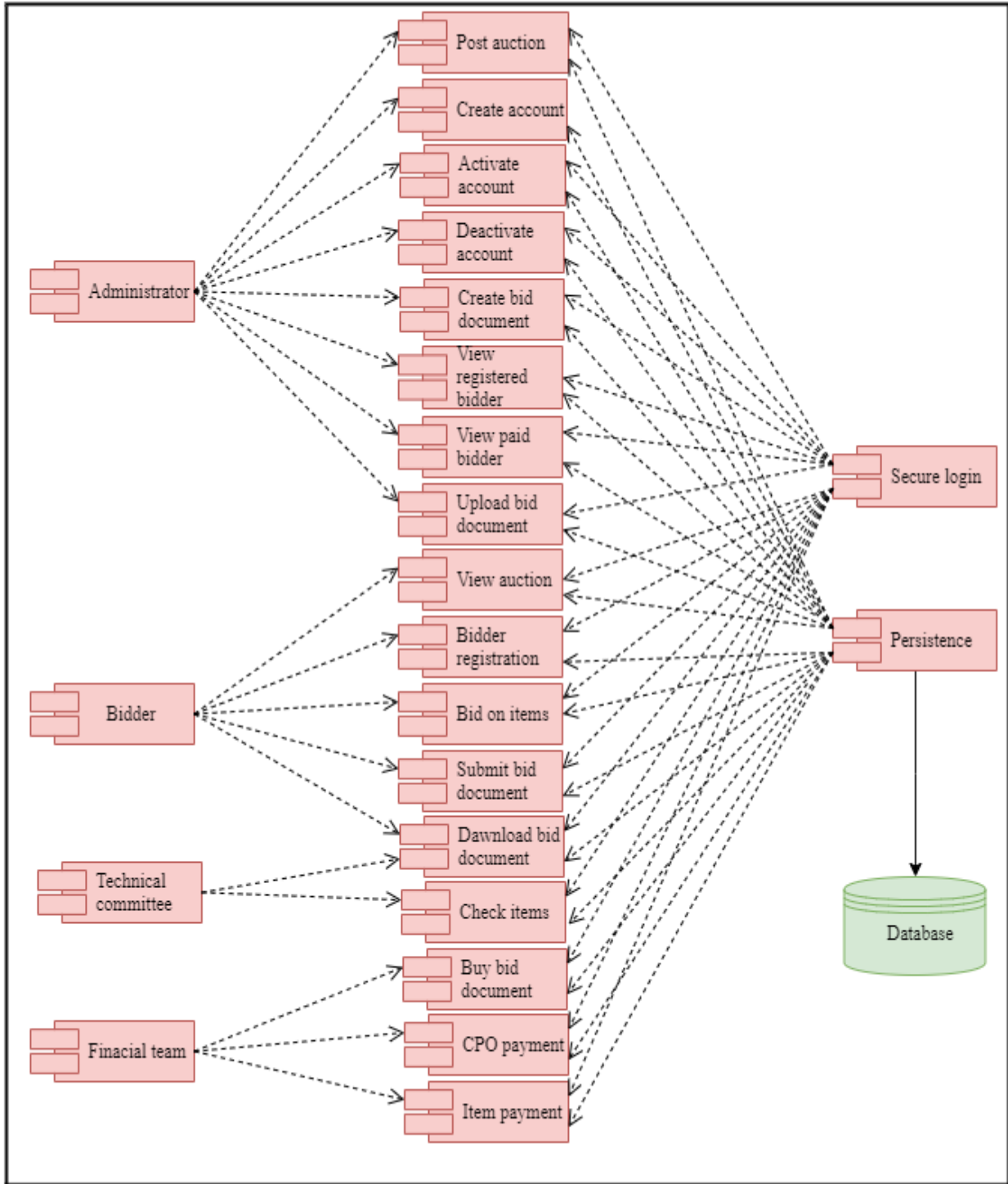


Figure 20: Component diagram

5.3.2. Hardware and software mapping

The proposed WKU bidding and auction system is going to be a web based system for all the users. The system operates within any operating system like windows. As we have tried to

mentioned on the System development tool part, the programming language that we are going to use for developing the system are: PHP, Scripting language such as Hyper Text Markup Language (HTML), Cascading Style Sheet (CSS), Java Script(JS). For the database management system we will use MySQL and web server will run on xamp server. The system consists of three independent components: Web browser, online system server and database server.

