Accounts and Inventory Management System (AIMS)

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Acknowledgments

Abstract

Inventory has been one of the most important aspect of manufacturing industry especially in businesses where inventory replenishes very quickly, gets expired in short period of time and freshness is key. Restaurant business is one such business where all these things should be taken care of simultaneously to keep the taste in your hand, improve the quality of cooking and customers satisfaction. In Restaurants, food items expiry date are key and store keeper should have a system in place to know its expiration dates before it really happens otherwise it adds to their loss. Fresh food items are also important to keep the taste of products. Store keeper must issue the items which were receive first as it happens in FIFO method of inventory management. At the same time, paying bills and invoices as they become due are also important. Therefore it is also need of the hour that accountant must know it that certain bills are outstanding and needs to be paid before due dates.

Saffron is a multi-branch food outlet in Rawalpindi having a variety of food dishes to its customers. They running this business since 2009 and their customer base have increased a lot in recent years. In order to manage their business well and to handle it properly, they need a system to manage their inventory movement as well as accounts department daily transactions including payroll calculation, payments, expense tracking etc. AIMS (Accounts and Inventory Management System) are aimed to provide to solution to all these daily matters.

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Chapter # 1

Introduction

1.1. Background

Saffron Restaurant is one of the prominent food places in Rawalpindi and especially in Food Street Rawalpindi. They are known for their unique delicious taste and beautiful sitting in the vicinity. Over the years, their business has taken some enormous leaps expanding their customer base to large number. In order to manage it properly they initiated some quick procedures. But its inventory management and accounts department are not doing well with the pace of customers' orders frequency and daily transactions.

1.2. Problem Definition

With growing business's needs, it is evident for entrepreneurs to know about their business situations as they need. Using manual accounting system, sometimes this becomes impossible and results in much bigger losses for businesses than expected.

As we know that in Pakistan business environment, our business men are not well educated that's why they hesitate to implement computerized accounting systems and thus fail to expand their business or face losses due to manual accounting system.

For our project Saffron (The Family Restaurant) is the most appropriate organizations who are looking for solution regarding mechanizing their operations with a simple and customized accounting system.

In the beginning Saffron's (The Family Restaurant) business operations were carried out manually that cost them a lot and it was also a big hurdle towards expanding to other regions. Ultimately they had to implement some computerized accounting system insistently to overcome problems. Later on, at saffron it has been experienced that the existing accounting systems/solutions (Peach tree, Quick books) lacked abilities to work on network environment and also required more expertise to learn that systems, they are not fitted in their businesses environment. It is because their users need pre-requisite knowledge to adhere its operations. Also these existing systems are much expensive when compared to business size in terms of operations and revenue. It is the need of the hour that there should be a program that minimizes all these Issues and focuses on results merely helping its managers. It becomes much more important when businesses are expended intercity or intra city.

1.3. Related Work

Generally in the market, it is observed that small and medium size firms use Peachtree or Quickbooks accounting systems. These accounting programs are not designed for entry level employees. Peachtree uses advanced accounting concepts in its ledgers and reports and accountants of SMEs like Saffron are not familiar with those concepts. Rather it requires basic understanding and little knowledge about the accounting to record transactions in them. Similarly many accounting software are also available at internet ether free or on cost, for example Acemoney etc.

1.4. Motivation

The motivation behind our system is to develop a computerized platform to save and to retrieve the data of inventory from web. It is to facilitate the user by providing all the data at one place, in a manner that they can access the information easily and supervise it remotely. The need to make this particular system was that there is no platform which provides all the facility of inventory management at this scale. Some other systems provide computerized facility of inventory management and some provide accounts information separately. But the system is going to be developed will provide the competence for both the features i.e. inventory and accounts at the same time and for entry level accountants with minimum knowledge of accounting.. The users will be able to record accounts transactions, make ledgers and manage all the company operations in accounting and can administrator the inventory also.

1.5. Proposed System

The proposed software is a web-based application which maintains information of business transactions (accounts) Vendors accounts and purchases of goods.

This system will also keep track of stock (inventory management).

In ledgers, there will be record of all business transactions including salary payments to employees, cash receipts and payments sale and purchase transactions. While there'll be special journals and General ledgers for rest.

Various types of reports (individual legers/accounts)

1.6. Project Scope

i.   System will provide the facility to add the accounts of company, employees and vendors.

ii.   System will also allow user to add departments and store items.

iii.   It can also calculate the Salaries of employees.

iv.   The system will also maintain the ledgers of employees and vendors.

v.   The system will also manage the vendor's credit and cash purchases.

vi. It will also keep track of inventory in/out.

vii. The System will allow the company to plan for future inventory needs.

viii. The system will also generate report of daily stock status.

ix. System will also provide reports of daily expenses, daily transactions and due payments.

x. System will also inform the user about the expiry dates of Items before some days so that the items must be consume first.

xi. It will also maintain the income statement of company.

1.7. Objectives

The primary objective of our AIMS (Accounts &Inventory Management System) is to use it for efficient management of the movement and storage of goods and the related flow of information. It is aimed to improve buying capacity of the purchase department for fresh and appropriate purchasing of raw material for kitchen department. Other objective is to provide accounts and ledger information to keep track of changes to each account transaction to transaction.

Chapter # 2

Requirements Specification

2.1. Introduction

The purpose of this Requirement Specification document is to clarify requirements of the system and to decide what the system should do and what the system shouldn't do? The store department personnel, stock handling employees, accounts department, purchase department employees and the management of the firm are the audience of the system. In other words they are the end user of it.

