School of Computing

Department of Information Technology

Industrial Project-II

Title: - *Store Management System*

Group -7

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CONTENTS

List of Table

List of Figures

CERTIFICATE

This is to certify that the project entitled “Store Management System” has been carried out by: Samuel Bekele, Leul Mekonn, Haftom G/Egziabhere, Birtukan Atenafu, Getu Wubie and Hagos G/Yohannis.Our guidance and supervision, for the fulfillment of the requirement for the award of Degree of Bachelor science in the field of Information Technology.

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Signature: _____ Signature: _____

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2. _____ _____

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4. _____ _____

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Finally we would like to express love, thanks, appreciation, and respect to the teaching staffs of computing collage who have contributed a lot to the success of this project.

CHAPTER ONE

1. Background of the project

Store Management systems allow companies to record and track materials and customer information. Accurate material management allows companies to use this information for market planning, purchasing studies, sales and marketing reporting, inventory, future marketing etc. Moreover, company value is increased when the materials management information system is accurate.

According to the university store management System, the manual material management system carried out at the university stores. This system maintains the details of stores, items, receipt, issue and adjustment of stock materials. Store management system produces all the desired reports required for monitoring and controlling of the system.

Store management provides for centralized management of all materials and their recipes, including bill of materials, equipment lists and processing instructions. Supporting the full life cycle of materials web based material management is a powerful solution for managing the receiving, warehousing, and shipping of materials. With its easy-to-use interface, material management allows materials management personnel to focus on the job at hand, rather than learning complex software.

Therefore the following consecutive topics describes about background of the organization, statement of the problem, objective of the project and methodologies that we follow, feasibility and scope of the project.

1.1 Organizational Background

Debre Berhan University was officially established in June 3, 1999. During this time it included three faculties. These are natural science, social science, Business and Economics Faculty. At present the University runs undergraduate programs. It is expected that with the on-going expansion a number of faculties and programs will be opened and the enrolment capacity will increase.
The Debre Berhan University store office was established during this time and it is developed from time to time with the development of the University. As it is developed from time to time it increases its capacity by increasing the number of workers in the office. The Debre Berhan University store office is the backbone of the University by managing any activities related to materials available on the

University. Now a day's, Debre Berhan University store office gives many services, among these services the following are the main services:

- Registering new materials and staff members
- Register items taken by the staff members
- Distribute items to the Staff members

1.2 Statement of the problem

1.2.1 Statement of the problem and its justification

Debre Berhan University uses manual store management system for the overall management of materials. This manual system of store management is tedious and error prone. Another problem is there is a difficulty in searching items, calculating inventory item cost: this is somewhat bad and it takes time to finish this process unless it is computerized. It is expected to include all necessary activities in the store management such as purchase activities, inventory (stock) activities, reports and other activities using web based store management.

Moreover, there is

- ✓ Time delay in generating reports.
- ✓ Paper wastage in using the manual system.
- ✓ No knowledge of how staff members utilize the materials
- ✓ Problem of how departments will ask materials from the university.
- ✓ chances of errors and data processing time
- ✓ Timely Due to manual process, required more time to complete user requirement
- ✓ It will increase updating complexity.
- ✓ Security of data were not maintain

In today's Internet-enabled business environment, increased competition, globalization, customer expectations, and technology advancement have combined to produce a powerful effect on the process of delivering goods and services to the marketplace. Increasingly, businesses see themselves as a collection of processes supported and driven by information systems and technologies. In order to succeed in this dynamic and integrated environment, systems analysts and consultants must be able to understand business decisions as well as technology decisions.

The Store Management information system enables the tracking of all materials, down to the unit level; from finance until delivery to departments' level. The system is fully web-based and can be accessed through the Internet. In addition, the project can perform the following functions:-

- ✓ Computer enhances easy and simple means of Storing information. The space occupied for storing of information is reduced.

- ✓ Computers helps in fast retrieval of information .we can search information in a short of time.
- ✓ Maintenance of data is very easy and workload is reduced.
- ✓ It's a paperless system.
- ✓ We can generate report on demand.
- ✓ It will give faster modification.

1.3 Objectives

1.3.1 General Objective

The general objective of this project is to develop a system that changes the manual process of store management to web-based in Debre Berhan University.

1.3.2 Specific objectives

In line with achieving the general objective, the study is going to deal with the following specific objectives:

- ✓ To request items online
- ✓ To maintain a consistent flow of materials utilization
- ✓ To maintain security of data
- ✓ To develop user friendly system that eliminates the manual system
- ✓ To study the different characteristics of the university store management process in the database through interview and observation.
- ✓ To apply an appropriate Software methodology, tool and model to develop the universities web based store management system.
- ✓ To categorize the materials based on the time of their usage
- ✓ To cancel request sent by the staffs when necessary
- ✓ To manage the status of the staff members
- ✓ To test the quality of the university web based store management system with real life environments which include requesting materials.
- ✓ To make conclusion and forward recommendations for further projects

1.4 Feasibility Study

The feasibility study is the preliminary study that determines whether a proposed system project is financially, technically and operationally viable. The alternative analysis usually include as part of the feasibility study, identifies viable alternatives for the system design and development.

1.4.1 Technical Feasibility

We believe that building this system with acceptable through, response time and other performance parameter will involve through technical knowledge and technology availability.

1.4.2 Operational Feasibility

The new system will support the major activities of managing materials and will take advantage to solve the problem out lined in the statement of the problem section .The employees can operate the system with little training .so we can say that it is operationally feasible.

1.4.3 Schedule Feasibility

Realized within the time duration, we have identified the activities in accomplishing the project objective with their schedule requirement.

1.5 Methodology

In order to accomplish this project on time and within the cost, we will follow different procedures which are described below.

1.5.1 Data Collection Methods

Data collection methodology is the way of gathering relevant data/information to study problems of the current system.

Document Analysis: It describes the act of reviewing the existing documentation of comparable business processes or systems in order to extract pieces of information that are relevant to the current project, and therefore should be consider projects requirements.

Interview: We use this methodology to interview people that are directly involved on store service and have useful information for that desired system. Interviewing can be used to get facts, clarify facts, generate interest, get the end user involved, identify requirement and ask for ideas and opinions.

Observation: It is a useful data collection technique that assists the team to assess the manual system by participating or watching in the real work and forms using in the existing manual system.

1.6 System Development tools

Web based Store Management system is integrated computerized system for Store of Debre Berhan University and will be developed using **PHP** and **MYSQL** as back end Open Source Environment. We also use some software's such as

Microsoft Word 2010, **Microsoft PowerPoint 2010** and hardware's such as computer and Flash.

1.6.1 System testing

During the implementation of the system the team members are expected to conduct the following testing.

- **Unit test:** every developer and analyst will test each module.
- **Integrated test:** the integration of two or more modules will be tested by taking sample test data for its functionality.
- **System testing:** after the whole integration of all expected system modules, the whole system will be tested using sample data.
- **User Acceptance testing:** after delivering the system to respective owner/sponsor we will train the users and test themselves by feeding the real data.

1.7 General System Requirements

A server-class PC with Mozilla Firefox is needed to support the Web based store management. **MySQL** is the underlying database and **Apache** server is the underlying server. For client access, a PC with Internet browser is needed.

1.8 Purpose of the project

Computerized Store management system is developed to facilitate the general administration system to manage various information of the material distribution and the processes involved in the store of the University. So the university store can access accurate information quickly and easily as and when required, thereby improving its operational efficiency and effectiveness.

1.9 Scope of the project

The project is mainly aimed to develop cost effective and efficient store management application package. Hence, it is expected to include all necessary activities in the store management such as storing customer information, inventory (stock) activities, reports, and prepare bills to customers.

Generally speaking the web based store management applies to all staff members of the university.

Major functionality:

- Adding new staff members and items.
- Updating registered staffs and items.
- Categorizing items based on their time of usage
- Searching materials which are available in the store.
- Maintaining security of data
- Requesting an item online including canceling the request
- Register items taken by the staff member
- The system generates the necessary report to be viewed by the store manager.

1.10 Limitation of the project

It would have been of paramount importance if the entire organization in Debre Berhan city uses a Web Based store management system. However, as it has restriction in relation to time and finance, this project is limited to store management system of Debre Berhan University in line with addressing the problems that are stated understatement of problem area. Our project is also May vulnerable to the following obstacles.

- Luck of experience on doing a web-based system.
- Transferring of items must be done manually.
- Our system does not include issues related to purchasing activities.

The above activities or subsystems are proposed system limitations because of the following reasons:

- ✓ **Time:-**Is the main factor of limitation our proposed systems that limit its performance because while we are developing the system it takes more time and we may not get enough time to automate the system.
- ✓ **Resource**: - we have no laptop as an alternative when arbitrary failed the desktop and also when the power is off for a long time.

1.11 Significance of the study

The relevance why we have to conduct the study is:

- ✓ To understand how Debre Berhan University's Store management system works and to design an appropriate computerized system.
- ✓ To enhance the service offered inside the store.
- ✓ To Enables the store customer's or Staff members to get fast access and help the store in service giving operations.
- ✓ To manage item and employee information in computerized way

1.12 Time Scheduling

Table 1.Shows the time schedule to accomplish the whole project using Gant Chart

No.	*Activities*	Month			
		November	December	January	February-June
1.	***System Proposal***				
2.	**Requirement Analysis**				
3.	***System Design***				

4.	***Implementation***				

1.13 Cost Management

Table 2.The cost management of the project is included in the table below.

Name	**Costs per each unit in birr**	**Numbers of unit**	**Total cost In birr**
Flash	160	2	320
Paper	0.30	100	30
Pen	3	10	30
Internet service fee	30 cents	For 2 month	1800
Writing service fee	4	55 pages	220
Printing service fee	3	60	180
Maintenance			500
Total			**3,080**

Chapter Two

2.1 System Analysis

This chapter focuses on the description of activities in the existing system. It tells how the current system performs its activities within the University.

In order develop new user friendly and accurate system; it is must to understand the way and process of the existing system in Debre Berhan University store.

2.2 Description the Existing System

Debre Berhan University store management system uses paper oriented system which means all new items and staff members of the university, items taken by the staff members and all materials that are available in the store are recorded on paper.

In the existing manual store management system, materials are divided in to two as consumable and fixed assets. Each of them is recorded separately. Consumable materials are materials that staff members take from the store and never return them; for example, pen, paper, printer ink and fixed assets are materials that needs repair, for example, computers, speakers, office materials. The fixed assets materials will be returned to the university store. New materials are bought based on the need of all collages of the university.

2.3 Player of the Existing System

Players are the persons who are external agents to the system. They have interaction with the system. These persons perform some actions such as providing inputs, removing and updating data to/from the system.

Players	Description
Store Manager	A person who is responsible to approve the request from the staff member
Stock Clerk	A person who is responsible for registering the items to be taken by the staff members and registering new materials
Stock Keeper	A person who uses is responsible for giving the items to the staff members, check and place the new item.
Customer/Staff	A person who takes some items from the store

Member	
Purchaser	Responsible for purchasing materials to the store
Collage Dean	Responsible for approving the customer request is essential

2.4 Work Flow of the Existing System

The work flow in the existing system is performed starting from the top store head to the lower store kipper person. First the store clerk receives the material detail from the store manager and he/she assigns a code and record the item information.

Then the store keeper must get permission to receive and give the materials to the staff members by the head of the store office and the store keeper checks the incoming and outgoing materials by the related professionals. Then the store keeper documents the information and reports those materials detail based on their type to the officer.

When the customers want to request an item from the store, first, the customer get a form called **model 20** from the store manager. The Collage dean in which the staff member is working approves the necessity of the request. The Store manager checks if the staff member takes the requested item, if not the manager approves the requested items on the form. Then the stock clerk receives the form and attaches another form called **model 22 (see appendix 2)** which is printed in three copies and then register the items taken by the user by using the stock record form.

The store keeper checks the item listed on the form and gives the item to the customers or staff members. In addition, Stock keeper check and place new materials and those returned from the customer. At the end of each year, Finance purchase new materials based on the need of each collage.

In general, any new item is added to the store using **Model 19 (see appendix 1)** form and distributed to staffs using **Model 22**.

2.5 Report Generating in the Existing System

The store clerk and store keeper generates report to the store manager then the manager Views the report periodically and can decide what activities are performed in the store. But at the end of the year, the report must be within a total item distribution.

2.6 Business Rules Identified in the Existing System

A business rule is 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.

The main business rules or principles of the existing system are:-

Br1: the store gives service only for employees of the university.
Br2: the staff members can't get identical materials if he/she takes before.
Br3: employees of the store are not expected to give service on Saturday, Sunday, and Holiday.
Br4: when customers want to borrow any material he/she must register his id, full name, email, position and other user details properly and must get item request form called model 20 from the store officer.
Br5: in order to get the item he /she must get permission from the Collage Dean and the store manager must put their signature.
Br6: the staff member must put his/her signature while taking the item.
Br7: the staff member should keep safety of the item.
Br8: when the staff member leaves the university he/she must return all non-consumable (Fixed asset) materials in order to get clearance.

Br9: when the customer/staff return damaged material, the material checked by ICT technicians. Then, if some parts of the material are lost, the customer must pay for the material.

Br10: new items are recorded and assigned an item code by the store clerk.
Br11: after recording and assigning code by the store clerk the items directed to the store keeper then he/she check and place them.
Br12: The staff member must appear physically in the store manager office to get username and password for the first time.

2.7 CRC (Class Responsibility and Collaboration) Modeling

Class Responsibility Collaboration (CRC) Modeling is a method to gather and define the user requirements for an object-oriented application. The output of CRC Modeling is a CRC Model which is a collection of CRC that represent the whole or part of an application or problem domain.

Each CRC in the model represents a class in the solution. A class represents a person, place, thing, event, concept, screen, or report that is relevant to the system at hand. The name of the class appears across the top of the card. A responsibility is anything that a class knows or does.

Sometimes a class will have a responsibility to fulfill, but will not have enough information to do it. When this happens it has to collaborate with other classes to get the job done. The collaborators of a class are shown in the right-hand column of a CRC.

There are many benefits to CRC modeling. CRC modeling relies on natural language to describe concepts and their relationship to each other. This makes it much easier for users and business subject matter experts to participate. Because the business can be actively involved, buy-in for the potential solution is greatly increased. People who understand the problem and business domain are the ones who create the model and this ensures the right model is developed.

CRC modeling has been modeled in the following format:

Class Name	
Responsibility	Collaboration

Receive Item	
	Store Manager

Store Manager	
Give the item list	Store keeper and Store Clerk

Store Clerk	
-Register the new items	Store keeper

Store Keeper	
-Check the item	Item placed in the store

Approve Request	
Staff Member Full Name Item Name Model Quantity Unit Price Item type *Request Date* *Item description*	Store Manager

Store Manager	
Give approved item list	Store Clerk

Store Clerk	
Register list of items to be taken by the Staff member	Store Keeper

Store Keeper	
Get the approved item list	Staff member receive the items.

2.8 Problem in the Existing System

The major problem observed in the existing system is often used manual system. There are many problems in the existing system which includes

- ✓ Paper wastage in using the manual system.
- ✓ chances of errors and data processing time
- ✓ required more time to complete user requirement
- ✓ It is difficult to update employee or item information.
- ✓ Time consuming to generate report

2.9 Purpose of the new System

Developing computerized store management system: - This system will be implemented on the local intranet of Debre Berhan University. It enables online managing of materials. The advantages of this option are: -

- ✓ It saves time in performing material requisitions.
- ✓ It is user friendly and convenient environment since it has well defined user interface design.
- ✓ Ease of searching of materials that are available in the store.
- ✓ Easy to update employee or item information

2.10 Proposed system

The proposed system is the solution of the above mentioned problems. By using this system an organization can handle its all kinds of above mentioned works efficiently, accurately, and speedily with all kinds of security features by involving a few employees. The new system we are going to develop can perform the following functions:-

- Organizing stocks that run out from the store

- Classify the items based on their time of usage
- The system ensures each actor enter to the system based on their privilege.
- Search the desired information more quickly.
- To reduce manual efforts in activities that involved repetitive work.
- Updating and deletion of data become much easier.

2.11 Functional Requirement of the New System

The new system that we are going to develop includes several functions to satisfy the needs of the university. Some of these are as follows:

- The store clerk organizes stock that runs out from the store.
- The system generate report to be viewed the store manager.
- The store clerk adds the new material's information.
- The store clerk Search (view) items available in the store.
- The store keeper gives the item to the staff members.
- The store keeper places the item in the store.
- The system players perform functions based on their privilege.
- The customer/staff member requests an item online including canceling the request.
- The staff members can view available materials before sending request.
- The collage dean approves the necessity of the request from the customers.
- The purchaser class submits new materials to the store manager.
- The staff member receives response whether approved or disproved for their request.
- The manager approves the staff member request.
- The store clerk register taken items by the staff members.
- The store manager manages the status of the staff members.

2.12 Nonfunctional requirement

These constraints are the user visible aspect of the system.

Which includes?

- Maintenance: The store Management System is being developed in PHP (Hypertext processor). PHP is a markup language and shall be easy to maintain or modify.
- Portability:-The store Management System shall run in any Microsoft Windows environment that contains **php** Runtime and the integrated **Mysql** database.
- Reliability: - The store Management System service should not access without authenticate user.

- Standards Compliance: - The graphical user interface of the system shall have easily understood to the user.
- Performance: -Acceptable response times for system functionality.
- Security: - Access to the various subsystems will be protected by a user log in screen that requires a user name and password.

2.13 System Model and the Artifacts

2.13.1 USE CASE DIAGRAM

A use case is a sequence of action that provides a measurable value to an actor another way to look at it is that a use case describes a way to which a real world to interacts with the system. An essential use case sometimes called a business the case is simplified, abstract, generalized use case that captures the intention of the user in a technology and implementation independent manner.

The case models are used to document the behavioral (functional) requirement of a system.

- ✓ A use case describes a sequence of action that provides a measurable value to an actor and draw as a horizontal ellipse.
- ✓ An actor is a person, organization, or external system that plays a role in one or more interactions with the system and draw as stickman figure.

Relationship between actors and use cases exists whenever an actor is involved with an interaction described by a use case and modeled as a line connecting use cases and actors.

Figure 1 ***Use case Diagram of the System***

2.13.2 Use case description

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. Use case is a list of steps, typically defining interactions between a role (known in UML as an actor) and a system, to achieve a goal. The actor can be a human or an external system.

Table 2.1: log In

Table 1 Use case Description of Log In

Use case name	Log In
Participating actor	Store manager, store clerk, Technitian, Store keeper and Staff Members.
Entry condition	The user opens the home page of the system.
Basic course of action	1. The user wants to log in into the system. 2.The system displays the form 3. The user inputs his/her username, password and role. 4. The system verifies that the user is authorized to log in into the system (account checking from the database). 5. The user login into the system.
Alternative course of action	If the entered username, password and role not matched, the system displays error message and stay on login page.
Exit condition	When the user click home link.
Pre-condition	The user has a username, password and Role.
Post condition	The user login into the system and do the allowed operation based on his/her privilege.