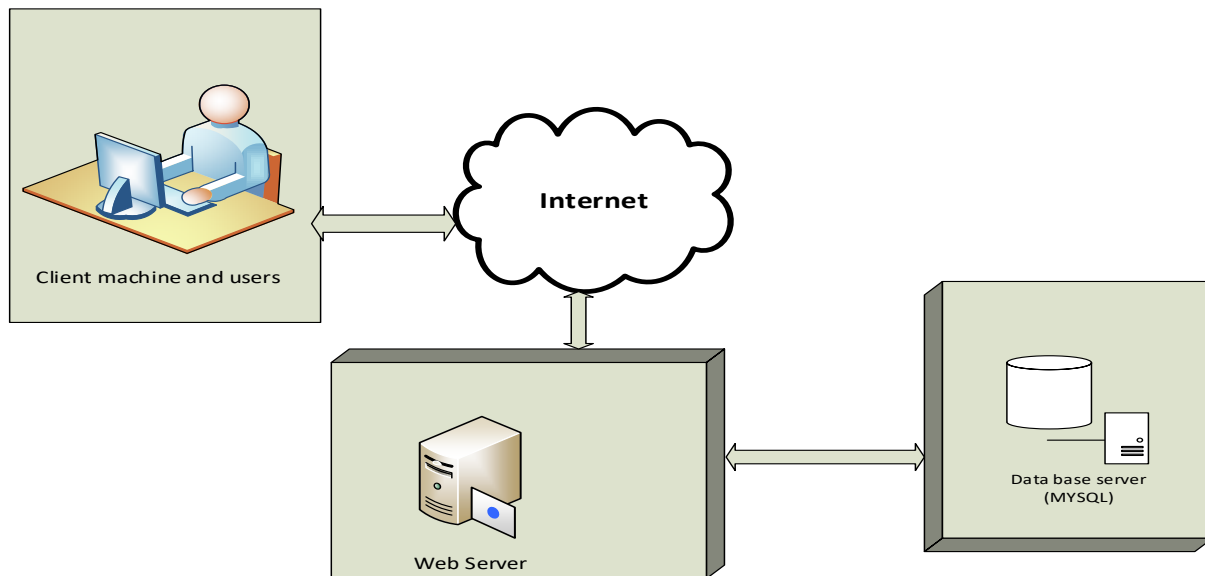


Figure 21: Hardware/Software mapping

5.3.2.1. Deployment Diagram

A deployment diagram is a graph of nodes connected by communication associations. The deployment diagram specifies a set of constructs that can be used to define the execution architecture of systems that represent the assignment of software artifacts to nodes. Nodes are connected through communication paths to create network systems of arbitrary complexity. Nodes are typically defined in a nested manner, and represent either hardware devices or software execution environments.

- Nodes are shown as 3-D boxes.
- Nodes may contain component instances.
- Components may contain objects which indicating that the object is the part of the component.