2.1.1. Purpose

The purpose of this Requirement Specification document is to clarify and clear the requirements of the system and to decide what the system should do and what the system shouldn't do? Owner, accountant and store keeper are the audience of the system or simply say that they are end users and admin will play a role of administrator.

2.1.2. Stakeholders

i. Administrator
ii. Cashier/Accountant
iii. Store keeper
iv. Owner

2.1.3. Major Functions

i. Record of inventory in and out of the store
ii. To get expiry date of items in store before it expires
iii. To get first item that enters the store leaves the store first
iv. To get employees payroll account status whenever needed
v. To get bills due date reminder as they become due
vi. To get inventory low alert as they reach to lowest level

2.1.4. Major Inputs

i. List of Stock items their quantitative units and stock out limit of   each item.
ii. List of Employees those are working at organization.
iii. List of Vendors.
iv. List of Departments
v. Incomes/Daily sales

2.1.5. Major Outputs

i. Status of inventory items in the store
ii. Real time accounts' balances and its transactions effecting it
iii. Display items with low inventory in near future

iv. Display Items near to expire

v. Income statement

vi. Daily Expense Sheet

vii. Account ledgers

2.2. Definitions, acronyms, and abbreviations

User	Accountant and Storekeeper, Owner, Admin
AIMS, System	Accounts and Inventory Management System
Ledger	Balance Sheet of any account

2.3. Overall description

The rest of topics contain the detailed information about functional, non-functional, performance requirements and overall functionality of the system.

2.3.1. Product perspective

AIMS is meant to be stand-alone system. It is used to provide real time information about stock items and let its user take pro-active steps to maintain stocks as per company policy. It will help the end user to keep himself updated about the expiration of the items in the store which is not commonly embedded in this sort of programs. Perishable items will be used only when they are justified for health.

2.2.1.1 SYSTEM INTERFACES

The AIMS will be provided in the form of a website. The information will be provided by the administrator, storekeeper and the accountant.

2.2.1.2 USER INTERFACES

Graphical user interface (GUI) will be provided to all users.

2.2.1.4 SOFTWARE INTERFACES

System requires Web browser

2.3.2. Product Functions

i. Manage employee's accounts, vendor's accounts,

ii. Manage and company's accounts (sale, purchase, expenses).

iii. Calculate salaries of employees

iv. Manage Invoice records.

v. Calculate status of stock items according to stock in and stock out.

vi. Manage record of stock issued to departments.

vii. Calculate Daily expense sheet

viii. Manage company expenses.

2.3.3. User characteristics

This is assumed that user knows English language, He/she have a basic knowledge of how to use internet and how to enter data in fields. He/she can use mouse and keyboard to enter data and select options.

2.4. Functional Requirements

i. The system shall validate username and passwords of admin, store keeper and owner.

ii. The system shall allow admin to manage employees (which will include employee basic information and account information).

iii. The system shall allow admin to manage supplier/vendors (which will include basic information and account information).

iv. The system shall allow admin to manage purchase accounts (which will include on credit, on cash).

v. The system shall allow admin to manage salaries of employees.

vi. The system shall allow admin to manage company expense accounts (which includes utility bills, fuel expense of vehicles, maintenance expense and other patty expenses)

vii. The system shall allow store keeper to enter invoice/bill of purchase items for store.

viii. Every item should have a stock out limit.

ix. The system shall allow store keeper to Issue store items to departments.

x. The system shall allow accountant to manage transaction of accounts of employees and vendors and other company accounts.

xi. The system shall allow owner to check the all transactions of vendors and employees and patty expenses.

xii. The system shall allow owner to check reports of daily expenses.

xiii. The system shall allow owner to check report of store transactions.

xiv. The system shall allow owner to check the status of items available in store.

Chapter # 3

Requirement Analysis

3.1. Use Case Analysis

A use case analysis is the most common technique used to identify the requirements of a system. The primary goals of a use case analysis are: designing a system from the user's perspective, communicating system behavior in the user's terms, and specifying all externally visible behaviors.

A use case is a list of steps, typically defining interactions between a role actor and a system, to achieve a goal. The actor can be a human or an external system.