Table 2 Use case Description of Log Out

Use case name	log out
Participating actor	Store manager, Store clerk, Technitian, Store keeper and Staff members.
Entry condition	The user stays in the login page of the system.
Basic course of action	1, The user stays in its log in page. 2, The user wants to log out into the system. 3.The user clicks the log out link 4. The user logout from the system.
Exit condition	When the user click logout link.
Pre-condition	The user stays in the login page of the system.
Post condition	The user logout from the login page.

Table 3 ***: Add Item***

Use case name	Add Item
Participating actor	Store clerk
Entry condition	The store clerk activates add item form.
Pre-condition	The store keeper should login to the system
Basic course of action	1. The system displays add item form to the clerk. 2. The store Clerk enters details of new item. 3. The system checks the entered item information 4. The store Clerk stores the item to the item table.
Alternative course of action	If there is any invalid entry then the system displays error message and allows the store clerk to re-enter the correct data.
Exit condition	When the Store clerk close the form

Post condition	The item is added to the database.

Table 4 **Approve Request**

Use case name	Approve request
Participating actor	Store manager
Entry condition	The Store manager activates request approval form.
Pre-condition	The Store manager should log in to the system.
Basic course of action	1. The system display request approval form 2. The manager decides to approve or reject the request 3. The manager select either Approve or Reject link 4. The system displays confirmation message 5. Store Manager select either Yes Or No button 6. The system set the request status either Approved or Rejected.
Alternative course of action	If the requested item is not exist the system displays not found message
Exit condition	When the Store Manager closes the form.
Post condition	Approve and save the data to the store database.

Table 5 **Update Item info**

Use case name	Update Item info
Participating actor	Store Clerk
Entry condition	The store Clerk activates form to update item info
Pre-condition	The store Clerk should login to the system
Basic course of action	1. The system displays the update item form 2. The store Clerk select item name to search the item to be

	updated. 3. The system display the item information 4. The store Clerk fills the changed information. 5. The store clerk click update button. 6. The item updated.
Alternative course of action	If there is any invalid entry then the system displays error message and allows the store Clerk to re-enter the correct item name.
Exit condition	When the Store Clerk close the form
Post condition	The item info updated to the item table.

Table 6 ***Manage User Status***

Use case name	Manage User Status
Participating actor	Store Manager
Entry condition	The store Manager activates form to change user status
Pre-condition	The store Manager should login to the system
Basic course of action	1. The system displays the form 2. The store Manager select username to search the user to be updated. 3. The store Manager selects the Enable or Disable from the drop down list. 4. The store Manager Click status button. 5. The User status updated
Alternative course of action	If there is any invalid entry then the system displays error message and allows the store Manager to re-enter the correct employee id.
Exit condition	When the Store Manager close the form
Post condition	The user status updated

Table 2.7: Request online

Use case name	Request online

Participating actor	Staff Members
Entry condition	The Staff Members find form to send request.
Basic flow of event	1. The system displays the item request form. 2. The users fill the form to send request 3. The users send request by clicking send button. 4. The system validates the item request form. 5. The request form is now registered.
Exit condition	When The users log out from the page
Pre-condition	The users should log in to the system.
Post condition	The users request registered to the system database.
Alternative course of action	1. If the entered password and user name is incorrect go to the login page. 2. If the entered information's are incorrect go to step 2.

Table 7: **View item**

Use case name	View item
Participating actor	Store Clerk Or Staff Members or Store Keeper
Entry condition	The actors need to view available items.
Pre-condition	The actors should log on the system.
Post condition	Retrieve stored items and view the item list.
Basic flow of event	1. The actor select view item link 2. The system displays the items that are available. 3. Then the actors see the list of items.
Exit condition	When the actors log out from the view item

Alternative course of action	If the entered user name and password is incorrect, go to the login form. If the entered item name is incorrect, the system displays not found message and go to step 2.

Table 8 ***Cancel Request***

Use case name	Cancel Request
Participating actor	Staff Members
Entry condition	The Staff Members look request form.
Basic course of action	1. The system displays cancel request form. 2. The Staff Members search the request form by their id if the request status is waiting 3. The Staff Members see and check the previous request form. 4. The staff member click cancel request button or update the request information.
Exit condition	When the Staff Members closes the form.
Pre-condition	The Staff Members should log in to the system.
Post condition	The Staff Members cancel the request
Alternative course of action	1. If the entries user name and password is incorrect go to log in form. 2. If the id is incorrect go to step 1 with error message.

Table 2.10: Delete Item

Use case name	Delete Item
Participating actor	Store clerk
Entry condition	The store clerk activates delete item form.
Pre-condition	The store Clerk should login to the system
Basic course of action	1. The store clerk activates delete item form. 2. The system prompts the clerk to enter the name of the item. 3. The store clerk enters the name of the item. 4. The system checks availability of the item, if exist delete the item.
Alternative course of action	If there is any invalid entry then the system displays error message and allows the store clerk to re-enter the correct data.
Exit condition	When the Store clerk close the form
Post condition	The item deleted from the item table.

2.14 Dynamic Models

2.14.1 Sequence Diagram

Sequence diagrams are used to formalize the behavior of this system and to visualize the communication among objects. The diagrams show the flow of messages from one object to another, and as such correspond to the methods and events supported by a class/object. These typically show a user or actor, and the objects and components they interact with in the execution of a use case. The following diagrams describe the sequence diagrams of the store management system of Debre Berhan University.