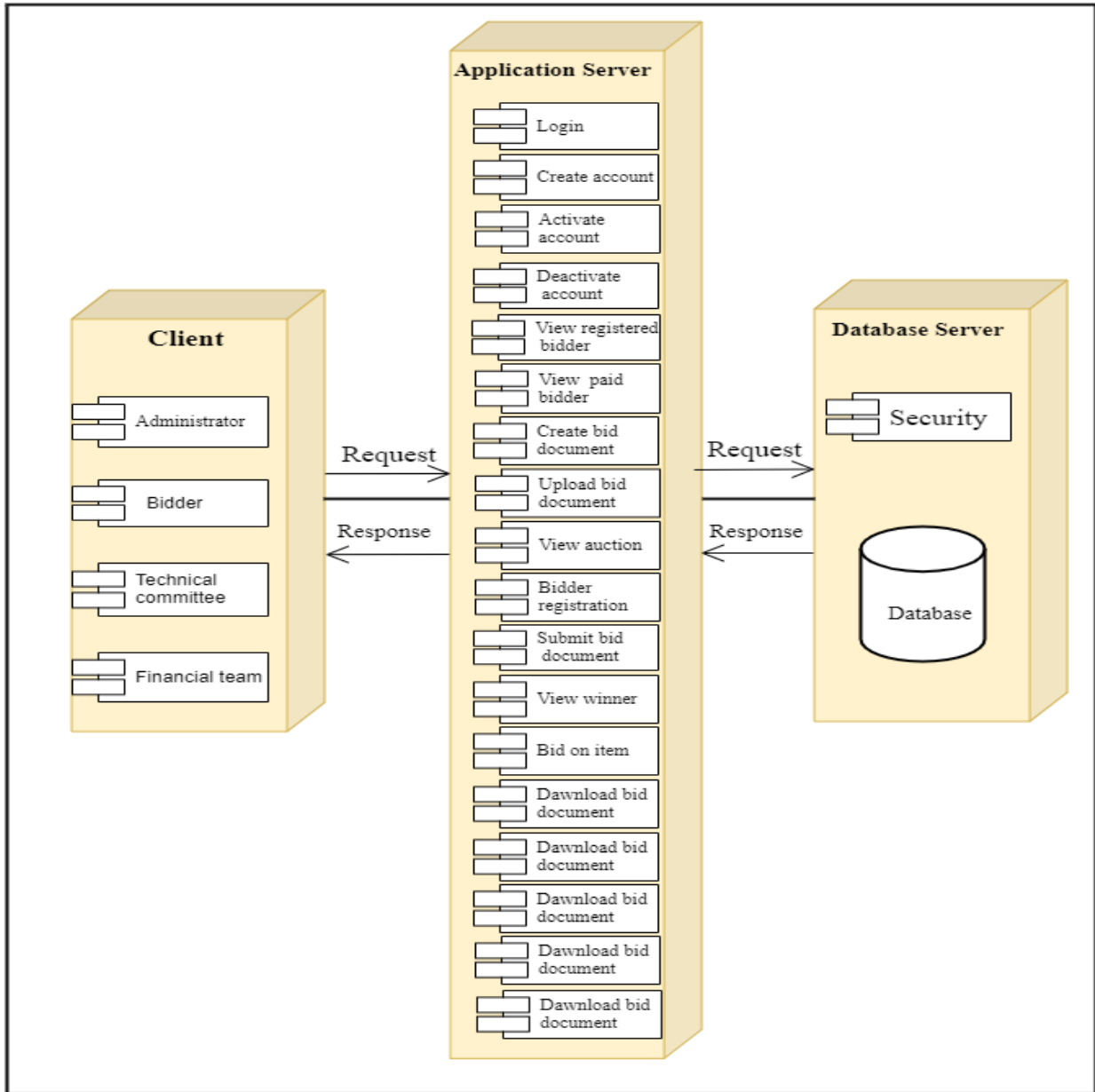


Figure 22: Deployment Diagram

5.3.3. Detailed Class Diagram

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

Information related to asset information detail, stock information detail, user information detail, and some other related information are persistent data and hence stored on a database management system to make the proposed system operate consistently. Data management issue raises the questions, which data need to be persistent, where should persistent data be stored, and how are they accessed. Persistent data represents a bottleneck in the system on many different fronts. Most functionality in system is concerned with creating or manipulating persistent data. For this reason, access to the data should be fast and reliable.