A use case diagram is a representation of a user's interaction with the system and for depicting the specifications of a use case. A use case diagram can portray the different types of users of a system and the various ways in which they interact with the system [1].
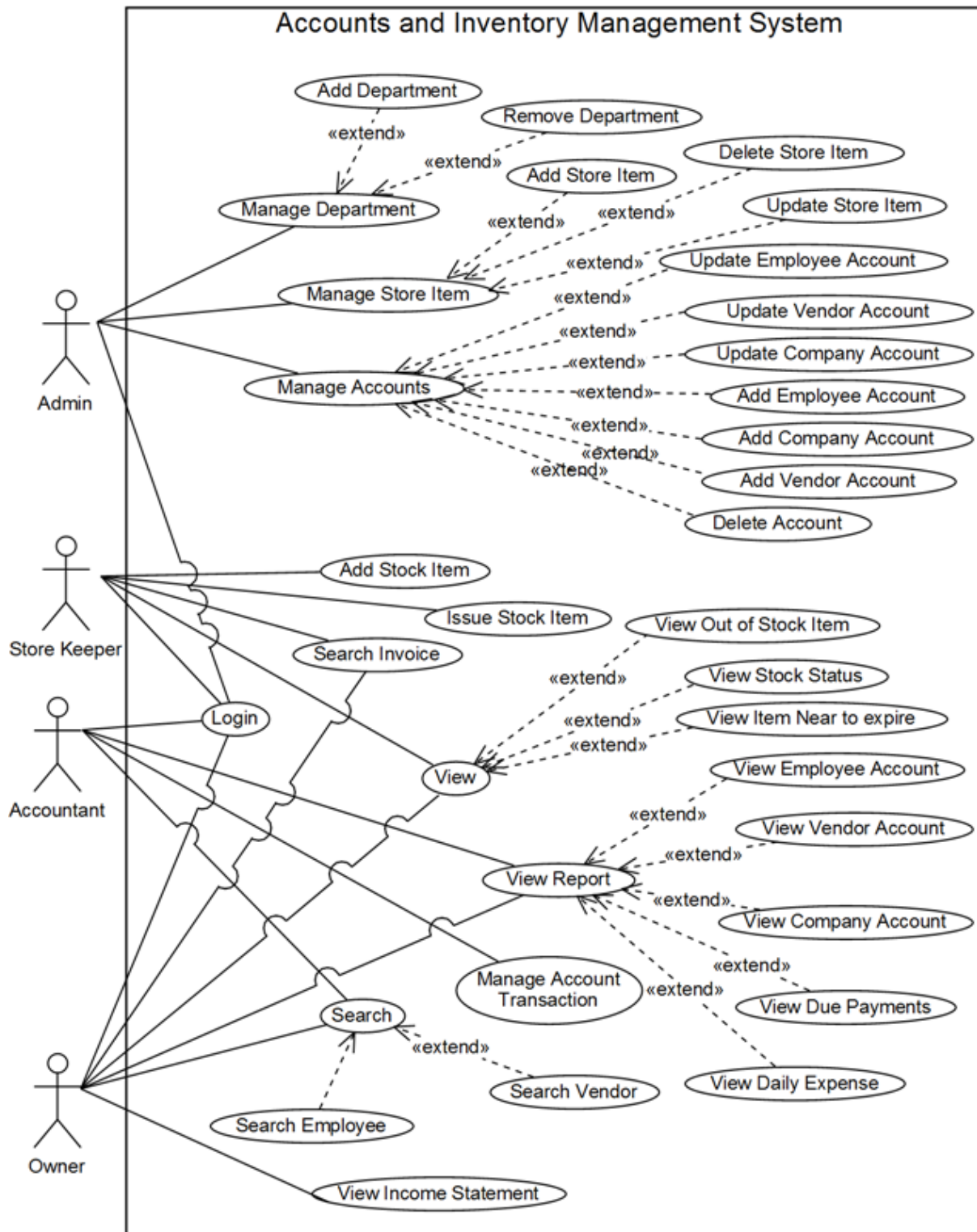
3.2. Use Case Diagram

Fig:3.1 Use case Diagram

3.3. Use Cases in Detail

ID	UC1
Name	Login
Primary Actors	Admin, Accountant, Owner, Storekeeper(termed as user)
Stakeholders	1. Admin, Accountant, Owner, Storekeeper
Pre-conditions	1. User is registered and his/her information is saved in the system
Post-conditions	1. User is logged in 2. System displays Home screen
Main Success Scenario	1. System displays Log in option 2. User selects Log in option 3. System displays two input fields for username and password with Log in option 4. User enters username and password in relevant fields 5. User selects Login option 6. System validates username and password 7. User is logged in the System 8. System displays home screen
Alternate flows or Extensions	6.a Wrong username or password System shows error message and allow him/her to re-enter username and password

ID	UC2
Name	Issue Stock Item
Primary Actors	Store keeper (termed as User)
Stakeholders	1. Store keeper
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System saves the entered information in database and displays all the information of Stock entered on that day.
Main Success Scenario	1. System displays 'issue stock' options In the Inventory menu. 2. User selects the 'issue stock' option. 3. System displays entry form for the stock out, which contains the following field's department name, date, item name and quantity. 4. User enters the appropriate information in all the fields. 5. User clicks the save option. 6. System saves the data in the database.
Alternate flows or Extensions	4.a If store keeper does not enter all the required fields, system will not save the data.

ID	UC3
Name	Add Stock Item
Primary Actors	Store keeper (termed as User)
Stakeholders	1. Store keeper
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System saves the entered data in database and displays all the information of Stock entered on that day.
Main Success Scenario	1. System displays 'Add Stock' option in the inventory menu. 2. User selects the 'Add Stock' option. 3. System displays entry form for the Add stock item, which contains the following field supplier name, date, Item name, Description, Expiry date, Unit price, Quantity. 4. User enters the appropriate data in all the fields. 5. User clicks the save option. 6. System saves the data in the database.
Alternate flows or Extensions	4. a If store keeper does not enter all the required fields, system will not save the information.

ID	UC4
Name	View Stock Status
Primary Actors	Store keeper, Owner (termed as user)
Stakeholders	1. Store keeper, Owner
Pre-conditions	1. User is identified and authenticated. 2. There should be some stock information saved in the system.
Post-conditions	1. System displays the item wise detail of all stock available in the store.
Main Success Scenario	1. System displays 'available stock' option in the Inventory menu. 2. User selects the 'available stock' option. 3. System displays item wise details of all the stock available in the store.
Alternate flows or Extensions	

ID	UC5
Name	View Item near to Expire
Primary Actors	Store keeper, Owner (termed as user)
Stakeholders	1. Store keeper, Owner
Pre-conditions	1. User is identified and authenticated.
	2. The Date of Expiry of some Item must have reached to defined date.
Post-conditions	1. System displays the expired item details.
Main Success Scenario	1. System displays 'Near to expire Items' option on the screen.
	2. User selects the 'Near to expire Item' option.
	3. System displays the details of all the items near to expire.
Alternate flows or Extensions	

ID	UC6
Name	Add Company Account
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	2. User is identified and authenticated.
Post-conditions	1. System creates the company account and saves the information in the system.
Main Success Scenario	1. System shows the 'Add Company Account' option in the Company menu.
	2. User selects the 'Add Company Account' option.
	2. System shows the entry form of New Company Account which contains the following fields, Account name, Type, Account Desc, and Parent Account.
	3. User enters all the required fields and selects the 'create' button to create the new account.
	4. System saves the information.
Alternate flows or Extensions	4. a If the user does not enter data in any of the required field the system will prompt him to enter the data in the fields.