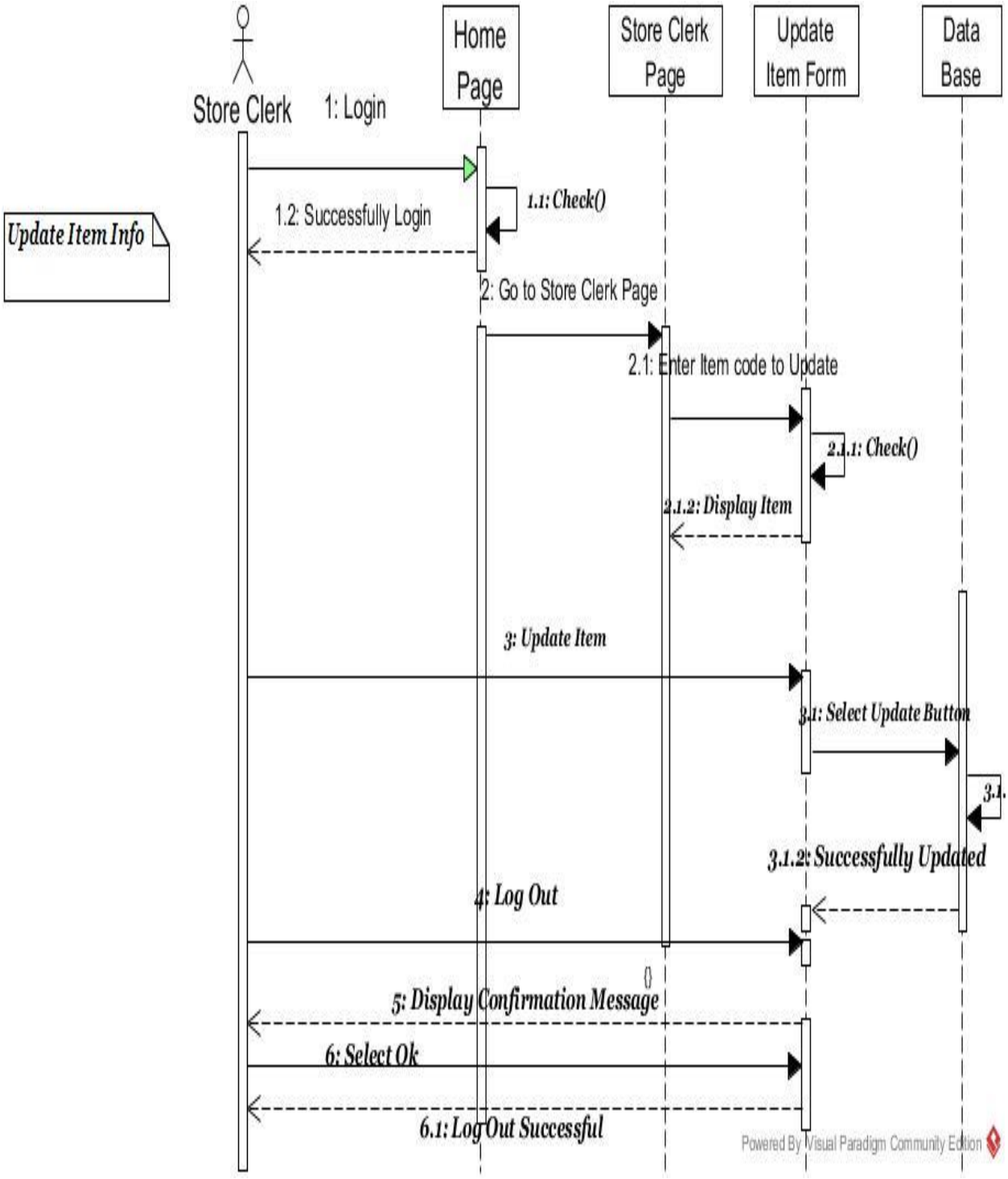

Figure 2 ***Sequence diagram of Update Item Info***

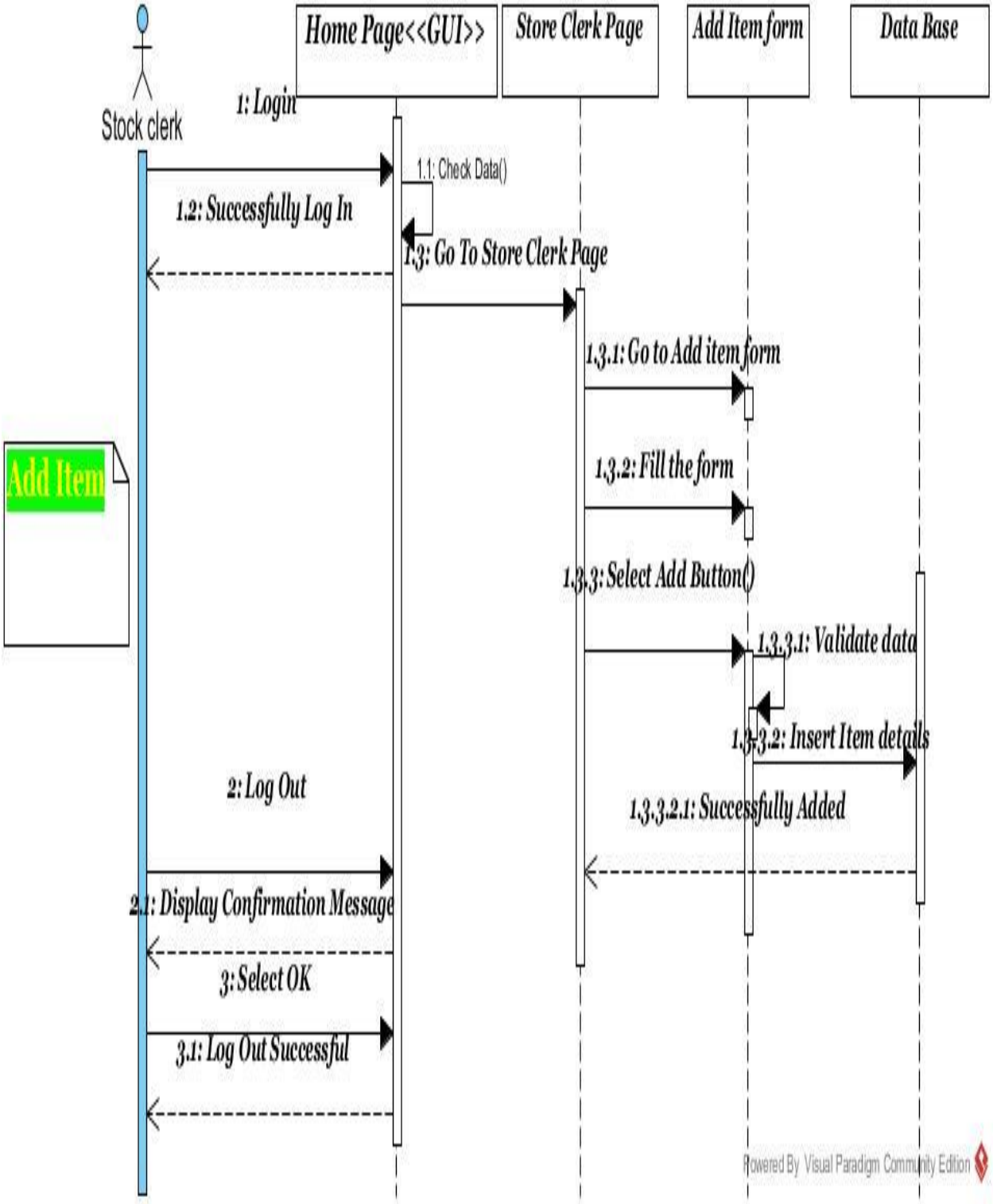

Figure 3 ***Sequence Diagram of Add Item***

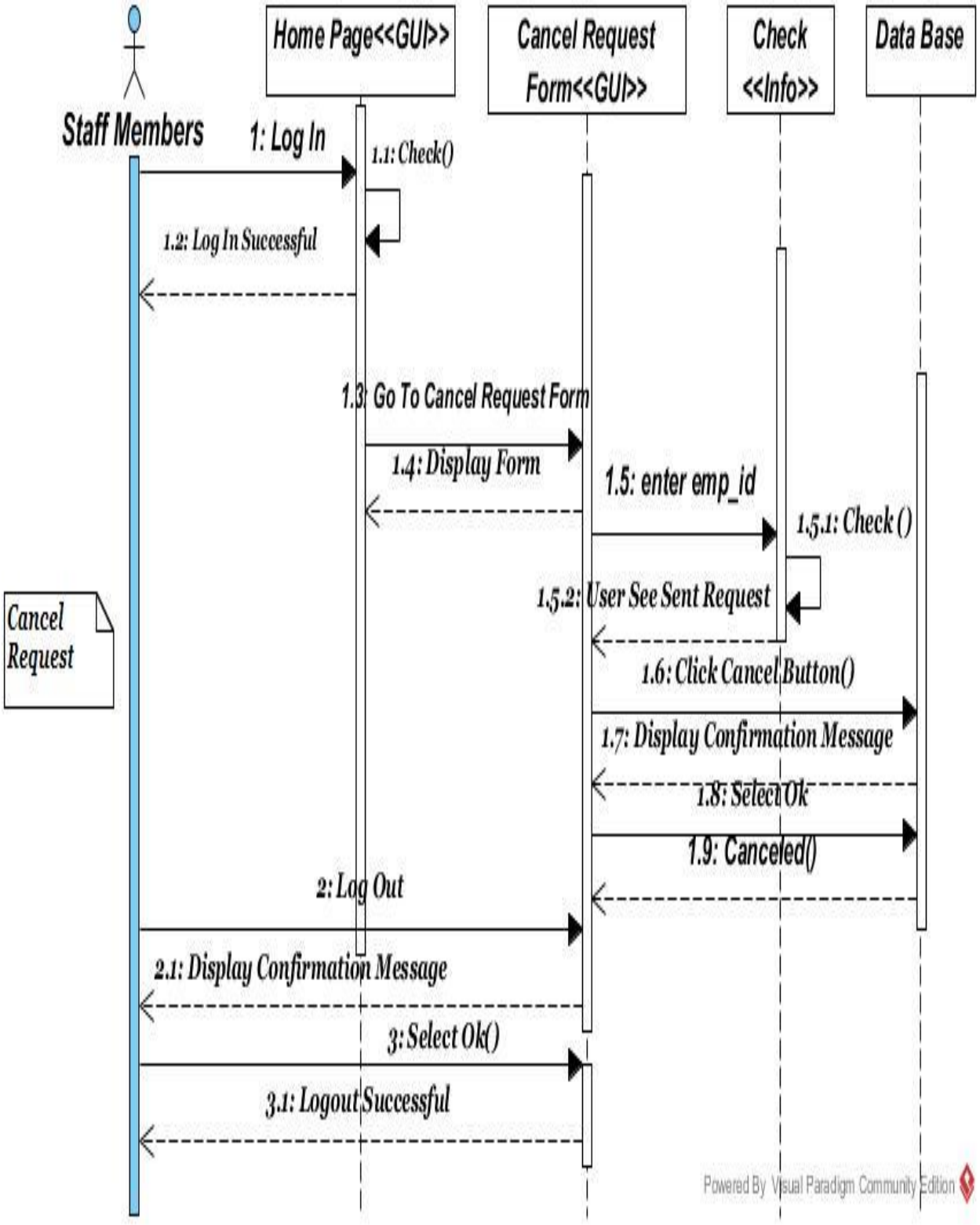

Figure 4 ***Sequence Diagram of Cancel Request***

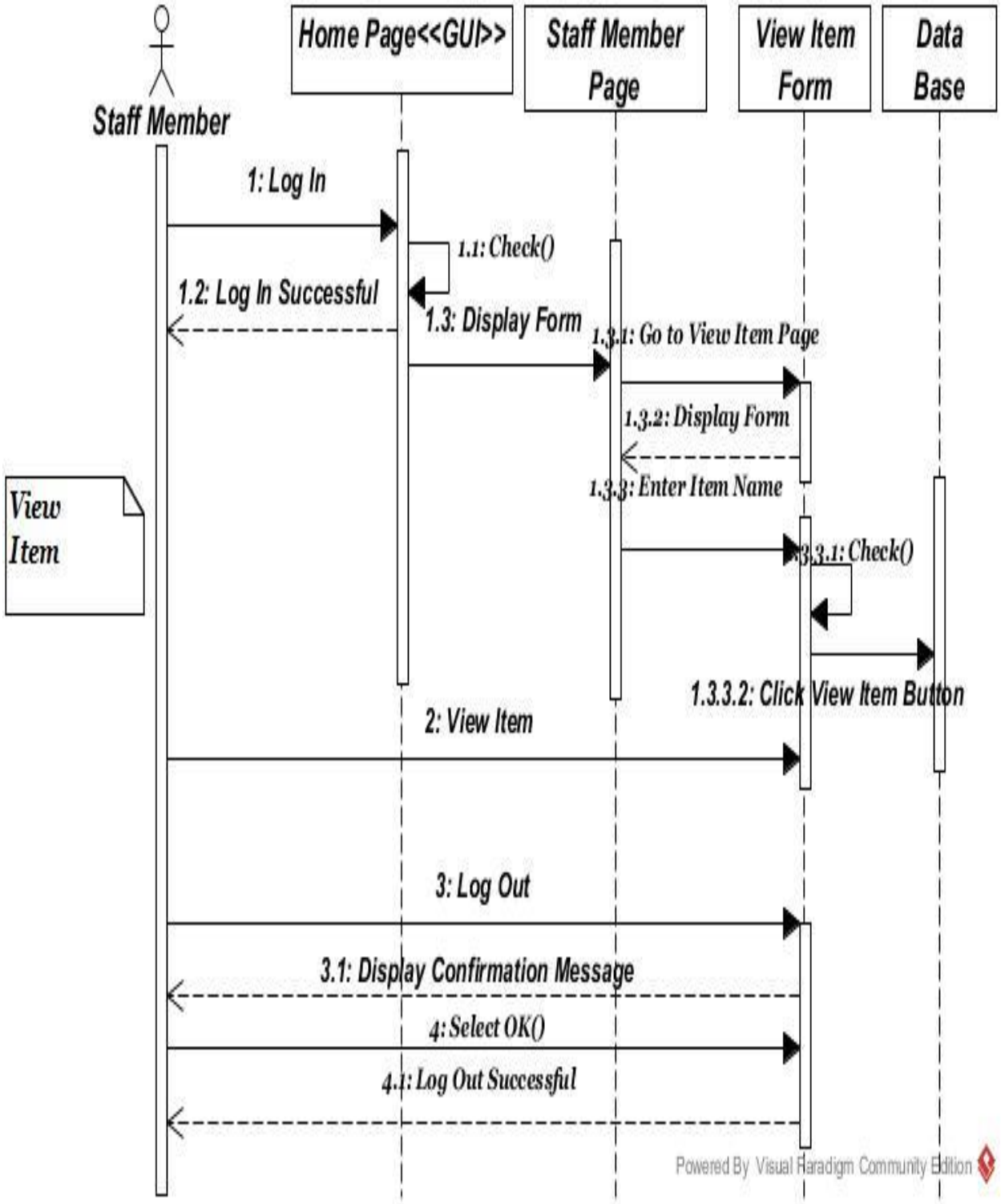

Figure 5 ***Sequence Diagram of View Item***

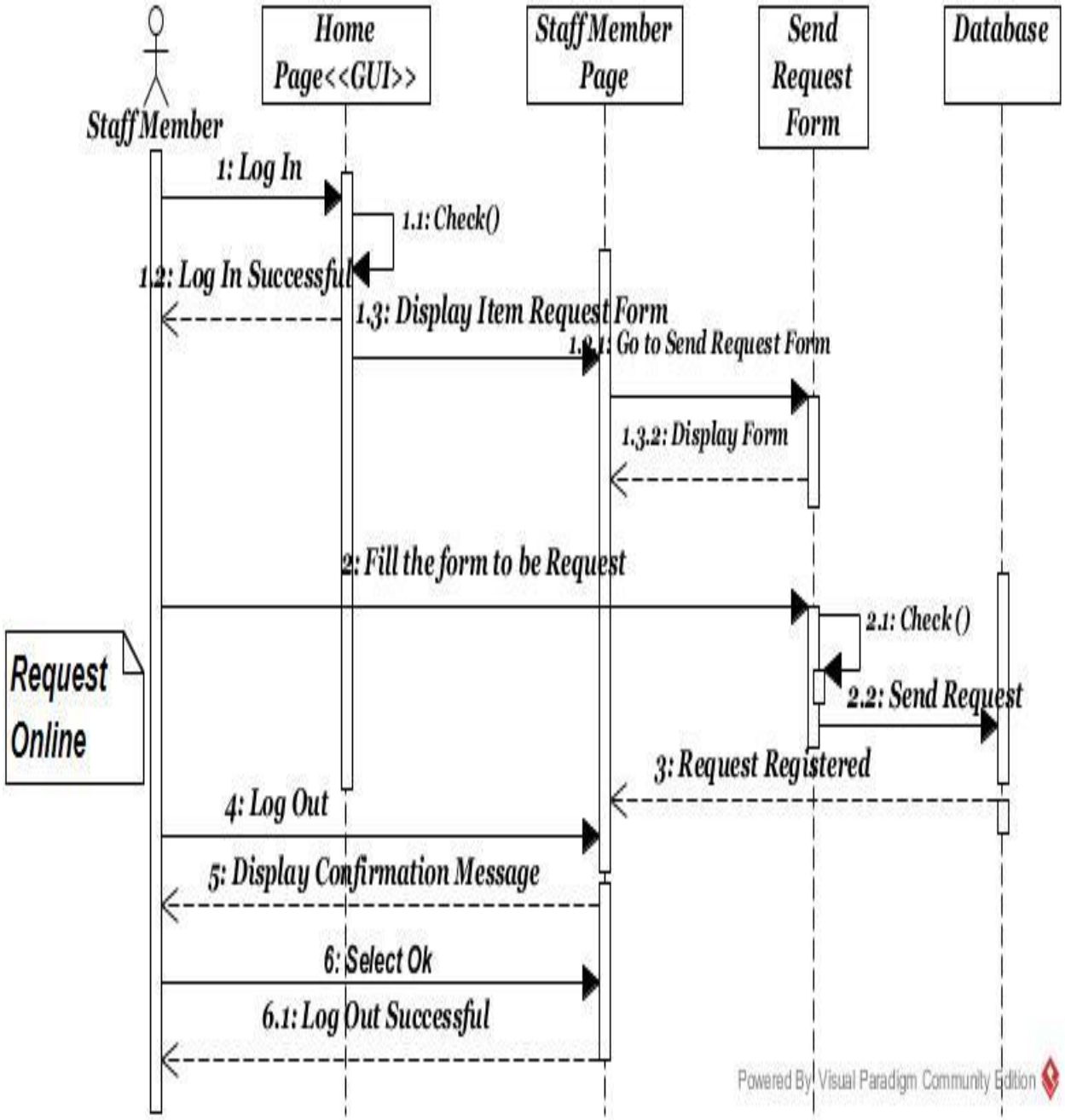

Figure 6 ***Sequence diagram of Request Online***

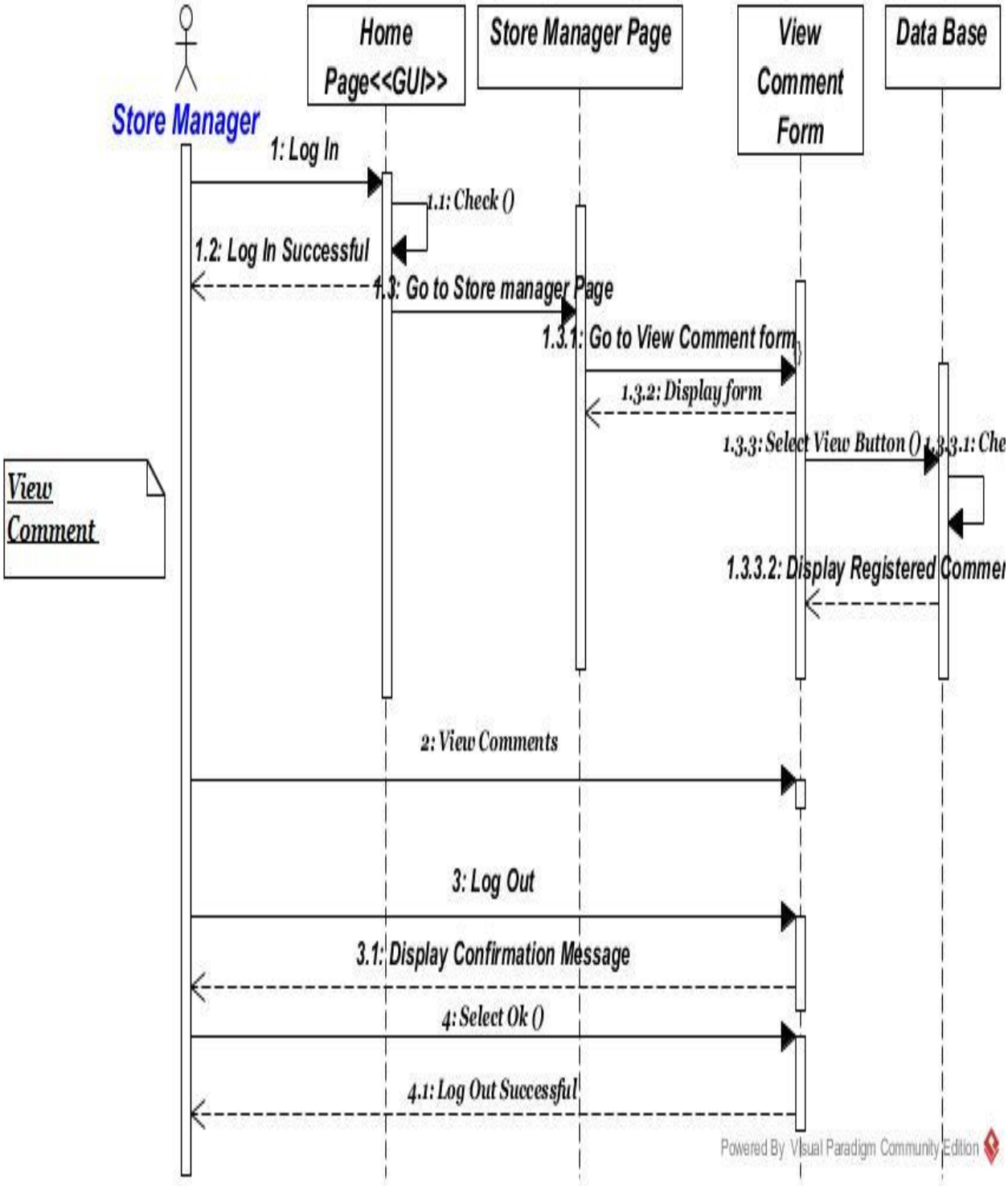

Figure 7 ***Sequence diagram of View Comment***

2.14.2 Activity Diagram

The activity diagram shows the work flow of the new system. The following are diagrams that discuss each process performed by each activity.