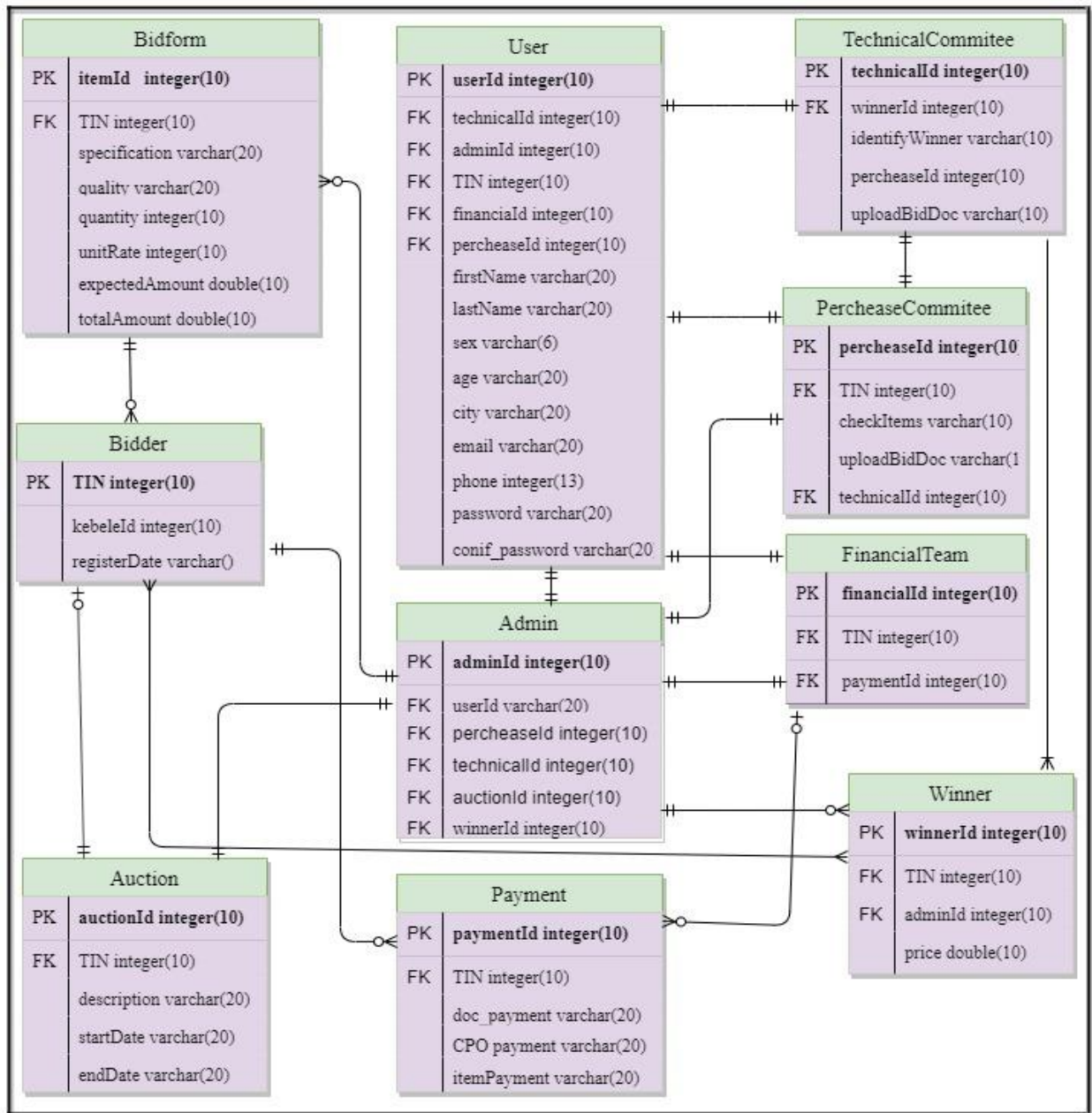


Figure 24: Persistent diagram

5.3.5 Access Control and Security

In WKU automated bidding and auction system there are different users interact with the system. Each user should have different level of authentication to different functionality and data in a system. For this reason our needs an authentication mechanism to control the data access by different stake holders as well as users, as it's information has to be protected from using by unauthorized users. The security is has to be given attention for data safety. There for the system will ask every user to Login before performing any operation depending on their level of authentication given by the administrator. To make the system secured we have used the security mechanism to be strong the password like the number of character must be long and the password must be include special characters, letters, numbers etc.