ID	UC7
Name	Search invoice
Primary Actors	Store keeper, Owner (termed as user)
Stakeholders	2. Store keeper 3. Owner
Pre-conditions	1. User is identified and authenticated. 2. The invoice must be saved in the system.
Post-conditions	1. System displays the invoice details against the provided invoice.
Main Success Scenario	1. System displays 'Invoice Search' option on the screen. 2. User selects the 'Invoice Search' option. 3. System displays the input field and a search button. 4. User inputs the invoice number which he wants to search and clicks the Search button. 5. System displays the details against that invoice number.
Alternate flows or Extensions	4.a If user inputs the number which is not saved in the system then the system will display the not found message on the screen.

ID	UC8
Name	Add Employee Account
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System creates the account of particular employee and saves the information in the system.
Main Success Scenario	1. System shows the 'Add Employee' option in Employee menu. 2. User selects the 'Add Employee' option. 3. System shows the entry form of New Employee which contains the following fields, employee name, father's Name, CNIC no, Address, Phone no, Department, Designation, Reference, Higher date, Account type, Comments. 4. User enters all the required fields and selects the 'create' button to create the new account. 5. System saves the information.
Alternate flows or Extensions	4. a If the user does not enter data in any of the required field the system will prompt him to enter the data in the fields.

ID	UC9
Name	Add Vendor Account
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	4. User is identified and authenticated.
Post-conditions	1. System creates the account of particular vendor and saves the information in the system.
Main Success Scenario	1. System shows the 'Add Vendor' option in Vendor menu. 2. User selects the 'Add Vendor' option. 3. System shows the entry form of New Vendor which contains the following fields, Vendor name, Company Name, Vendor Type, Address, Phone no, date create, Bank Account no, Payment Terms, Comments. 4. User enters all the required fields and selects the 'create' button to create the new account. 5. System saves the information.
Alternate flows or Extensions	4. a If the user does not enter data in any of the required field the system will prompt him to enter the data in the fields.

ID	UC10
Name	View Reports(View Employee Account, View Vendor Account, View Company Accounts, View Daily Expense, View Due Payments)
Primary Actors	Admin, Owner(termed as user)
Stakeholders	1. Accountant
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. Transactions completed successfully.
Main Success Scenario	1. System shows the 'Reports' option in the Statistics menu. 2. User selects the 'Reports' option. 3. System shows different Report Types to select. 4. User selects any Report type like Vendor, Employee, and Expense. 5. User selects the required type for report. 6. System shows transaction details against that option.

ID	UC11
Name	Add Department
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System creates the department and saves the information in the system.
Main Success Scenario	1. System shows the 'Add Department' option in Department menu. 2. User selects the 'Add Department' option. 3. System shows the entry form of New Department which contains the following fields Department name. 4. User enters all the required fields and selects the 'create' button to create the new account. 5. System saves the information.
Alternate flows or Extensions	4. a If the user does not enter data in any of the required field the system will prompt him to enter the data in the fields.

ID	UC12
Name	Add Store Item
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System creates the Item and saves the information in the system.
Main Success Scenario	1. System shows the 'Add Item' option in the Inventory menu. 2. User selects the 'Add Item' option. 3. System shows the entry form of New Item which contains the following fields Item name, Item unit, Item type, Stock out limit. 4. User enters all the required fields and selects the 'create' button to create the new account. 5. System saves the information.
Alternate flows or Extensions	4. a If the user does not enter data in any of the required field the system will prompt him to enter the data in the fields.

ID	UC13
Name	Update Employee Account
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System updates the account information and saves the updated information in the system.
Main Success Scenario	1. System shows the 'Employees list' option in the Employee menu. 2. User selects the 'Employee list' option. 3. System shows the list of all employees with update and delete option with each employee. 4. User selects the 'Update' option of the employee whose information he wants to update. 5. System shows the entry form of that employee with previously saved data in the input fields. 6. User changes the data in the fields and selects the 'save' button to update the information. 7. System saves the updated information.
Alternate flows or Extensions	6. a If the user removes the data or leaves any of the required fields empty then the system will prompt him to enter the data in the fields.

ID	UC14
Name	View Income Statement
Primary Actors	Owner(termed as user)
Stakeholders	1. Owner
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. Transactions completed successfully.
Main Success Scenario	1. System shows the 'Income statement' option from the Statistics menu. 2. User selects the 'Income statement' option. 3. A system shows the income statement which contains revenue and expense details.