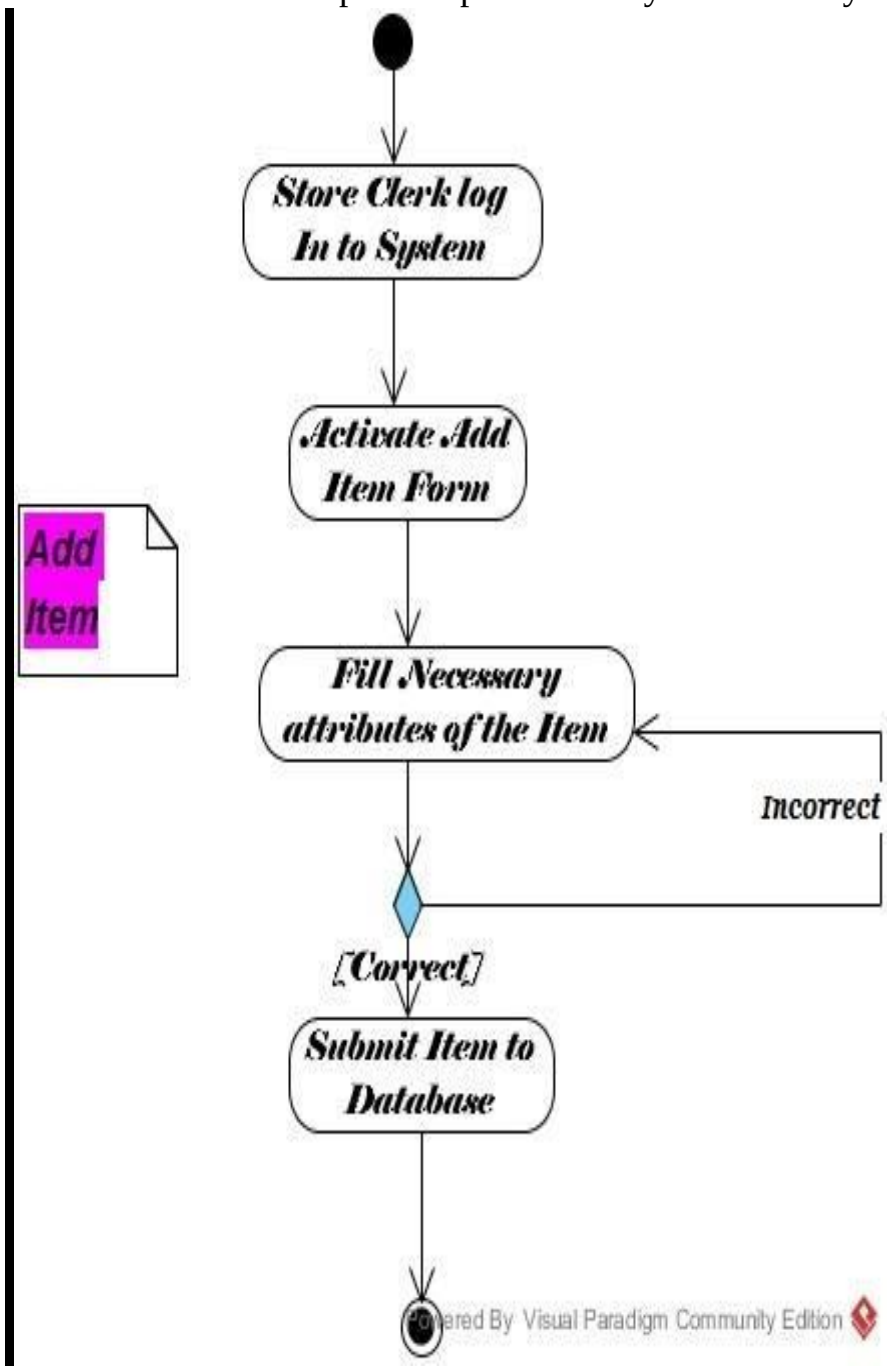

Figure 8 ***Activity Diagram Of Add Item***

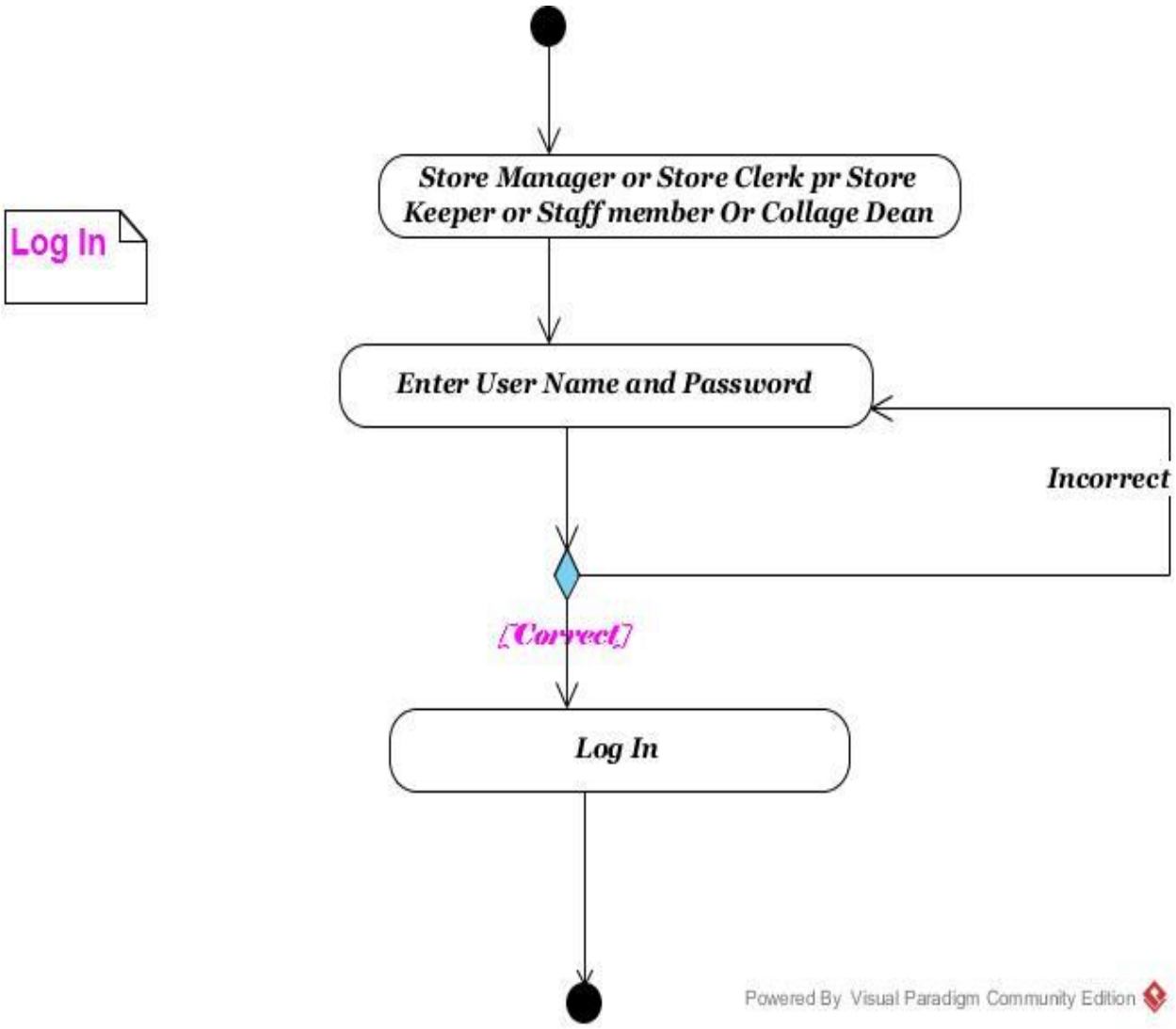

Figure 9 ***Activity Diagram of Log In***

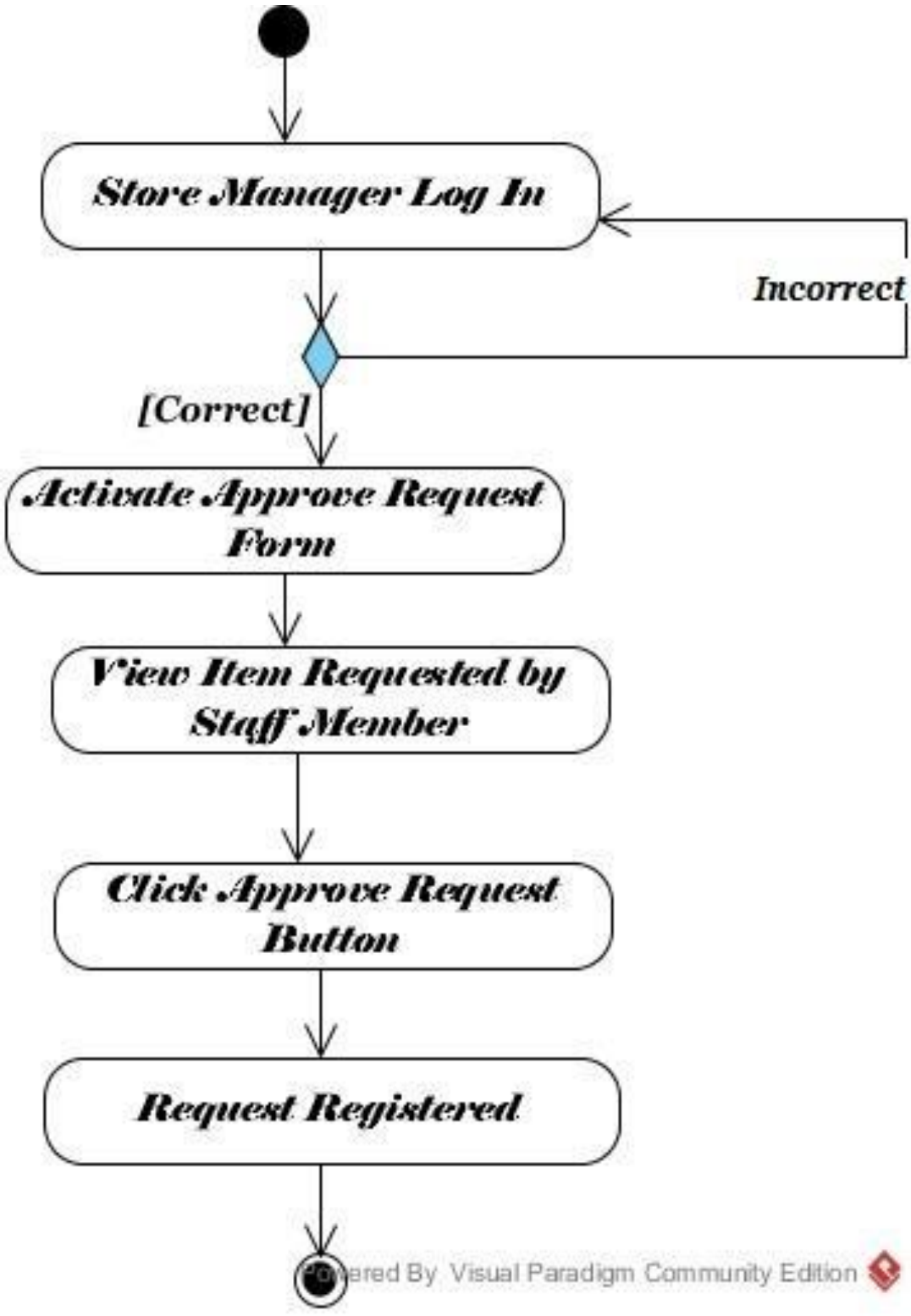

Figure 10 **Activity Diagram of Approve Request**

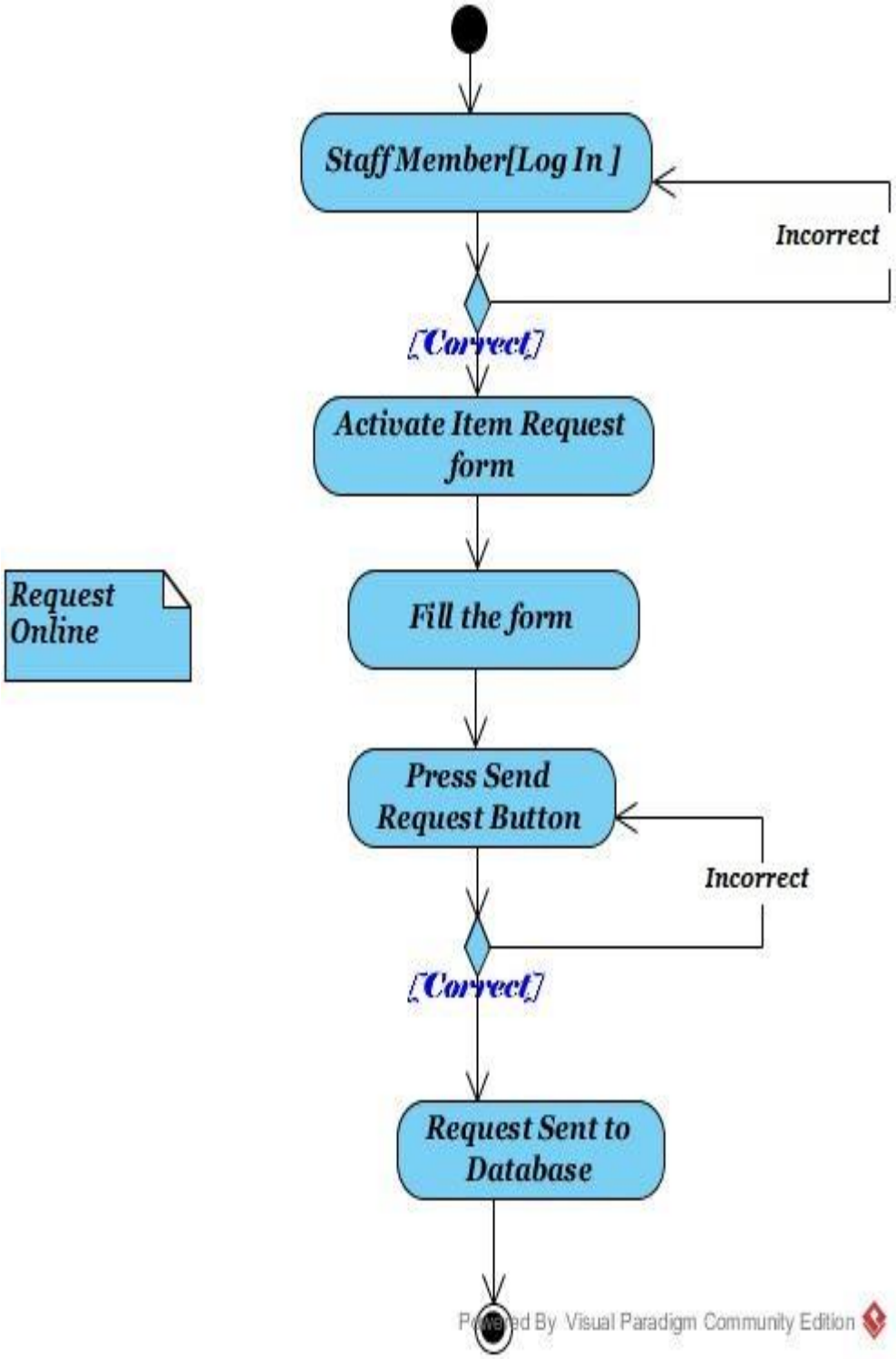

Figure 11 **Activity Diagram of Request Online**

2.14.3 Collaboration Diagram

A collaboration diagram emphasizes the relationship of the objects that participate in an interaction. A collaboration diagram is also an illustration of the relationships and interactions among objects in the unified modeling language.

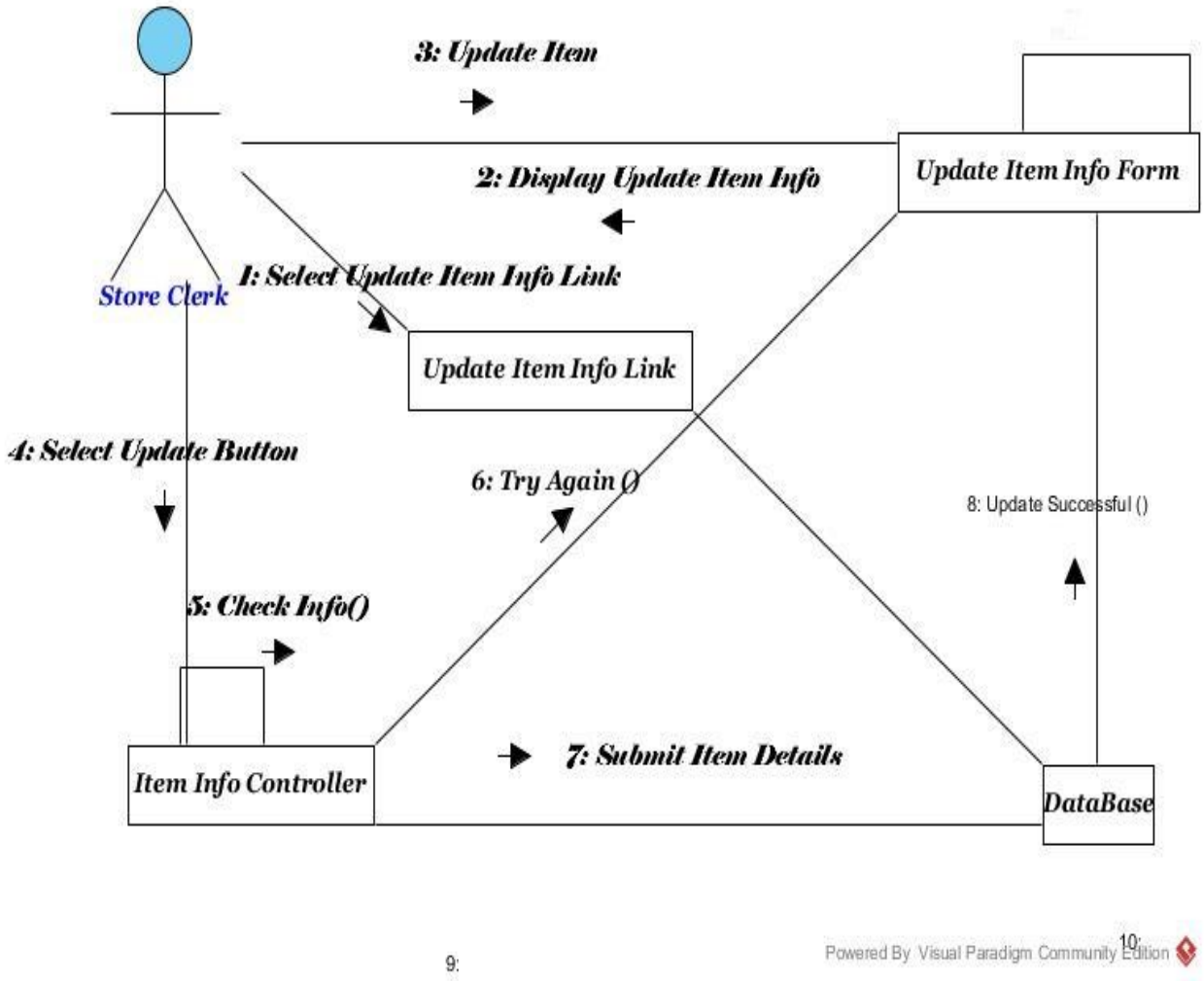

Figure 12 **Collaboration Diagram of Update item info**

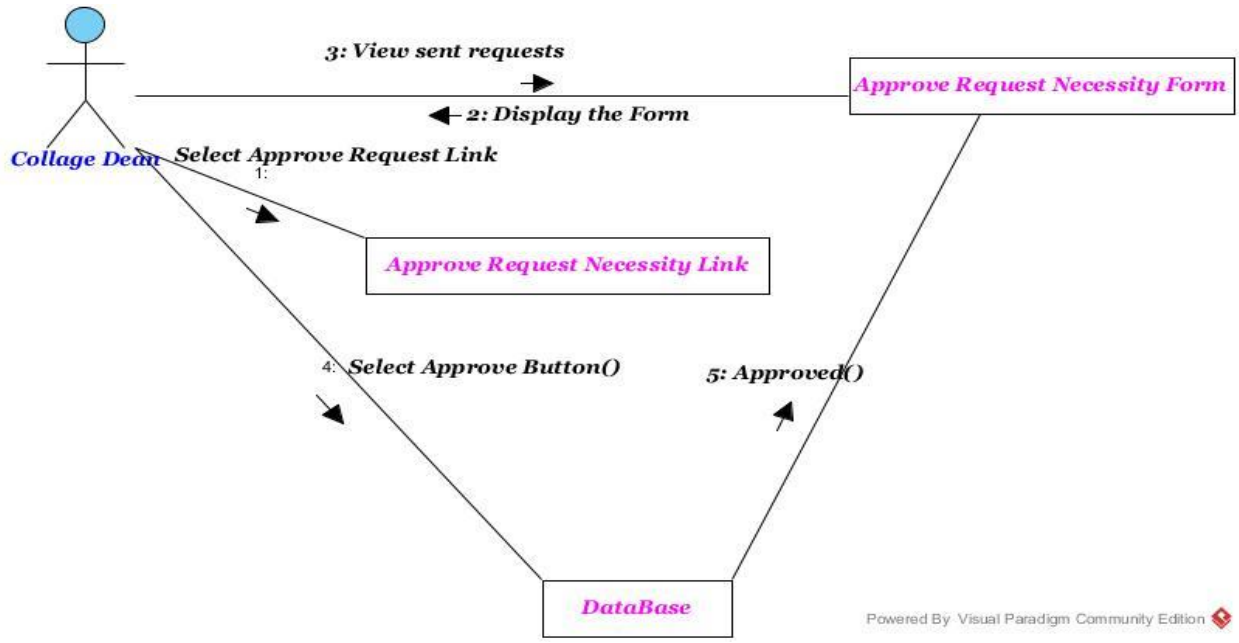

Figure 13 **Collaboration Diagram of Approve Request necessity**

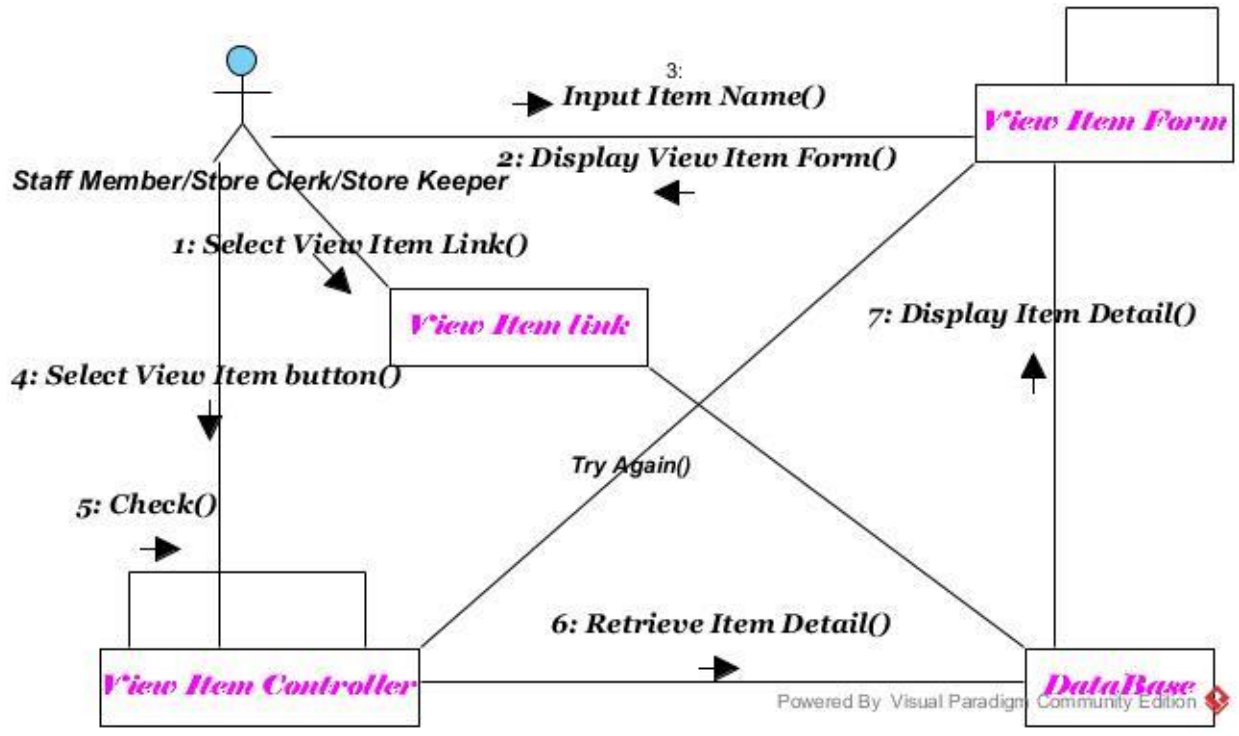

Figure 14 **Collaboration Diagram of View Item**

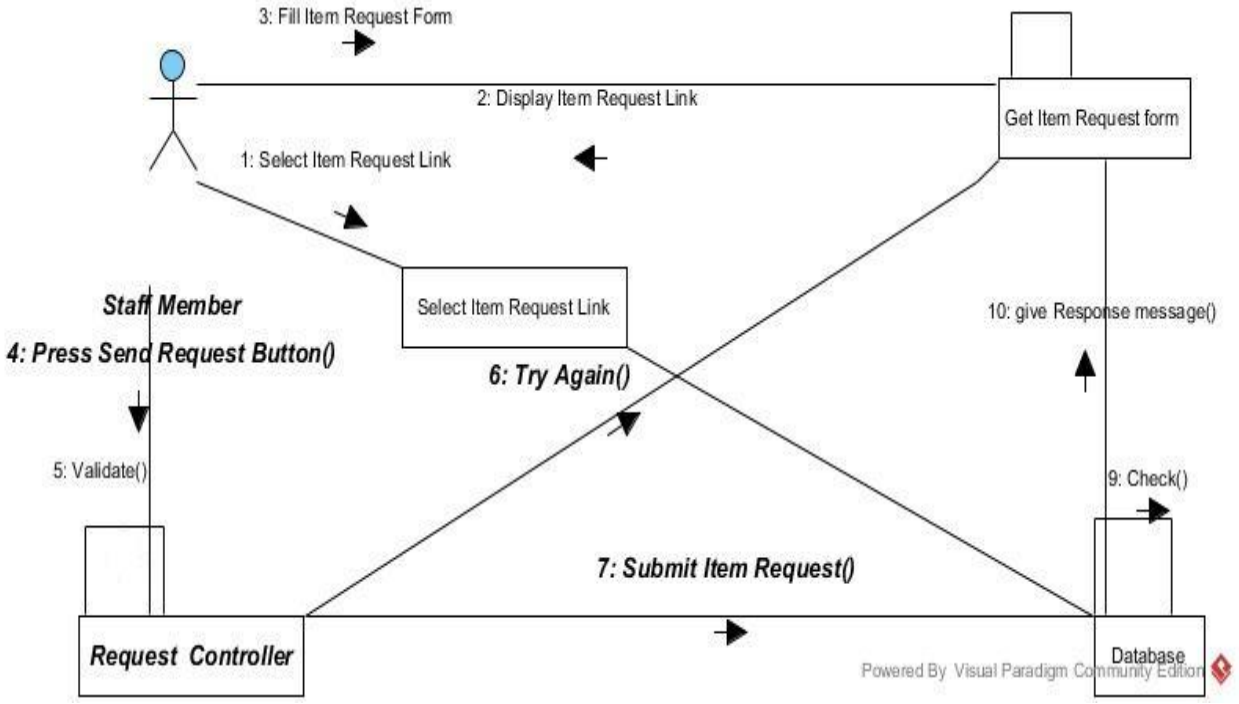

Figure 15 **Collaboration Diagram of Request Online**

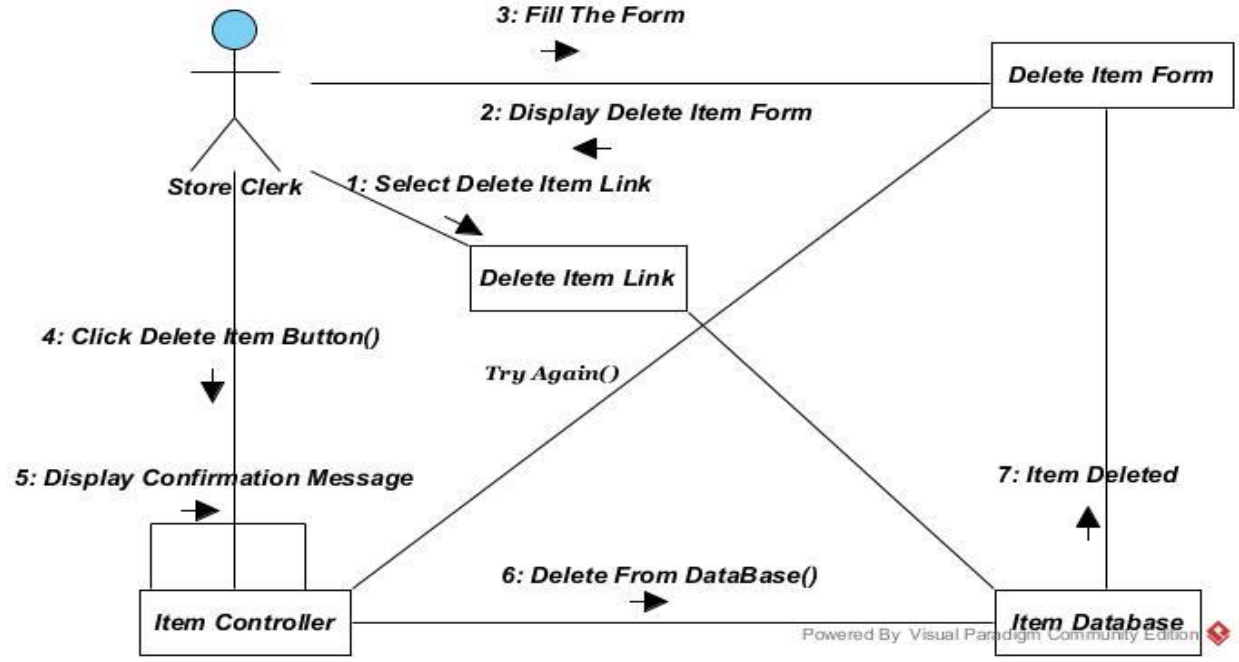

Figure 16 **Collaboration Diagram of Delete Item**

2.15 Static Model

2.15.1 State Chart Diagram

State chart diagrams describe the behavior of an individual object as a number of states and transitions between states. State diagram shows the object undergoing a process. It gives a clear picture of the changes in the object's state in this process.