Table 29: Access Control Information

Actors	Operations	Account
Administrator	Manage user()	Confirm user()
	View bided items()	Create account()
	Post auction()	Activate account()
	Create bid doc()	Deactivate account()
	Upload bid doc()	
Bidder	View auction()	Login()
	Register()	
	Buy bid doc ()	
	View winner()	
	Download bid doc()	
Technical committee	View bided items()	Login()
	Check items()	
	Send bid doc()	
Financial team	Make payment()	Login()

The following terms tells us what we consider under this topic: -

- ✓ **Privilege:** Every user of the system is privileged for some specific tasks. A user privileged to access some data is allowed only to access the data that he/she have privileged to access. When a user try to access the data that he/she haven't allowed to access the system must

ignore that unauthorized user. Generally privilege is the assignment of the right authority to the right person. The privilege is given based on the user type.

- ✓ **Authentication:** Identifying an individual who is trying to access the accounts secure data and relevant information. The authentication process is based on username and password of the user. When a user tries to login to the system the system asks for his username and password. Then match the username and password he/she enter to login with the username and password of his/her own account. If it doesn't match the system reject the user to login to the system. If it matches then the user is allowed to login.

5.4. Packages

Package diagram is a graphical representation of the logical structure of the system as a set of packages combined with dependencies and decomposed. These diagrams are used for grouping and organizing complex project documentation. Our system has the following packages diagram.