ID	UC15
Name	Update Vendor Account
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated.
Post-conditions	1. System updates the account information and saves the updated information in the system.
Main Success Scenario	1. System shows the 'Vendors list' option in the Vendors menu. 2. User selects the 'Vendors list' option. 3. System shows the list of all vendors with update and delete option with each employee. 4. User selects the 'Update' option of the vendor whose information he wants to update. 5. System shows the entry form of that vendor with previously saved data in the input fields. 6. User changes the data in the fields and selects the 'save' button to update the information. 7. System saves the updated information.
Alternate flows or Extensions	6. a If the user removes the data or leaves any of the required fields empty then the system will prompt him to enter the data in the fields.

ID	UC16
Name	Search (Employee, Vendor)
Primary Actors	Owner(termed as user)
Stakeholders	1. Owner, Accountant
Pre-conditions	1. User is identified and authenticated. 2. The account which the user wants to search mush be available in the system.
Post-conditions	1. Search completed successfully
Main Success Scenario	1. System shows the 'Search' option on the screen. 2. User selects the 'Search' option. 3. System shows Search options for employee and Vendor. 4. User selects any option from those options and enters the name or any other information and clicks the search button. 5. System shows details found against search criteria.

ID	UC17
Name	Remove Account
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated. 2. Account information must be available in the system.
Post-conditions	1. System removes the account information from the system.
Main Success Scenario	1. System shows the 'List of Accounts' option in the Company menu. 2. User selects the 'List of Accounts' option. 3. System shows the list of all accounts with update and delete option with each account. 4. User selects the 'Delete' option of the account whose information he wants to delete. 5. System shows confirmation message with cancel and ok options. 6. User selects the ok option to confirm the action. 7. System deletes the account.
Alternate flows or Extensions	7. a If the user selects cancel option the system will withdraw the action.

ID	UC18
Name	Manage Account Transaction
Primary Actors	Accountant (termed as user)
Stakeholders	1. Accountant
Pre-conditions	1. User is identified and authenticated. 2. Account must be available in the system.
Post-conditions	1. Transactions completed successfully.
Main Success Scenario	1. System shows the 'Transaction' option in the Transactions menu. 2. User selects the 'Transaction' option. 3. System shows the transaction form with following fields Voucher number, Transaction Type, Transaction for, Transaction detail and amount. 4. User selects the save option. 5. System shows all the transaction details of that day.
Alternate flows or Extensions	3.a. If the user does not enter data in any of the required field the system will prompt him to enter the data in the fields.

ID	UC19
Name	Remove Department
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated. 2. Department information must be available in the system.
Post-conditions	1. System removes the department information from the system.
Main Success Scenario	1. System shows the 'List of Departments' option in the Department menu. 2. User selects the 'List of Departments' option. 3. System shows the list of all departments with update and delete option with each account. 4. User selects the 'Delete' option of the department whose information he wants to delete. 5. System shows confirmation message with cancel and ok options. 6. User selects the ok option to confirm the action. 7. System deletes the account.
Alternate flows or Extensions	6. a If the user selects cancel option the system will withdraw the action.

ID	UC20
Name	View Out of Stock Status
Primary Actors	Store keeper, Owner (termed as user)
Stakeholders	1. Store keeper, Owner
Pre-conditions	1. User is identified and authenticated. 2. The stock of some Item must have fall short of defined limit.
Post-conditions	1. System displays the details of out of Stock Items.
Main Success Scenario	1. System displays 'Out of stock Items' option on the screen. 2. User selects the 'Out of stock Items' option. 3. System displays the details of all the items whose quantity falls short of defined limit.
Alternate flows or Extensions	

| ID	UC21
Name	Remove Store Item
Primary Actors	Admin (termed as user)
Stakeholders	1. Admin
Pre-conditions	1. User is identified and authenticated. 2. Item information must be available in the system.
Post-conditions	1. System removes the Item information from the system.
Main Success Scenario	1. System shows the 'List of Items' option in the Inventory menu. 2. User selects the 'List of Items' option. 3. System shows the list of all departments with update and delete option with each account. 4. User selects the 'Delete' option of the Item whose information he wants to delete. 5. System shows confirmation message with cancel and ok options. 6. User selects the ok option to confirm the action. 7. System deletes the account.
Alternate flows or Extensions	6. a If the user selects cancel option the system will withdraw the action.

Chapter # 4

System Design

4.1. Architectural Design

MVC (Model View Controller) architecture is used in the system. The model consists of application data and business logic, and the controller mediates input, converting it to commands for the model or view. A view can be any output representation of data. The central idea behind MVC is code reusability and separation of concerns.