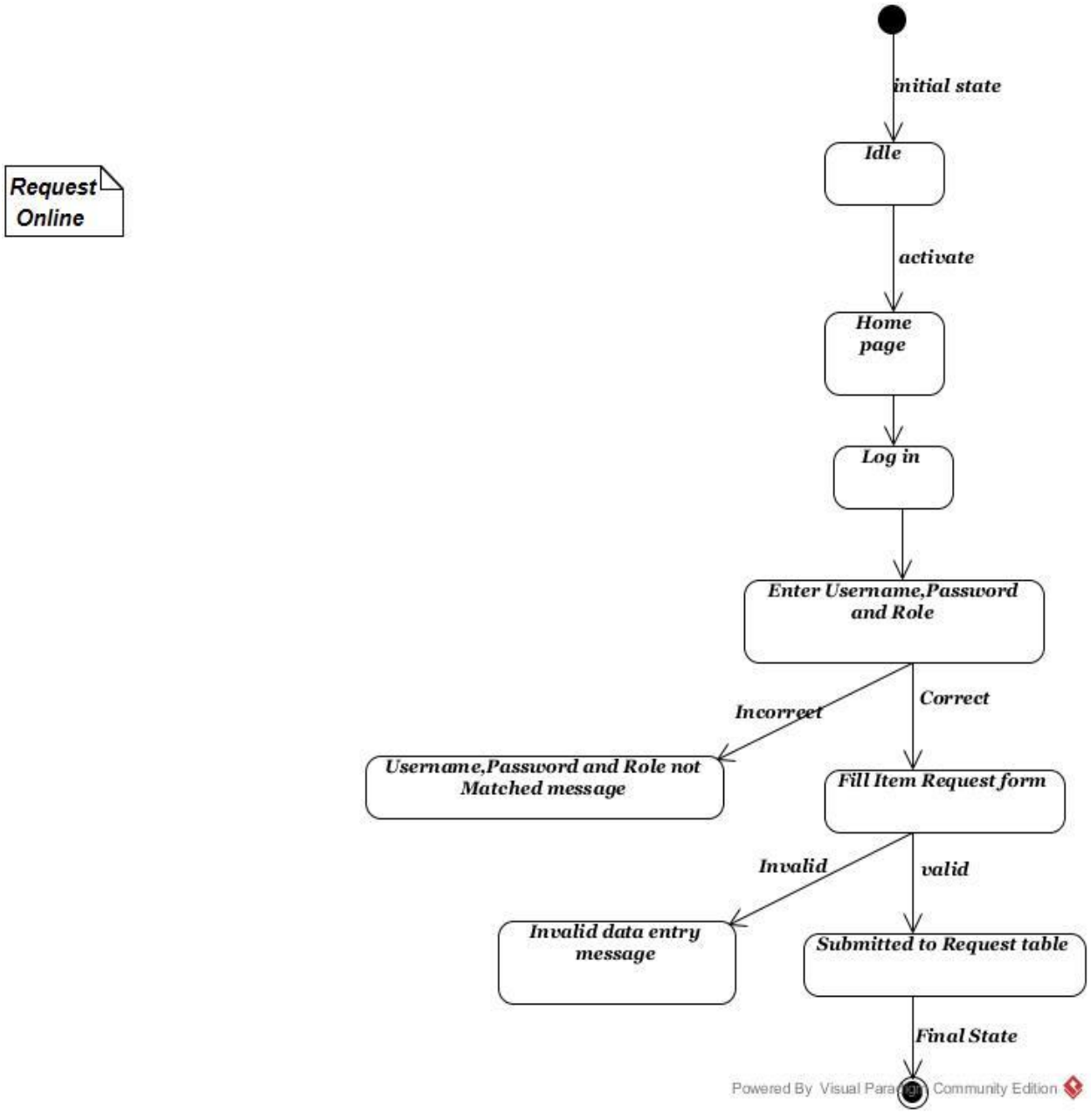

Figure 17 **State Chart Diagram of Request Online**

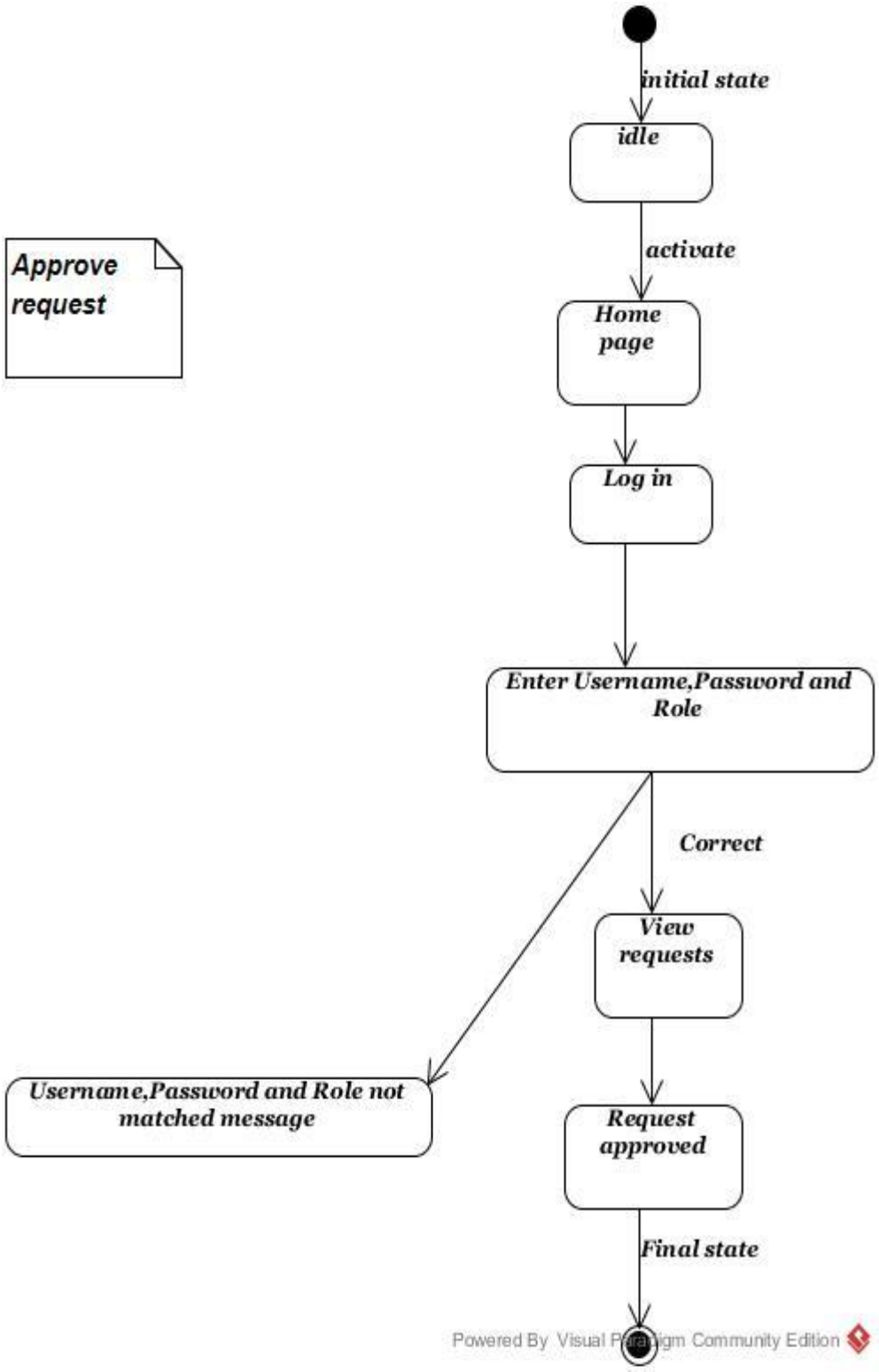

Figure 18 **State Chart Diagram of Approve Request**

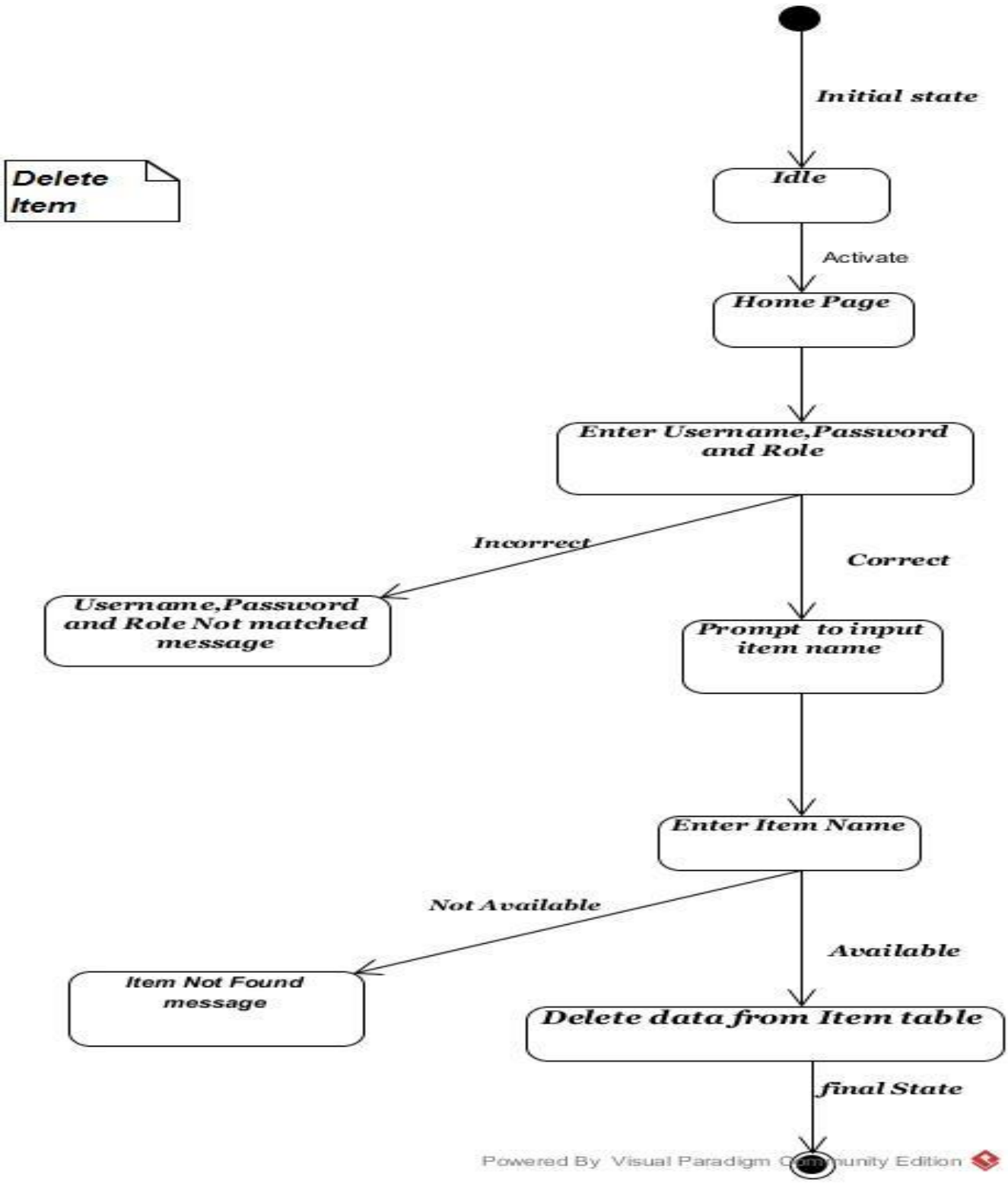

Figure 19 **State Chart Diagram of Delete Item**

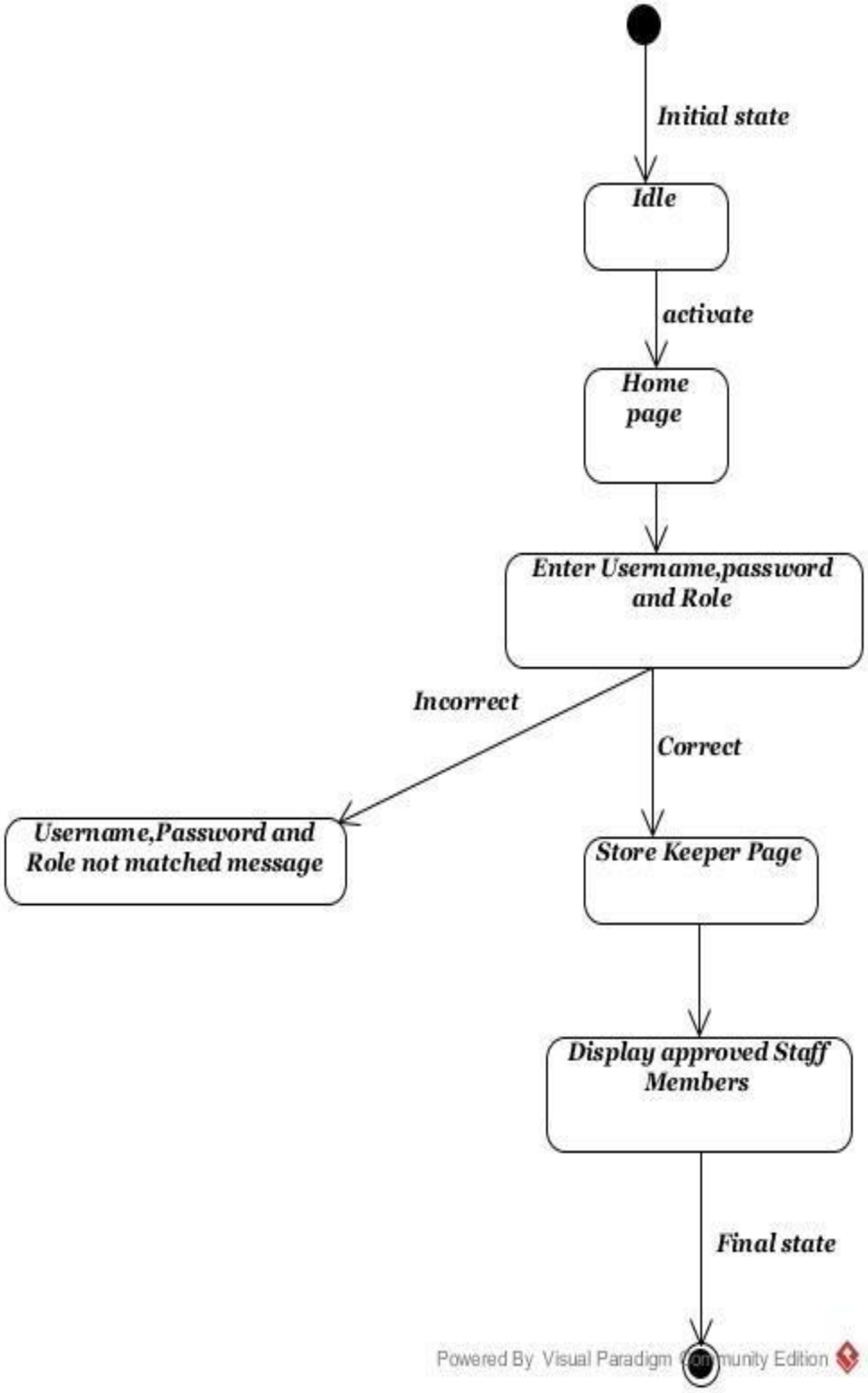

Figure 20 **State Chart Diagram of Approved Users**

2.15.2 Class Diagram

- **Staff Member:** a person who gets any service from the store.
- **Store Keeper:** a person who receives new items and receives returned items.
- **Store Manager: a** person who manages users and new purchased items until the items delivered to store keeper.
- **Store Clerk: a** person who manages items in the store and register taken items.
- **Item:** an item is any goods which are used by the staffs. And it is divided as **Consumable** ,**Fixed Asset** and **returned** items
- **Request:** request that is sent by the staffs and approved by the store Manager.