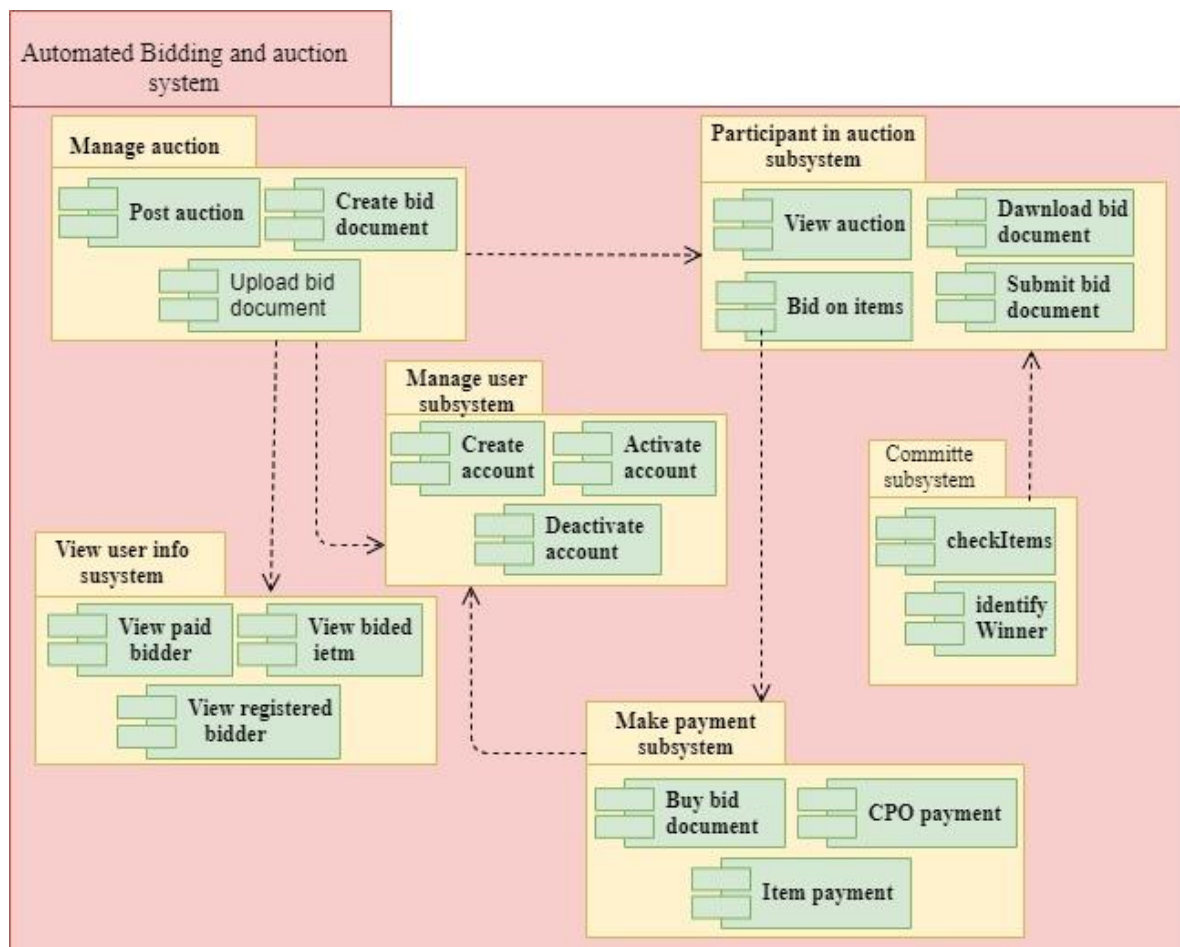


Figure 25: Package Diagram

5.5. Algorithm Design

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

Pseudo code for login

Method name: login

Begin

GET Username GET Password IF (Username == Entered Username && Password == Entered Password) THEN Put cookies Login Successful ELSE Login failed display error message.