Development effort is distributed to some extent, so that implementation changes in one part of the Web application do not require changes to another. The MVC design has an organizational structure that better supports ease of modification and maintenance (due to the cleaner separation of tasks).
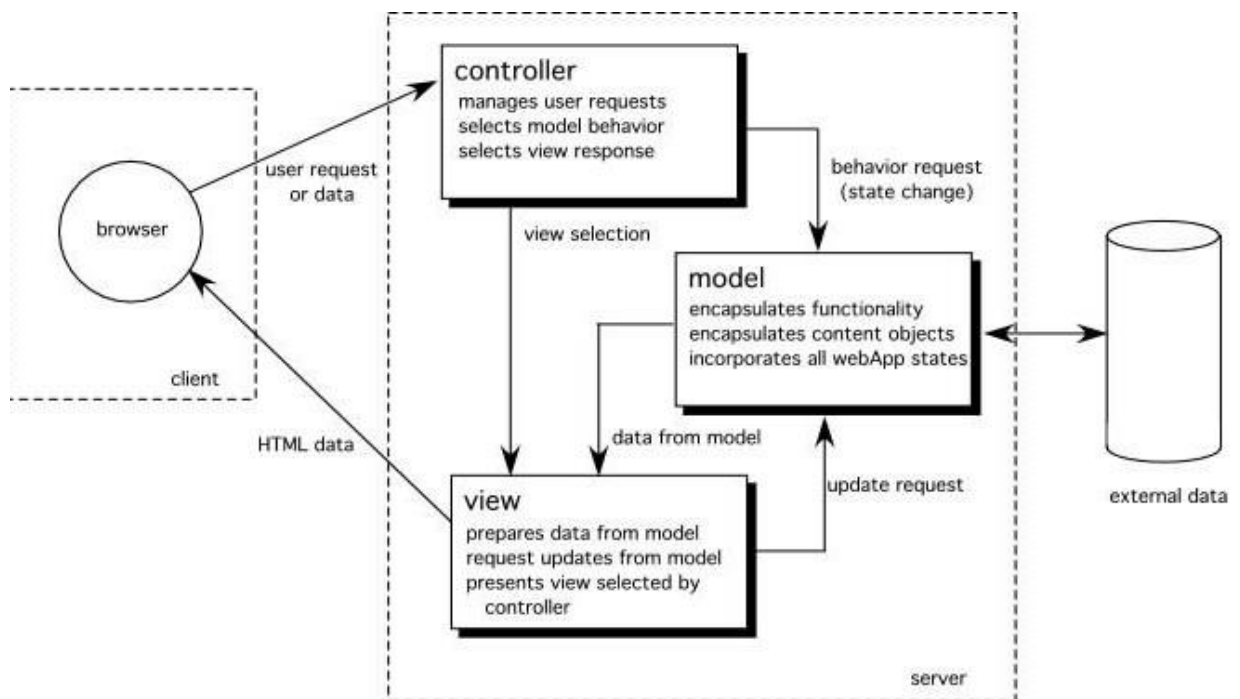
Fig4.1 MVC Architectural Diagram[2]

4.2. Entity Relationship Diagram

An entity-relationship diagram is a graphical representation of entities and their relationships between them. ER Diagram describes the data in an abstract way. An ER diagram helps to design databases in an efficient way
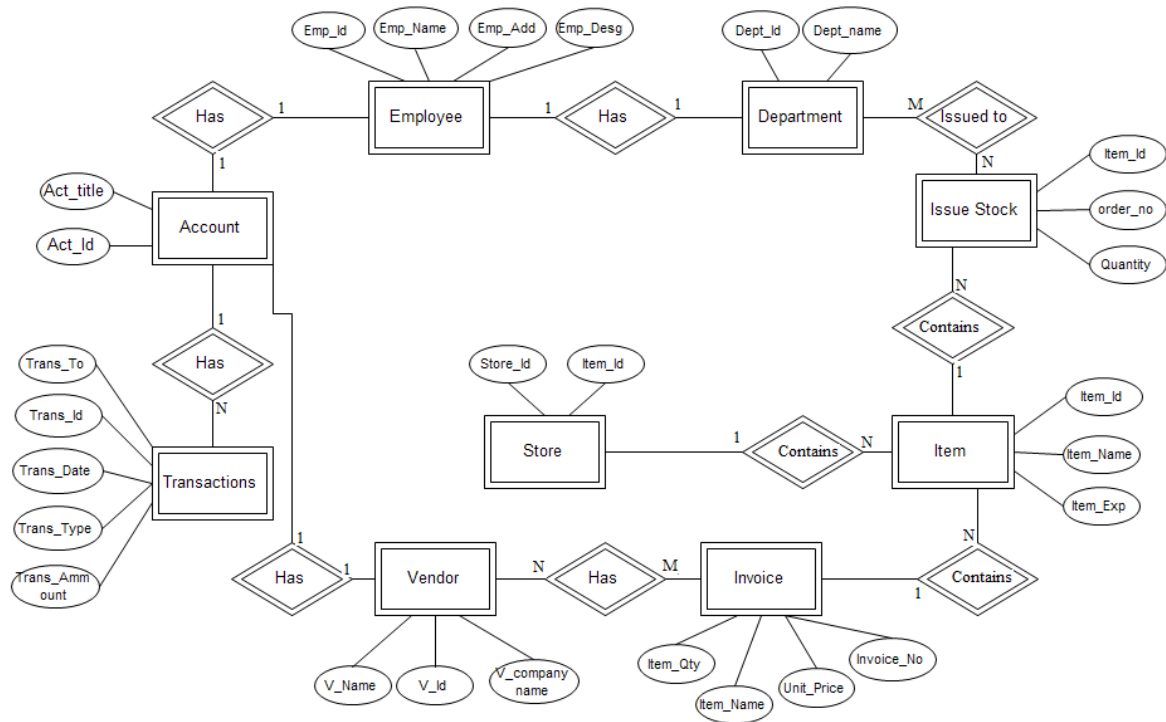
Fig4.2 ER Diagram