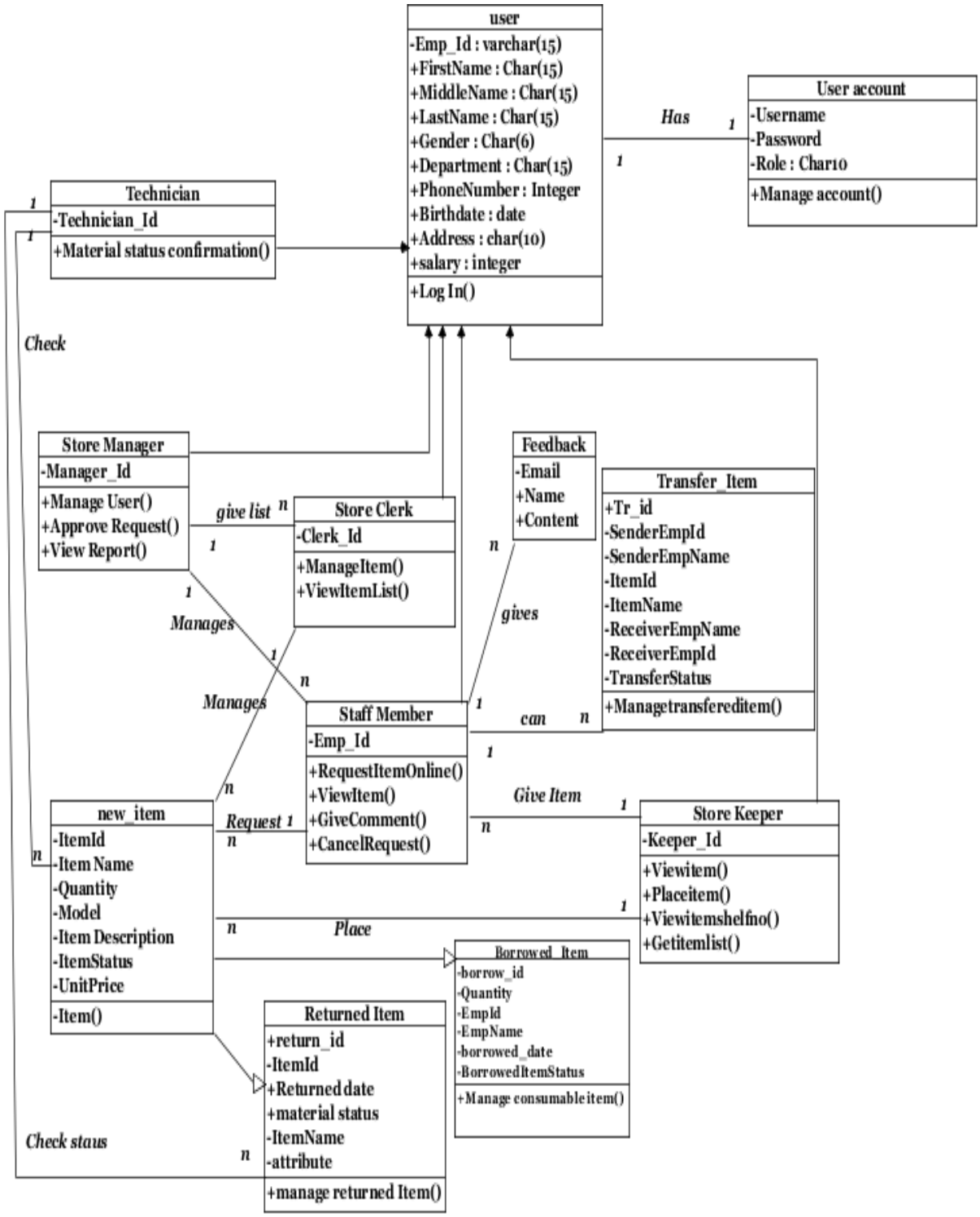

Figure 21: ***Class Diagram of the system***

Chapter Three

3.1 System Design

Systems design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development.

This section provides a description of the project from a management perspective and an overview of the framework within which the conceptual system design was prepared.

3.2 Design Goals

The goal of design 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 with an attractive GUI (Graphical User Interface). It is based on understanding of the model the web page built on the system design also focuses on decomposing the system in to manageable parts.

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.

- **Modifiability**: The system should be modifiable to different services depending on the need of the user.
- **Flexibility:** The system should be changeable to suit new condition or situation.
- **Efficiency:** The system must do what it supposed to do efficiently without the problem.
- **Accessibility** One of best feature of proposed system is its accessibility. Staff members can access system only inside of Debre Berhan University.

3.3 System Decomposition

The system will be built on a layered architecture. A layered architecture makes it easier to maintain or modify one part of the system without affecting the others. If for example the users need a modification on the User interface, they could get it without affecting the whole or the rest of the system. During decomposition of the system we decompose our system in to individual unit that can be perform by one team member and one subsystem modification do not affect the other subsystem and each subsystem class are related with each other. Our system has the following sub system

- Employee Information management subsystem
- Item Information Management Subsystem
- Submit purchased items subsystem
- Item distribution management subsystem

The following diagram shows the layers that the system will be constructed on.

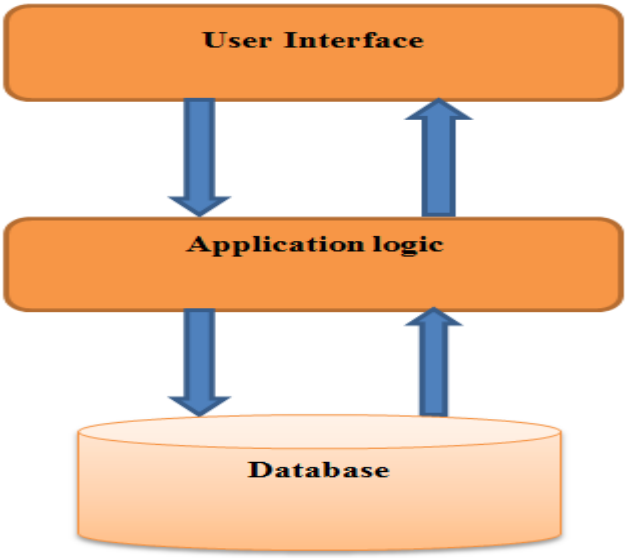

Figure 22: - ***layered architecture of the system***

The above figure shows that the system will have three logical layers now let us describe each layer:-

- **User interface:-**it is the first layer of the system in which the user interacts with the System.

- **Application logic: -**it is the second layer of the system in which all functional requirement of the system will implement. On application logic the system should have the following subsystems.
    - Employee Information management subsystem
    - Item Information Management Subsystem
    - Submit purchased items subsystem
    - Item distribution management subsystem
- **Database:-**the layer at the bottom of the system architecture will be a database system that store Information about Student and Employee.

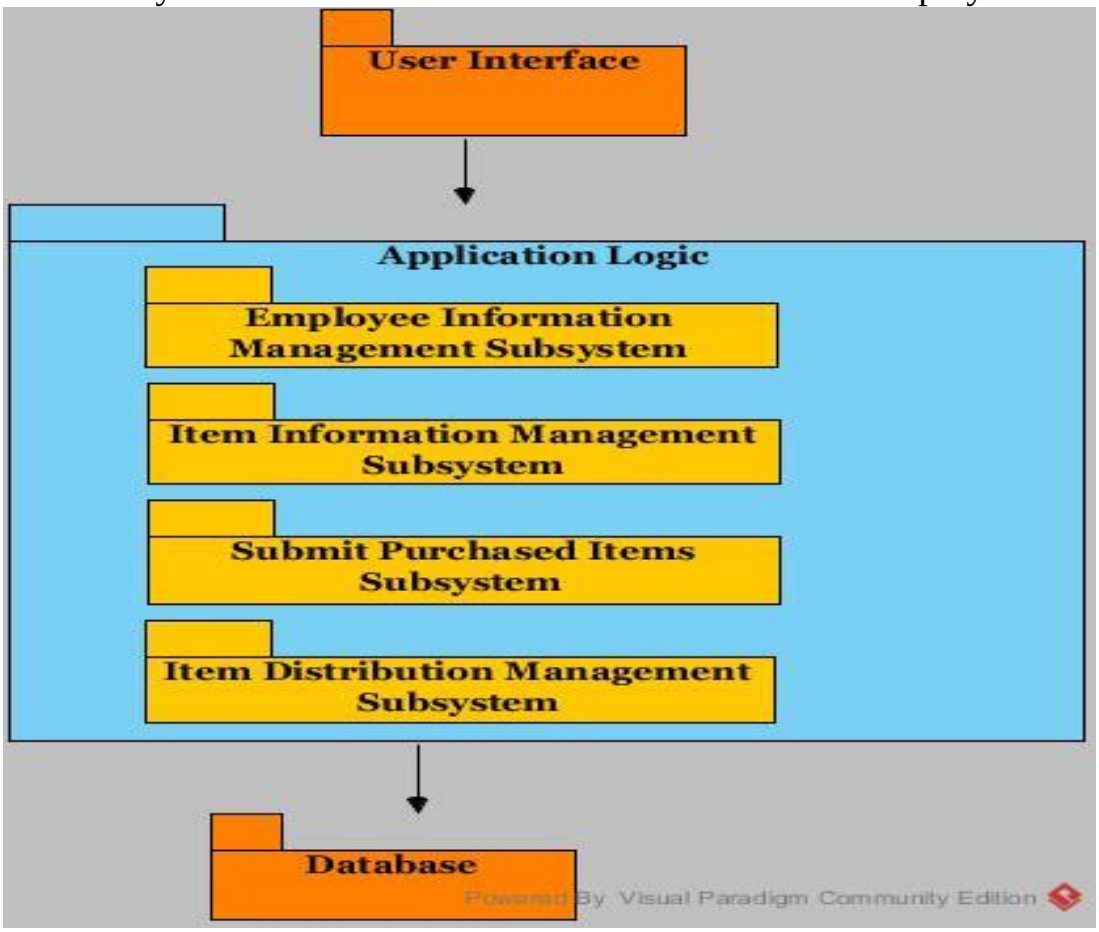

Figure 23: Sub System of the System

Each subsystem of the system is decomposing in to class. The following figure show subsystem of the system and the class in each subsystem.

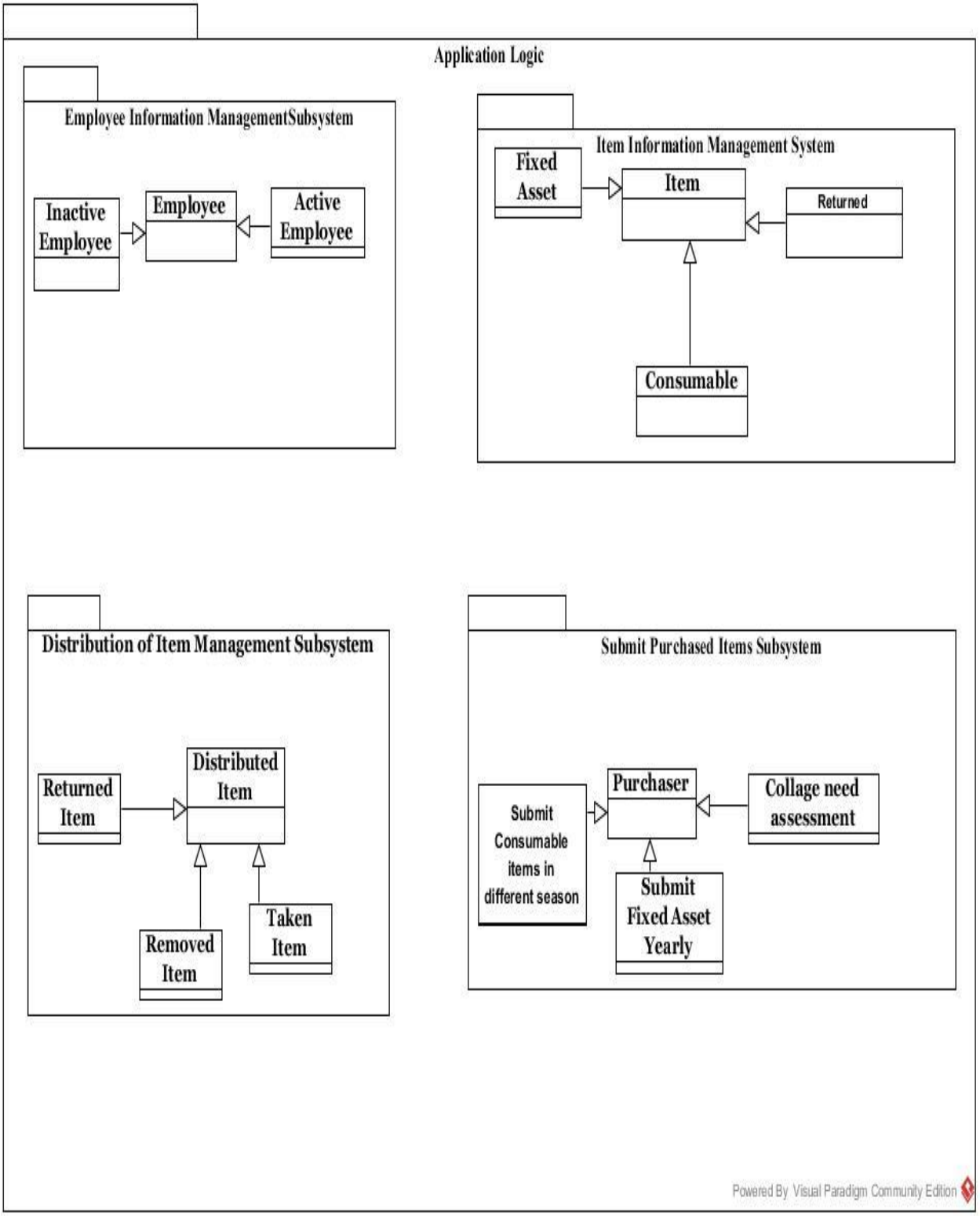

Figure 24 ***Sub Classes of the Subsystem***

3.4 Component Modeling

Component modeling diagrams are one of the diagrams found in modeling the physical aspects of an object-oriented system. This diagram shows the organization and dependencies between a set of components with in this system.

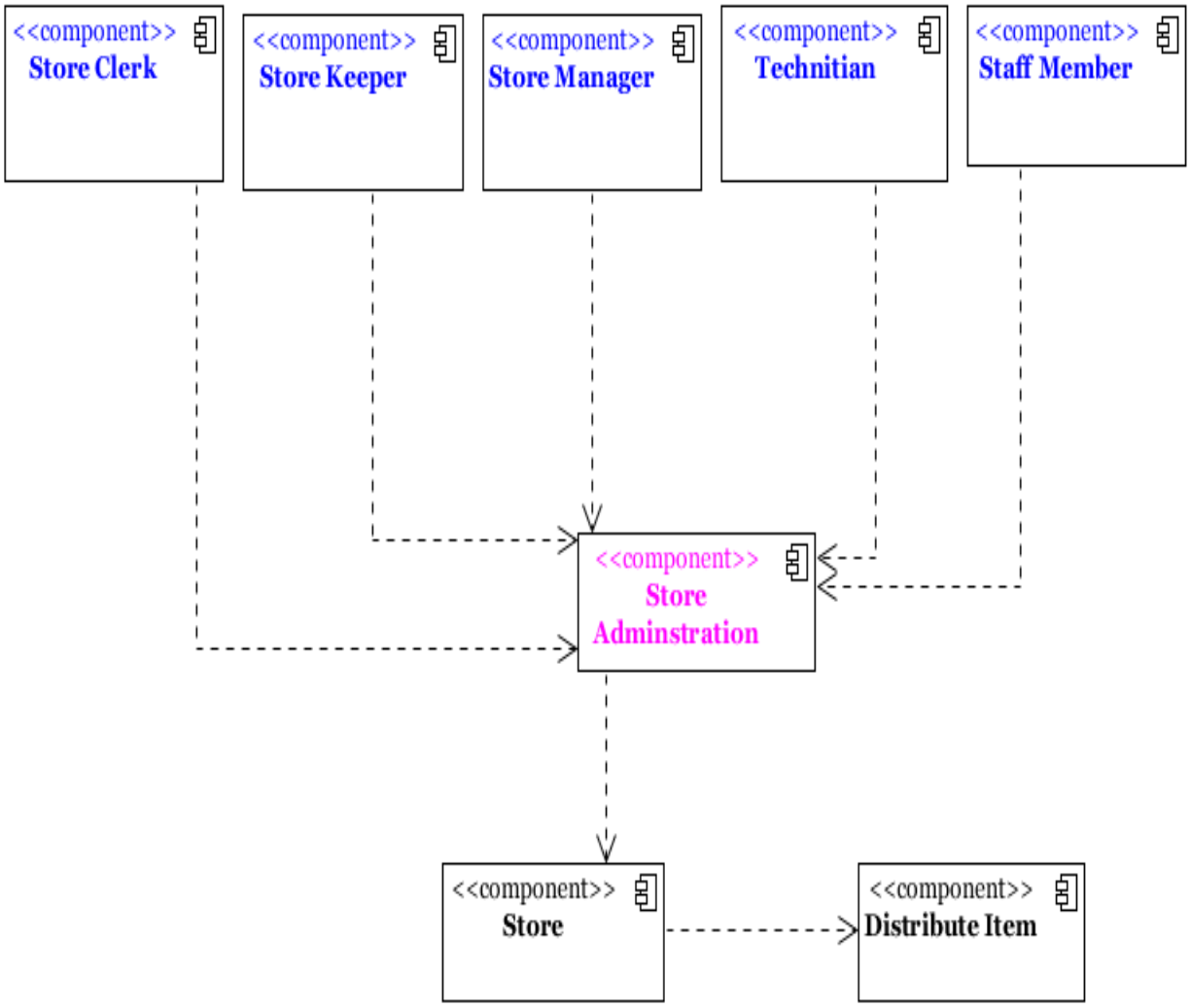

Figure 25 ***Component Diagram of the system***

3.5 Deployment Diagram

A deployment diagram is used to depict the relationship among run-time components and hardware nodes. A web server, for example, is a component that provides services to Web browsers. A component is a physical unit of implementation with well-defined interfaces that is intended to be used as a replaceable part of a system. The deployment diagram for this system is shown in the following figure.