END Pseudo code for logout

Begin

If the user login to the system then and click logout link then

Delete cookies and display the home page

End

5.6. User Interface Design

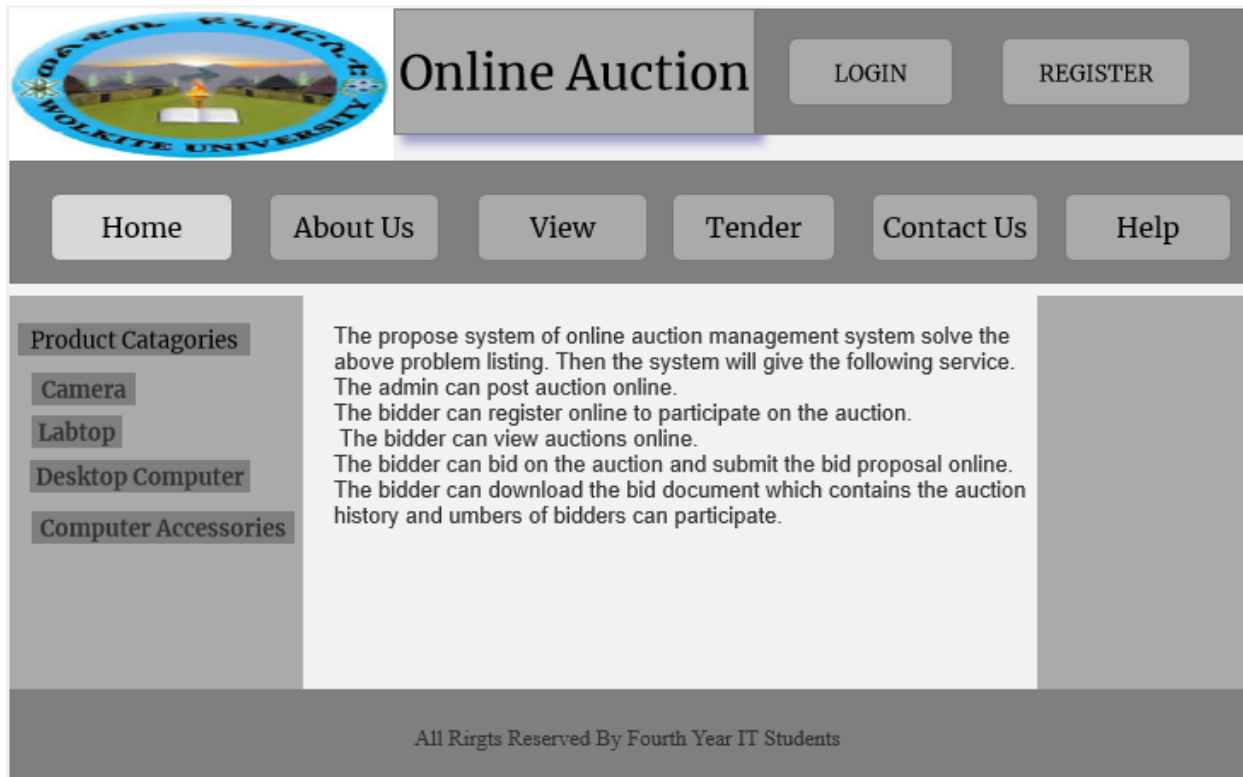


Figure 26: User interface for Home Page

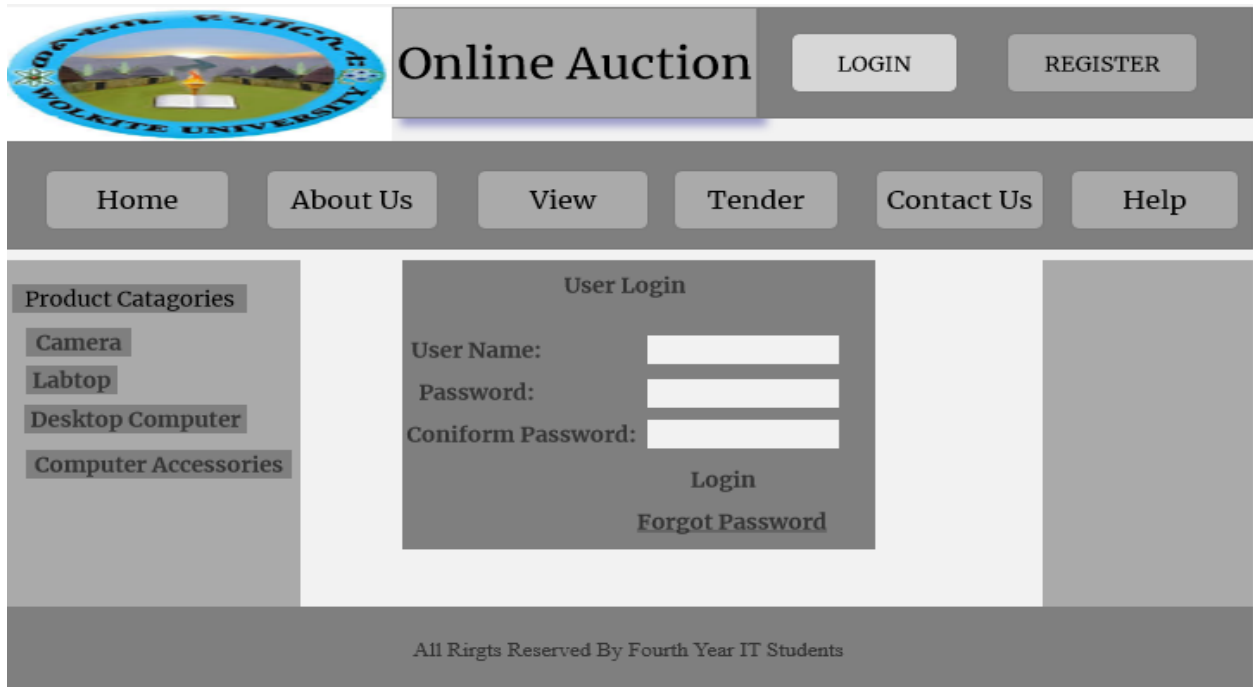


Figure 27: User interface for Login page

CHAPTER SIX

6. IMPLEMENTATION AND TESTING

6.1. Implementation

In this phase what the group members have done is turning the physical design specification into working computer code and also application, and then the code is tested until most of the errors have been detected and corrected. User sites are prepared for new system and user must come totally on the new system rather than the existing one to get there work done. There are some managerial activities in this, coding, testing, and installation. Implementation is one of parts of the project development phase where project inputs are converted to project outputs. In implementation phase, main task is coding. In implementation; we tried to put into practice what was proposed in the project document i.e. transforming the project proposal into the actual project. Then the developed system is implemented or hosted on the server for the users to get the purpose or benefit of the system.