4.3. Database Design Diagram

Database design is the method of making a detailed data representation of a database. This rational data model encloses all the desirable logical and physical design selections and physical storage parameters desired to create a blueprint in a Data definition language, which will be able to be used to generate a database. A completely accredited data model contains comprehensive attributes for each entity.
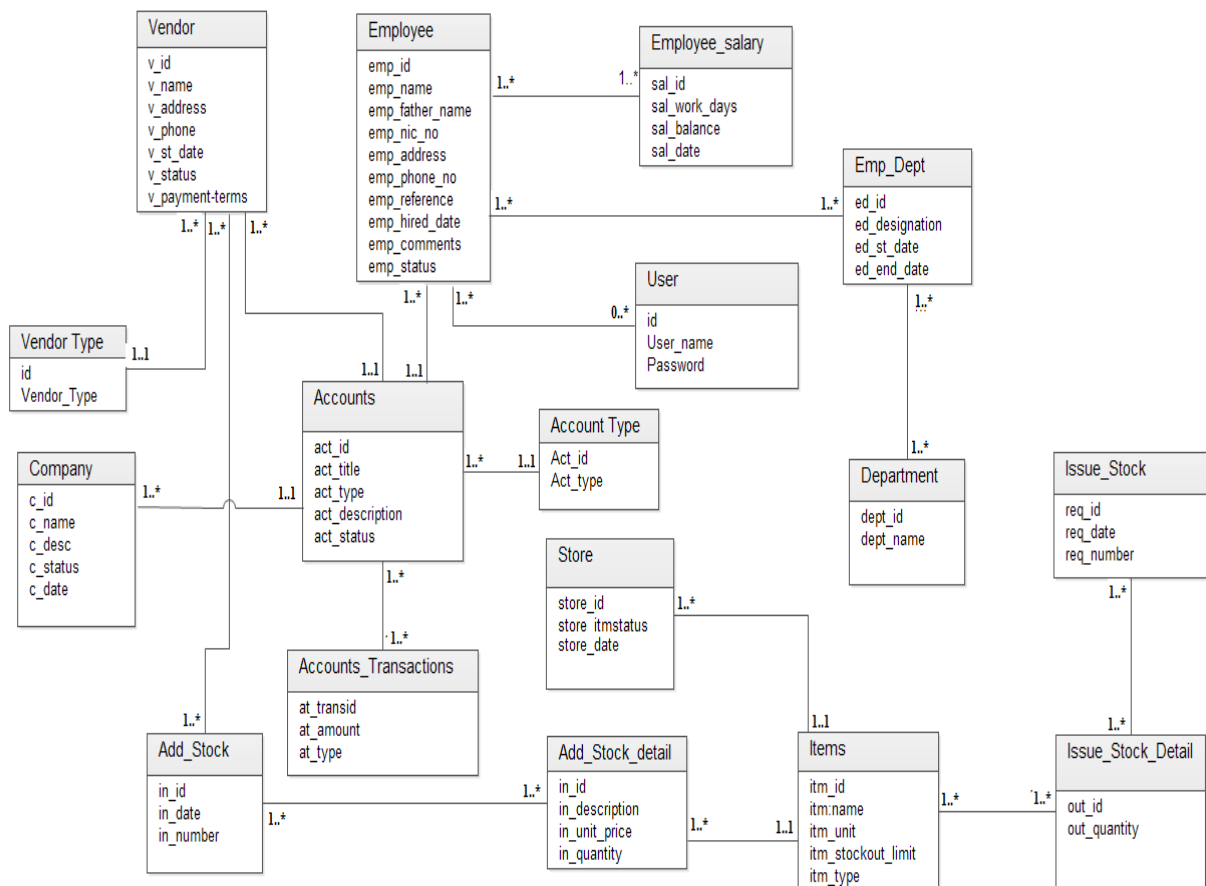

Fig: 4.3 Database Design

4.4. Sequence Diagrams

UML (Unified Modeling Language) sequence diagrams model the flow of logic within our system in a visual manner. Sequence diagrams are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within the system. A sequence diagram is an interaction diagram that details how operations are carried out. [3]
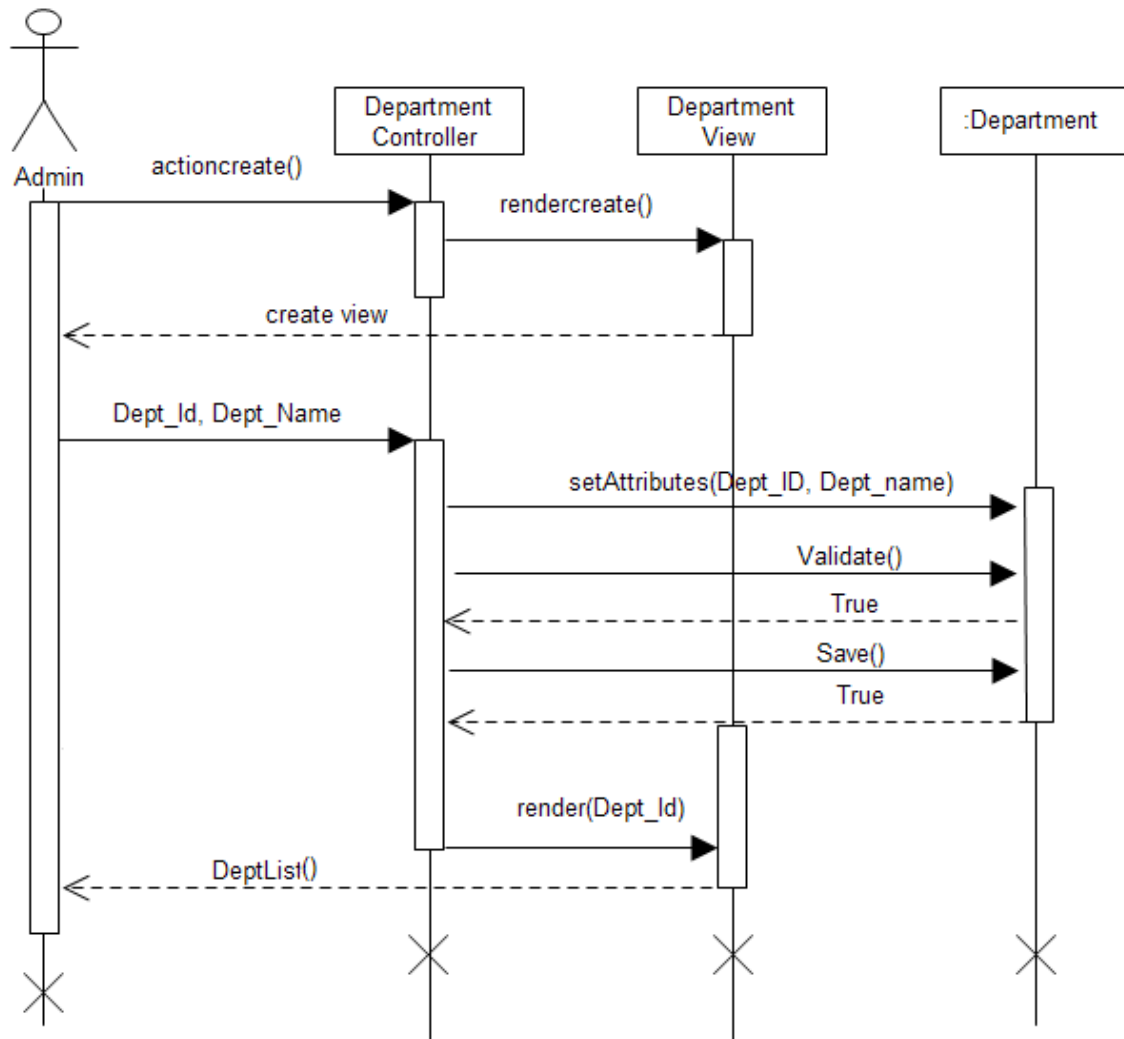
4.4.1. Add Department