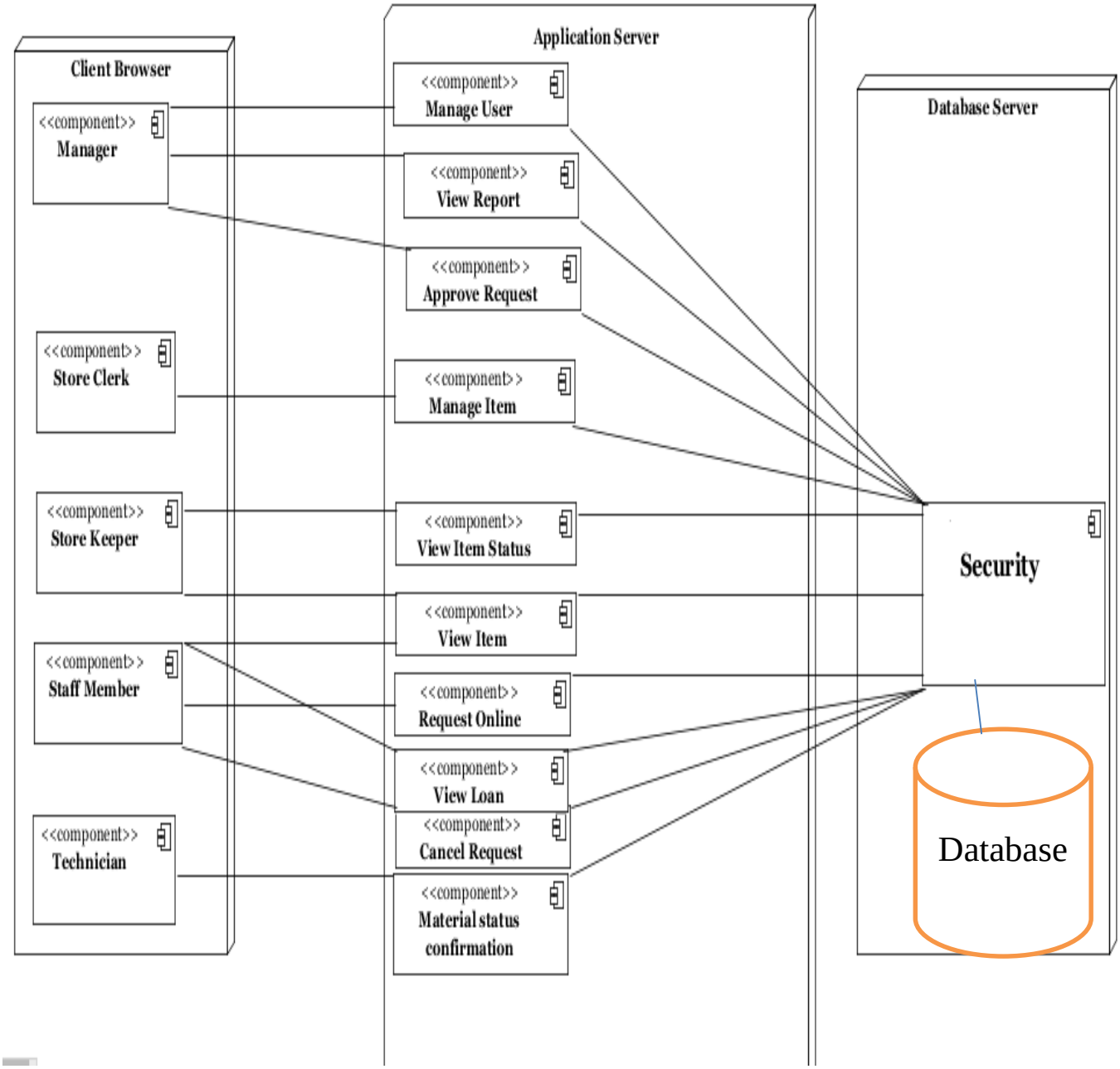

Figure 26 ***Deployment diagram of the system***

3.5 User Interface and Prototyping Design

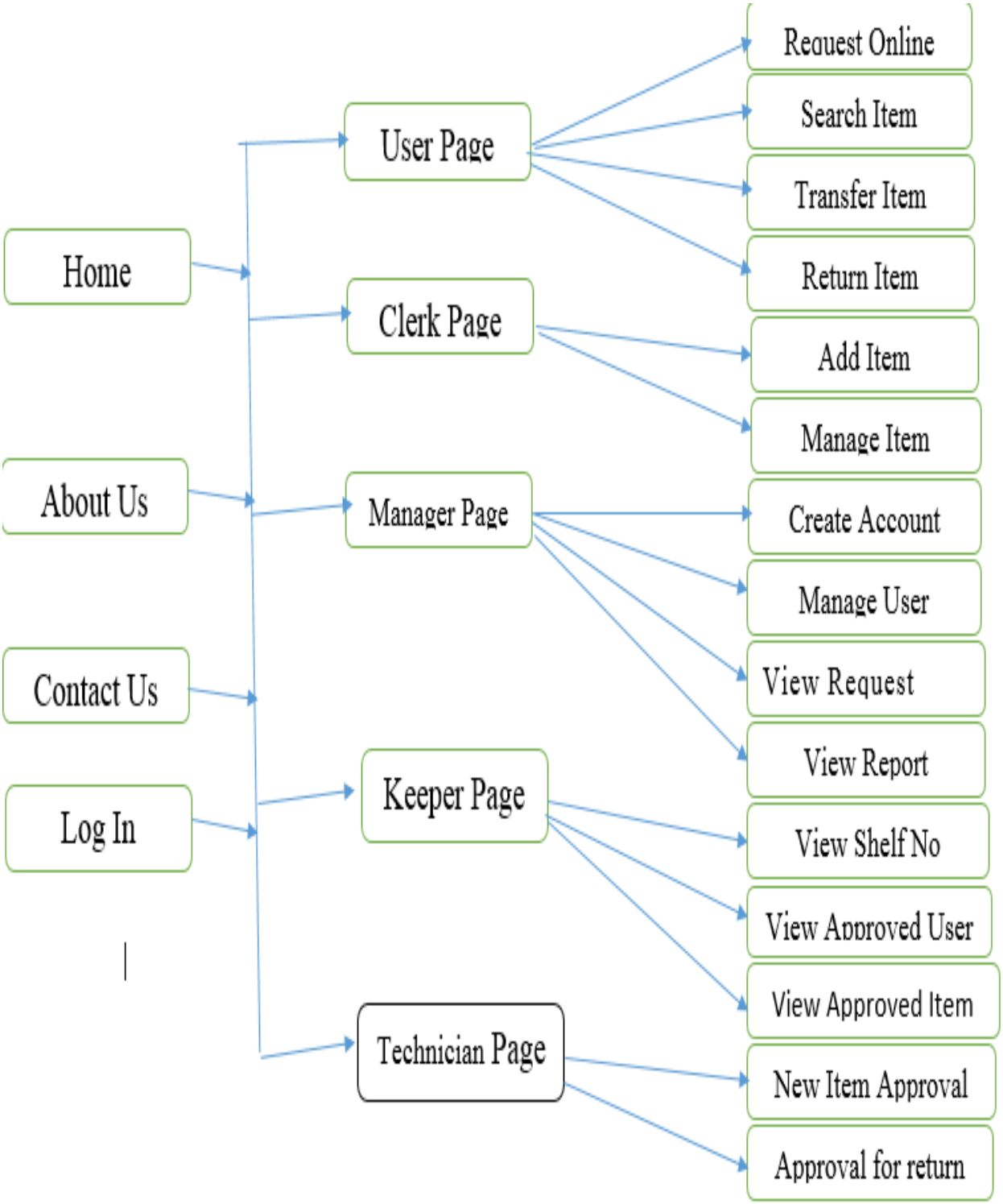

Figure 27 **User Interface Prototyping Design**

3.6 Database design and Class mapping

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity. The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data.

Database design is also a visual representation of different table using agreements that describe how these tables are related to each other on our proposed system. The proposed inventory systems have the following tables.

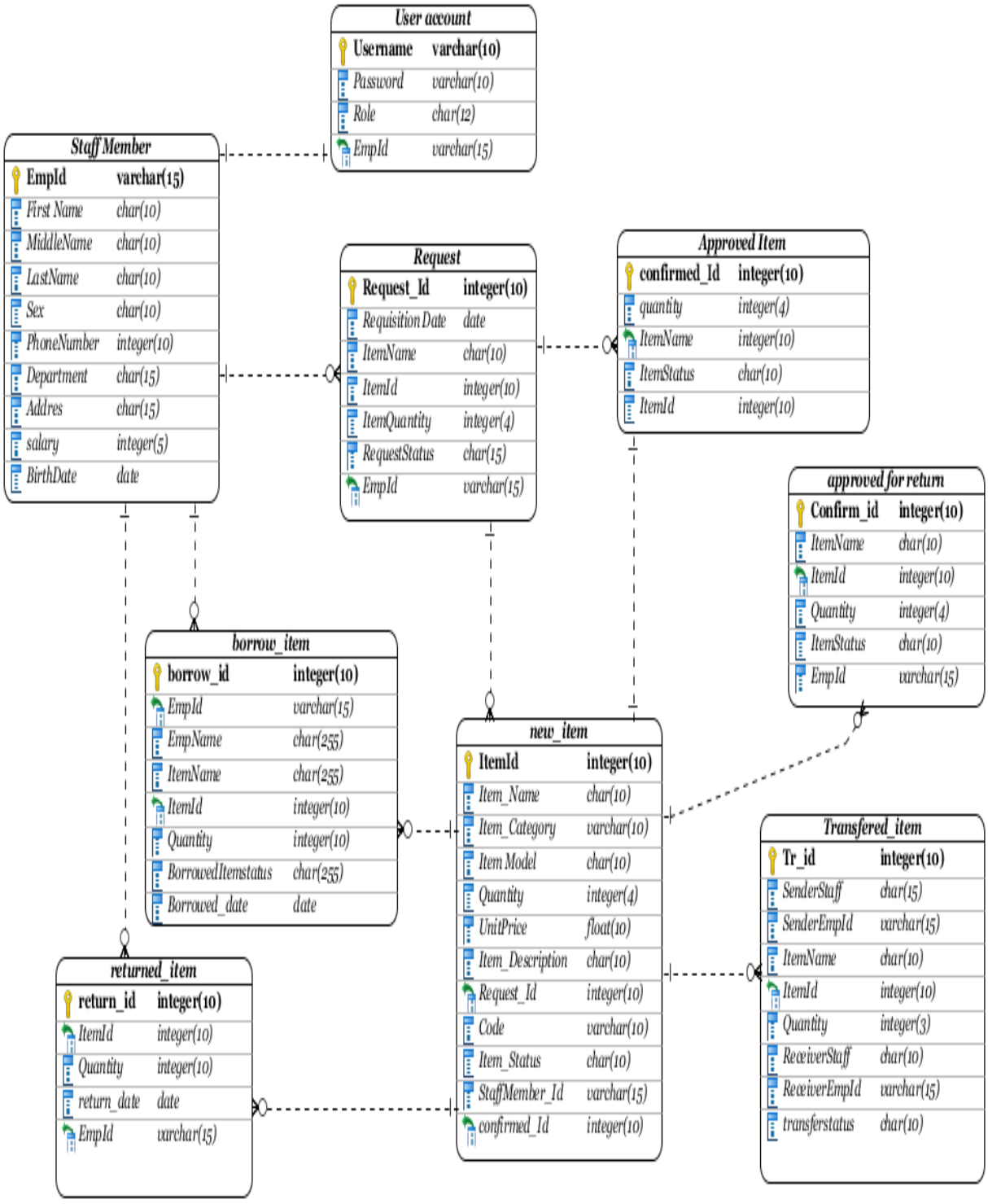

Figure 28 ***Database design of the system***

3.7 Class Mapping

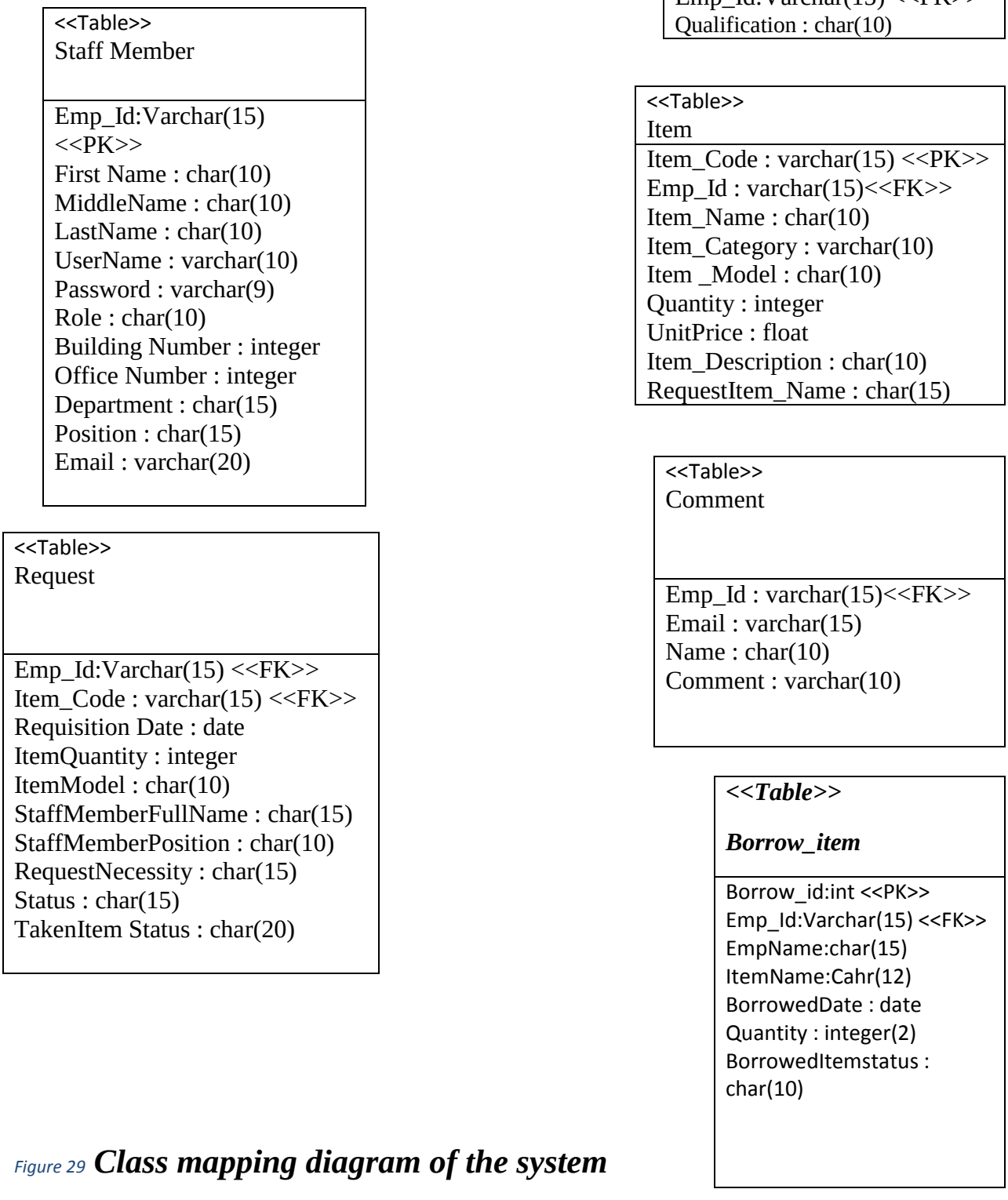

Figure 29 ***Class mapping diagram of the system***

Chapter Four

4.1 Implementation Technique and Tools

A server class PC with any internet browser is needed to support the system we are going to develop.

A server-class PC with Mozilla Firefox is needed to support the Web based store management. **MySQL** is the underlying database and **Apache** server is the underlying server. For client access, a PC with Internet browser is needed.

The Store Management system is integrated computerized system for Store of Debre Berhan University and will be developed using **PHP** and **MYSQL** as back end Open Source Environment. We also use some software's such as **Microsoft Word 2010**, **Microsoft PowerPoint 2010** and hardware's such as computer and Flash.

4.2 User Interface prototype

Home Page: This form appears on the site in which the system deployed is opened and contains some links which lead the user to other page according to his/her privilege, and if the user is authorized user or has an account, he/she will directly go to the page that he/she wants by entering username, password and select the role.