6.2. Testing

Testing is an integral part in software development. It is broadly deployed in every phase in the software development cycle. Testing is done during implementation. Testing is often done after implementation phase because testing requirements are related to functionalities of system. The purpose of testing can be quality assurance, verification and validation, or reliability estimation.

6.2.1. Features to be tested and not to be tested

Features to be tested

- ❖ Create bid document
- ❖ Login page and Logout page
- ❖ Database
- ❖ Place your bid

6.2.2.1. Unit Testing

In this phase of testing we tried to eliminate faults in procedure and functions point of view by using black box and white box testing.

Tasks that we have performed under this phase

- ❖ Prepare unit test plans.
- ❖ Identify the unit test objectives.
- ❖ Prepare a test case that includes information such as set of test inputs, execution condition and expected output.
- ❖ Perform the tests according to our plan
- ❖ Analyses the test results

6.2.2.2. Integration Testing

In this phase we have focused on how individual software modules are combined and tested as a group. It occurs after unit testing.

Tasks that we have performed under Integration testing

- ❖ Prepare integration test plans.
- ❖ Identify integration test objectives.
- ❖ Perform the tests according to our plan.
- ❖ Document the test results.

6.2.2.3. System Testing

System testing is the type of testing to check the behavior of a complete and fully integrated software product based on the software requirements specification document. For this type of testing do not required knowledge of internal design or structure or code.

CHAPTER SEVEN

7. Conclusion and Recommendation

7.1. Conclusion

An effort has been made to study Bidding System of WKU as partial fulfillment of BSc degree in Information Technology. In doing the study the team has tried to follow object oriented system analysis and design methodology. Until now we have been doing the documentation of the online auction management system and mainly the implementation of the online auction system. In the documentation we have seen the introductory sections about the overall system we have also done the detail analysis and the design of the system that we developed and implemented in the final year project. We have developed this online auction system that support or operate Amharic and English language. We also think that we have tried to show what the online auction management system looks like in terms of documentation and implementation. The online auction system systems will be used to conduct online auctions and bidders simply can participate on the auction that you live.

7.2.Recommendation

We recommend that the organization use this online auction management system fulfill the necessary requirement that may exist limitation of computer, Internet connection and if users do not awareness of a computer talk training of the computer how to use. Due to shortage of time and some other condition like resources we do not include some features to the system. Nowadays, the world is highly becoming a competitive world. Organizations have to divert their attention on using the recent technology to be on the first line and competitive. As described in our document this Bidding system has its own limitation. So there are some enhancements can be made in the future to make the system perfectly functional by solving its limitation. As a further work we recommend to develop mobile based auctions system and develop online payment system. Generally as a future work connect with bank and GUMRUK to checking payment and identify legal users of the system simply. Some of the enhancements can be made are

- By including online payment system bidder registration can be completed by the time of registration.
- Making the system to handle bidder prerequisite download and upload functionality can be added to the system.
- System can be made more users interactive by providing additional language features for the system.

REFERENCES

- [1] D. Varma, Bidding for a process innovation under alternative modes of competition [J]. International Journal of Industrial Organization,, (2003).
- [2] f. g. fethiya mehammed, online auction management system,, 19 april 2004..
- [3] D. Bell, . [Online]. Available: [https://www.fing.edu.uy/inco/cursos/ingsoft/iis/files/UML-Class diagram.pdf](https://www.fing.edu.uy/inco/cursos/ingsoft/iis/files/UML-Class%20diagram.pdf)., 15 Sep 2004.
- [4] M. Felici, [Online]. Available: http://www.inf.ed.ac.uk/teaching/courses/seoc/2009_2010/notes/10_notes.pdf" , 14 January 2004..