Figure 30 ***User Interface design for Home Page***

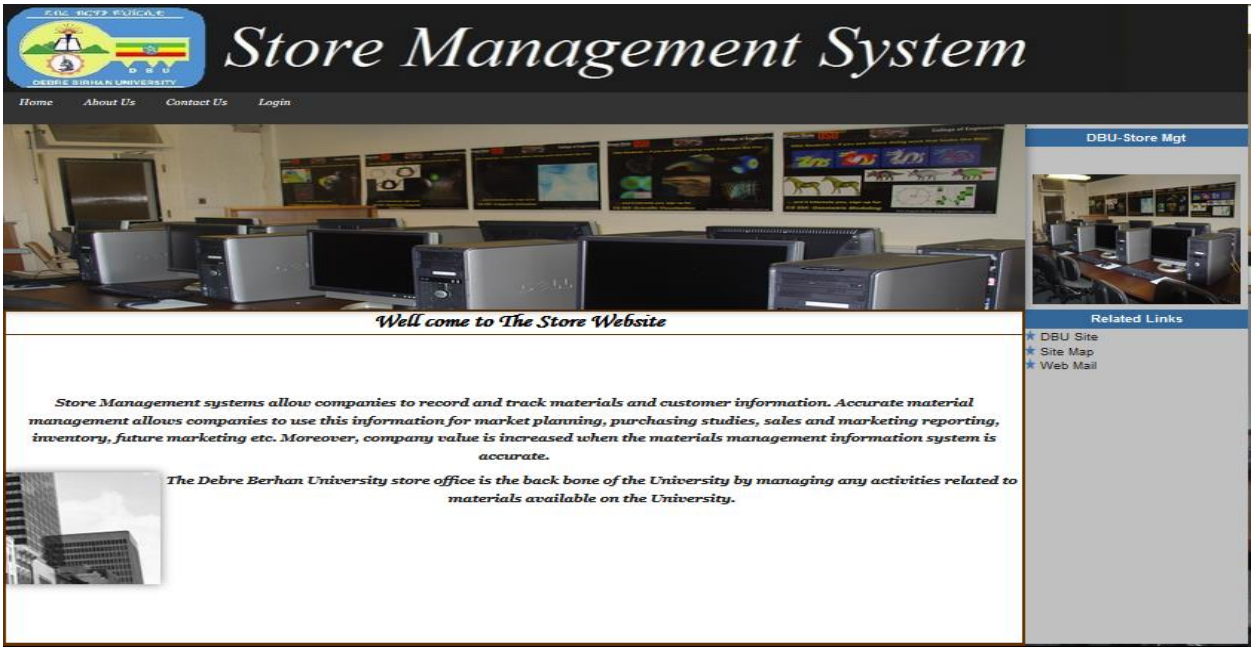

Figure 31 **User Interface design for Login with error message**

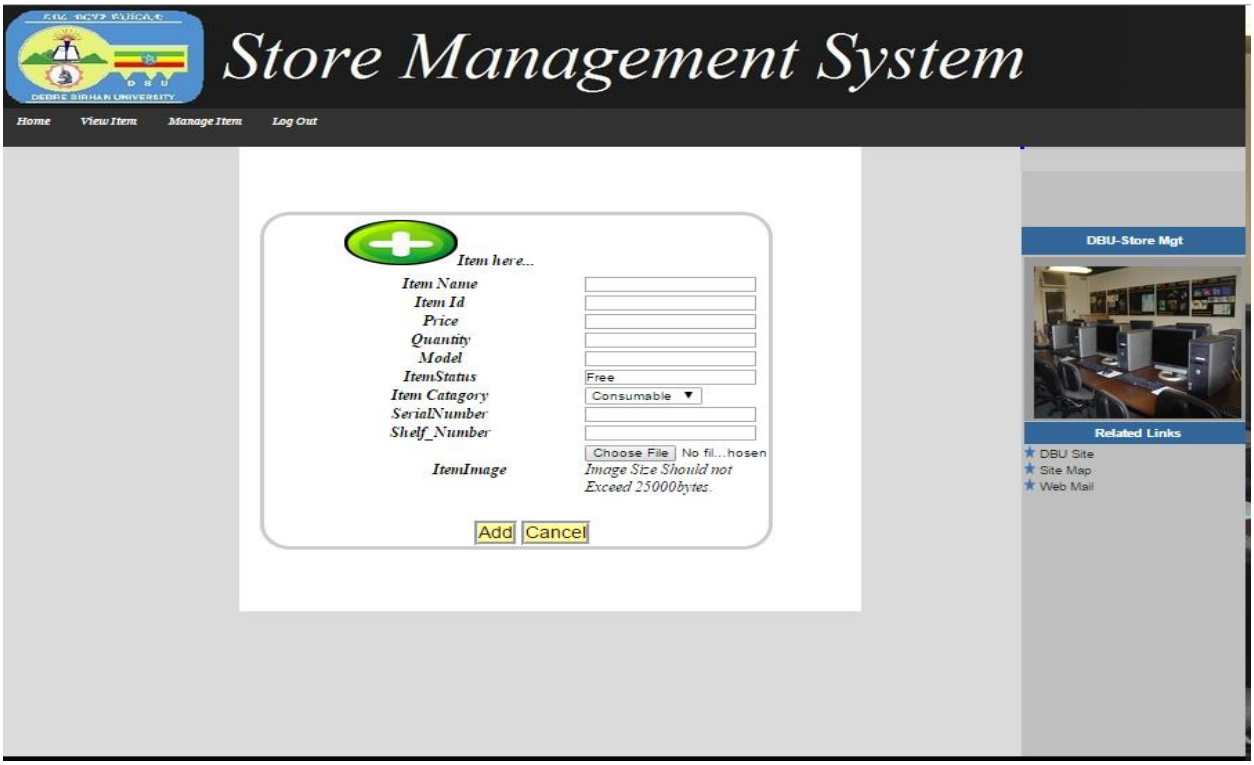

Fig user interface design for Add Item

Figure 32 ***user interface design for new user registration***

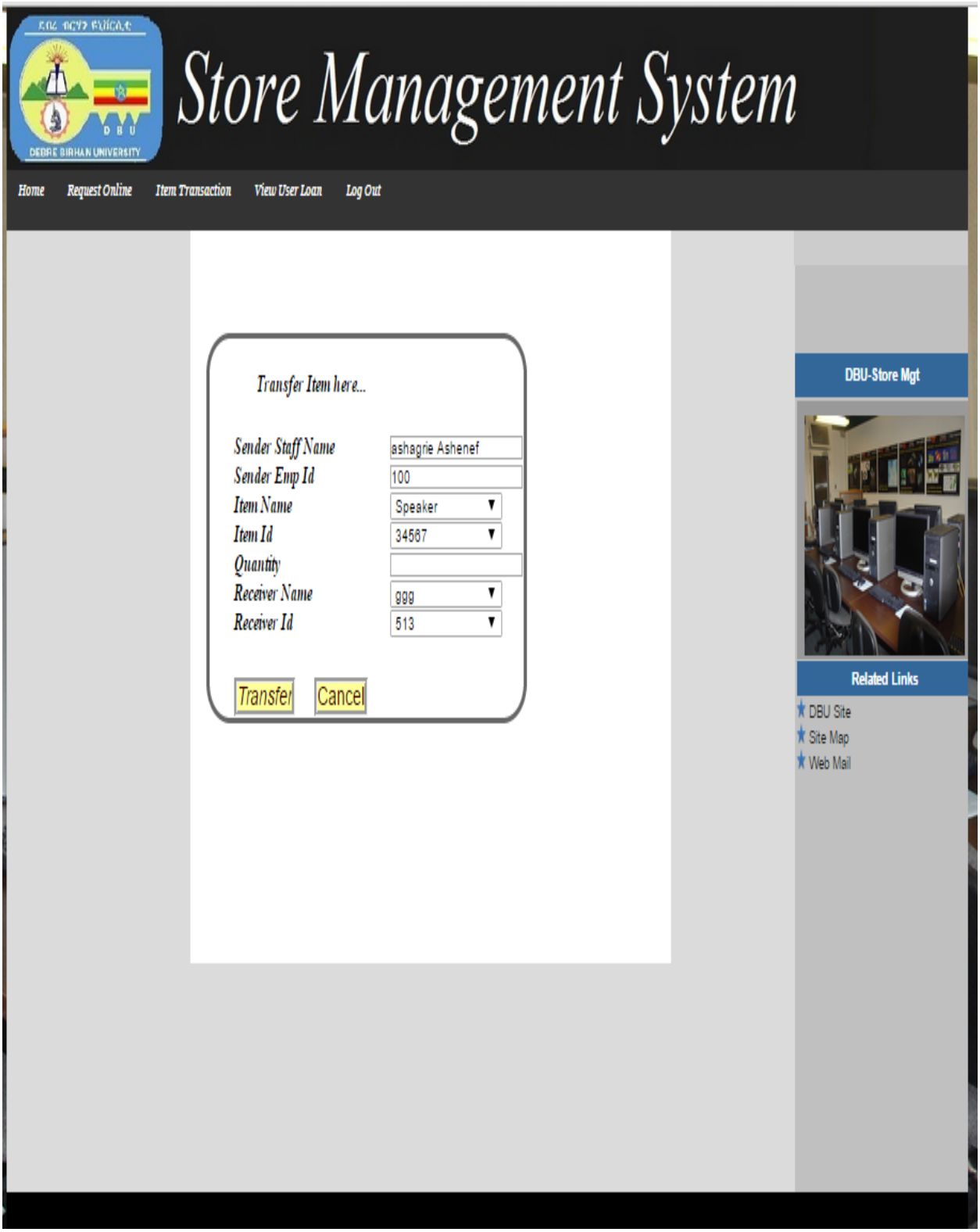

Figure 33 ***User Interface design of Transfer Item***

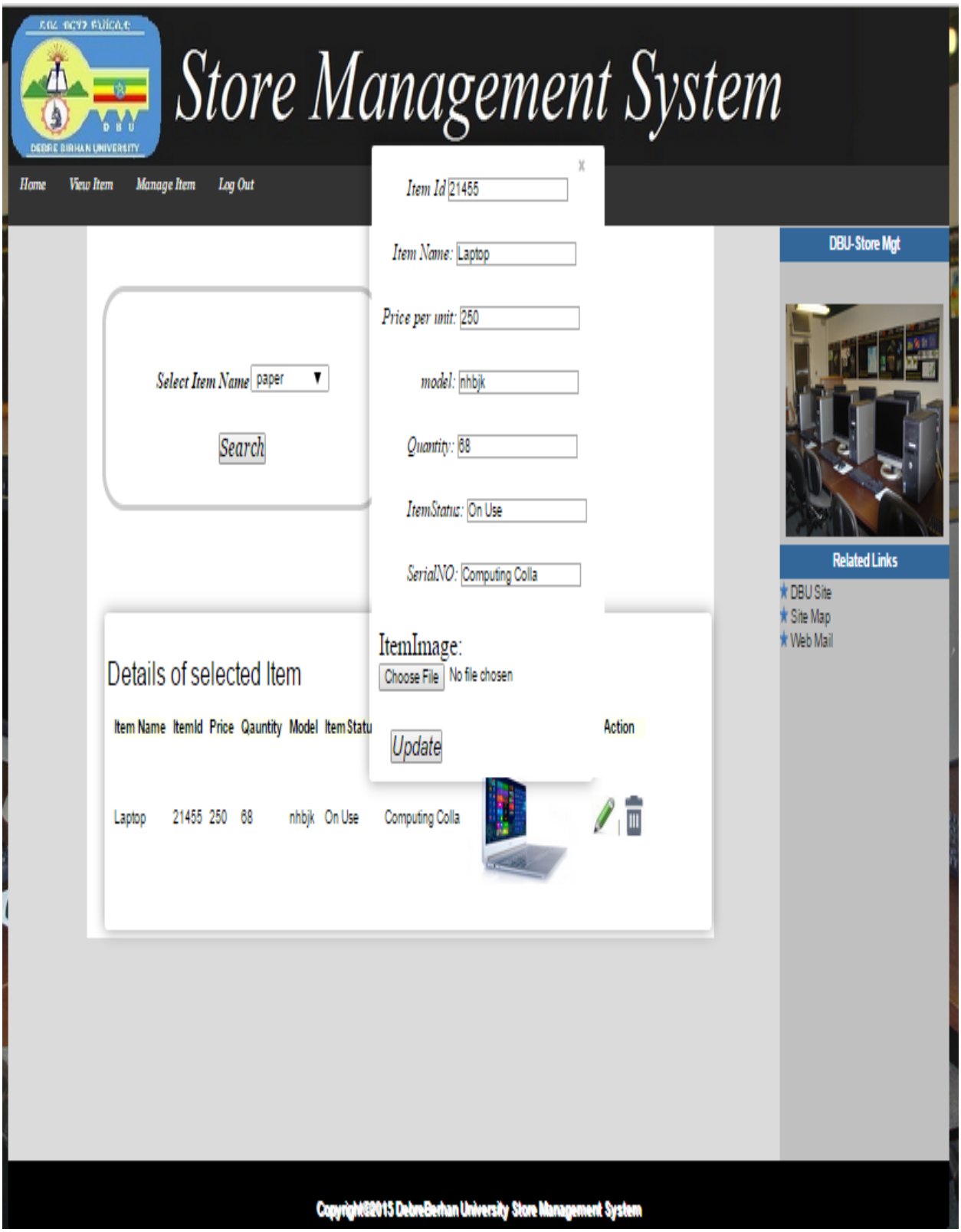

Figure 34 ***User Interface design of Update Item***

CHAPTER FIVE

5.1 PROTOTYPE DEVELOPMENT

//Sample code for Login

```
<?php
 if(isset($_POST['submitMain']))
 {
  $acc=$_POST['select'];
   $user =$_POST['mail'];
   $_SESSION['mail']=$_POST['mail'];
  $password=md5($_POST['pass']);
    $_SESSION['pass']=$_POST['pass'];
   $query = "SELECT * FROM accou WHERE   username= '{$user}' AND password= '{$password}' AND type='{$acc}';";
   $result_set=mysql_query($query);
if(!$result_set){
die("query is failed".mysql_error());
}
if(mysql_num_rows($result_set)>0)
{


 if($acc=='manager')
{
$_SESSION['validuser']=$user;
echo "<script>window.location='manager/manager.php';</script>";
}
else if($acc=='staff')
{
$_SESSION['validuser']=$user;
```

```
echo "<script>window.location='staff/userpage.php';</script>";
}
else if($acc=='Clerk')
{
$_SESSION['validuser']=$user;
echo "<script>window.location='clerk/clerk.php';</script>";
}
else if($acc=='Keeper')
{
$_SESSION['validuser']=$user;
echo "<script>window.location='keeper/keeperpage.php';</script>";
}
else if($acc=='Technitian')
{
$_SESSION['validuser']=$user;
echo "<script>window.location='technitian/technitian.php';</script>";
}
}

else
  {
 echo '<div align="center" ><strong><font color="#FF0000">Role, User Name & Password Not Match
!!</font></Strong></div>';
  }
//mysql_close($conn);
}
?>
</fieldset>
</table>
```

```
  <!--close sidebar_container-->

    </div>

<div id="footer">

<table width="1200" align="left">

                    <tr><th height="30" width="1200" align="center" bgcolor="#000000">Copyright©2015
DebreBerhan University Store Management System

                    </th></tr>

          </table>

          </div>


          <!--close sidebar-->


</body>

</html>
```

//Sample Code of Request Online

```
<?php

session_start();

if(!isset($_SESSION['Send']))

//c =mysql_query("Select ItemName from new_item where ItemId=Itemid'");

//$name =mysql_fetch_array($c);

//while($row=mysql_fetch_array($name)){

$Iname=$_POST['Itemname'];

$EmpId=$_POST["EmployeeId"];

$Empname=$_POST["Employeename"];

$Iid=$_POST["Itemid"];

$Iname=$_POST["Itemname"];

$Qaun=$_POST["Qauntity"];

$Date=$_POST["date"];

$status=$_POST["rstat"];
```

```
$approved=$_POST["Aitem"];

if(!strlen($_POST["EmployeeId"])||!strlen($_POST["Itemid"])||!strlen($_POST["date"])||!strlen($_POST[
"Qauntity"])){

$msg="You Need To Fill All The Required Field/s.";



}

elseif(!is_numeric($_POST["EmployeeId"])||!is_numeric($_POST["Itemid"])||!is_numeric($_POST["Qau
ntity"]))

  {

    $msg="Please, You need to enter numbers only on the id and qauntity Field.";

              }

                    else{

$db = mysql_connect("localhost","root","") or die ("Error connecting to database.");

if(!$db)

$msg="no connection established";

mysql_select_db("dbu",$db) or die("Couldn't select the database.");

$sql=mysql_query("SELECT * FROM new_item,accou where ItemId='$Iid' and EmpId='$EmpId'");

$count=mysql_num_rows($sql);

if($count<='0'){

 $msg="sorry! item id is incorrect";

  }

 else

 {

 $q="SELECT Qauntity  from new_item  WHERE ItemId='$Iid'";

$query=mysql_query($q);

while($row=mysql_fetch_array($query)){

$items=$row['Qauntity'];

}

$d= +$items - $Qaun;
```

```
if($items==$Qaun){

mysql_query("delete from new_item  WHERE ItemId='$Iid'");

}

elseif($items>$Qaun)

{

mysql_query("INSERT INTO request VALUES ('','$EmpId', '$Empname', '$Iid', '$Iname','$Qaun','$Date',
'$status', '$approved' )");

$message='<div align="center" ><strong><font color="Green" font-size="+2">Request Details inserted
sucessfully !!</font></strong></div>';

mysql_query("update new_item set Qauntity='$d' WHERE ItemId='$Iid'");

}

elseif($items=='0')

{

$message='<div align="center" ><strong><font color="red" font-size="+2">Sorry,The requested Item
Quantity Is Zero!!</font></strong></div>';

}

elseif($Qaun>$items)

{

$message='<div align="center" ><strong><font color="red" font-size="+2">Sorry,Your Demand
Exceedes The Available Item Quantity!!!</font></strong></div>';

}else

 $msg= "The item not found";

}

mysql_close($db);

}

include('requestonline_2.php');

?>
```

//Sample Code of Register User

```
<?php

session_start();

if(!isset($_SESSION['Submit']))

$a=$_POST["FirstName"];

$k=$_POST["MiddleName"];

$b=$_POST["LastName"];

$c=$_POST["EmployeeId"];

$d=$_POST["Gender"];

$e=$_POST["date"];

$f=$_POST["Address"];

$g=$_POST["PhoneNumber"];

$h=$_POST["Salary"];

$i=$_POST["department"];

if(!strlen($_POST["FirstName"])||!strlen($_POST["MiddleName"])||!strlen($_POST["LastName
"])||!strlen($_POST["EmployeeId"])||!strlen($_POST["date"])

||!strlen($_POST["Address"])||!strlen($_POST["department"])||!strlen($_POST["Salary"])){

$message="You Need To Fill All The Required Field/s.";


}

elseif(!is_numeric($_POST["EmployeeId"])||!is_numeric($_POST["Salary"])||!is_numeric($_PO
ST["PhoneNumber"]))


  {
```

```
    $message="Please, You need to enter numbers only on the id and Salary Field.";


            }

        elseif($_POST['FirstName']==strval(intval($_POST['FirstName']))||$_POST['LastName']
==strval(intval($_POST['LastName']))){
                $message="Please Enter Characters In The FirstName,LastName,type Fields.";}
                else
                {
$db = mysql_connect("localhost","root","") or die ("Error connecting to database.");
if(!$db)
$message="no connection established";
mysql_select_db("dbu",$db) or die("Couldn't select the database.");
$sql=mysql_query("SELECT * FROM user where EmpId='$c'");
$count=mysql_num_rows($sql);
if($count<='0'){
mysql_query("INSERT INTO user VALUES ('$a','$k', '$b', '$c','$d', '$e', '$f','$g','$h','$i')");
$message="The User Successfully Registered!!!!!";
}
 else
$message="sorry! EmpId must be unique";
mysql_close($db);
}
include('reguser_2.php');
?>
```

5.2 Conclusion

We come to the end of the system development project. It is time to summarize on the work done on Store Management System and check against our success indicators set at the beginning of the project to determine whether the effort was a success. In the first chapter we deal about the Objective, Scope, problem definition, proposed solution. In the second chapter we analyze the existing manual system and we model the new system using different object oriented modeling techniques such as use case diagram, activity diagram, sequence and other models. In chapter Three, we design the system using the design modeling such as class diagram, component diagram, collaboration diagram, state chart diagram, database design and class mapping, user interface and prototyping design, and deployment diagram. In chapter four, we try to specify the implementation technique and tools that we use to implement the system.

5.3 Appendix

Appendix 1

Model 19 **Serial No 854967**

Amhara National and Regional State Finance 1, Item No In Expenditure Registry ……

And Economic Development Bureau 2, No of entry in the register of incoming goods …….

3, Classification of Stock ……

4, Store's No ……

Department of ……..

Receipt for Articles or Property Received

Name …… I received the following Item List in Day ……..
Year …… E.C. From …… .

Roll no	Detailed description of the Item	Model	Serie	Page No From	To	Quantity	Unit Price Birr	Cent		Total Price	
						Total					

Deliverer (Donor) signature Receiver (Recipient) signature

…… ……

Warning: This receipt is copied three times. The first is given to the finance. The second given to the Deliverer and the third is kept in the store.

Appendix 2

Model 22 **Serial No 854877**

Amhara National and Regional State Finance

And Economic Development Bureau

1, Item No In Expenditure Registry _____

2, No of entry in the register of incoming goods _____

3, Classification of Stock _____

4, Store's No _____

5, No. of entry in the register of Outgoing goods _____

Department of _____

Receipt for Articles or Property Outgoing Goods

I _____ on Date _____ Year _____E.C. in accordance with the order No _____ I have counted correctly and receive the Items Listed below for proper Use and I ensure this with my signature.

Serial no	Detailed description of the Item	Model	Serie	Page No From	To	Quantity	Unit Price Birr	Cent		Total Price	
						Total					

Month _____Date ___ Year_____

Recipient's signature _____

Store Keeper signature _____

Warning: This receipt is copied three times. The first is given to the finance. The second given to the Deliverer and the third is kept in the store. If the Items are of the same type, one copy is enough.

5.4 Recommendation

The system that we are trying to develop is not a fully discovered especially when the staff members send request online because it needs digital signature to be more reliable. Therefore, we suggest the following features need to be incorporated in any further revision and extension attempt.

- Integration of digital signature.
- Integration of clearance system to the employee

5.5 Reference

1. Applications for Improved Inventory Management for Public Transit Systems pdf

2. Sales and Inventory Management Kriket-C0907i - FPT-Aptech

3. http://www.freestudentprojects.com/studentprojectreport/projectreport/stores-management-system
4. http://www.freestudentprojects.com/studentprojectreport/projectreport/stores-management-system-2/
5. http://www.visual-paradigm.com/VPGallery/diagrams/Component.html
6. http://msdn.microsoft.com/en-us/library/dd409393.aspx
7. http://www.sourcecodester.com/php
8. http://www.w3schools.com/php/php_mysql_intro.asp
9. Ambler, Scott (2001) The ***Object primer: The application Developers Guide to Object Oriented and the UML***.2nd rev. Ed England: The Cambridge University Press.
10. Different Video Tutorials for the different diagrams in our system