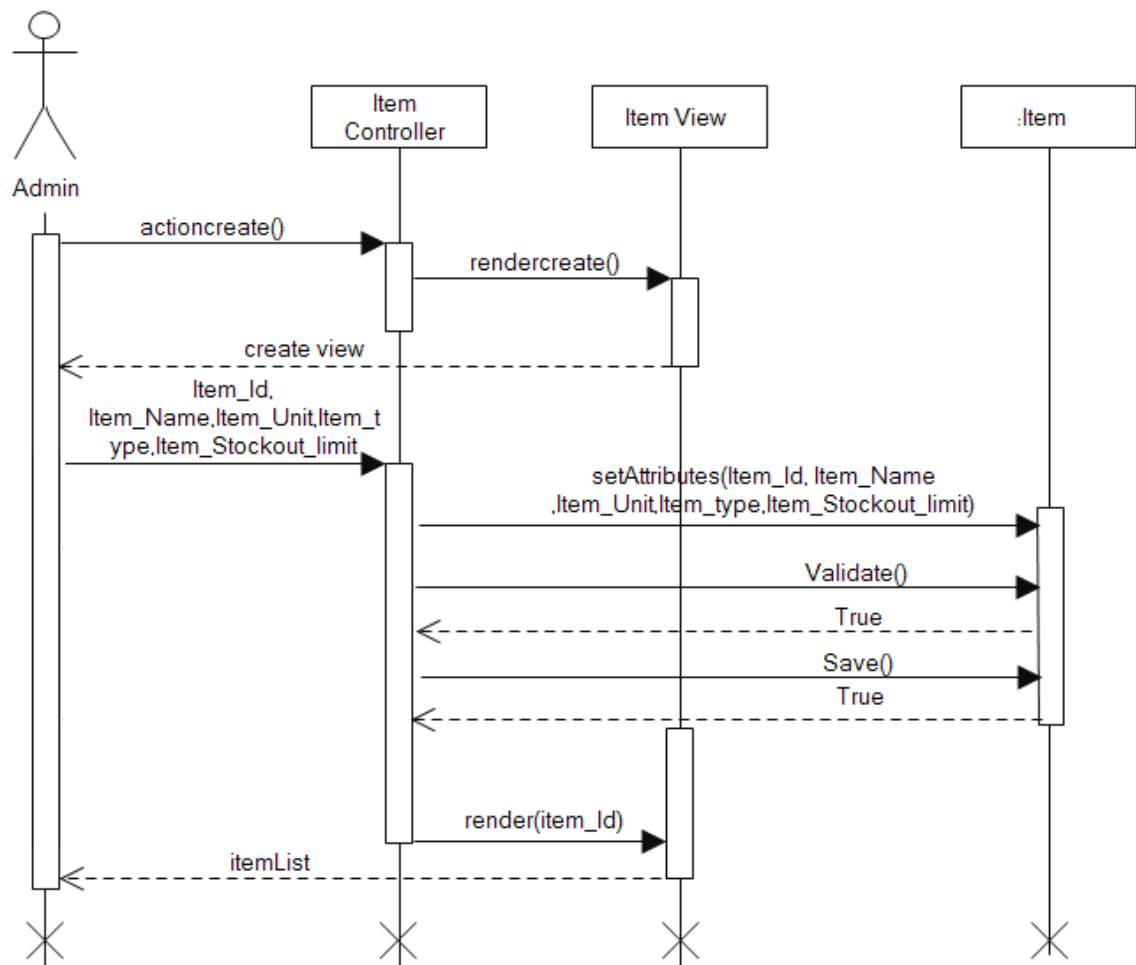**Fig: 4.4 Sequence Diagram (Add Department)**

4.4.2. Add Item

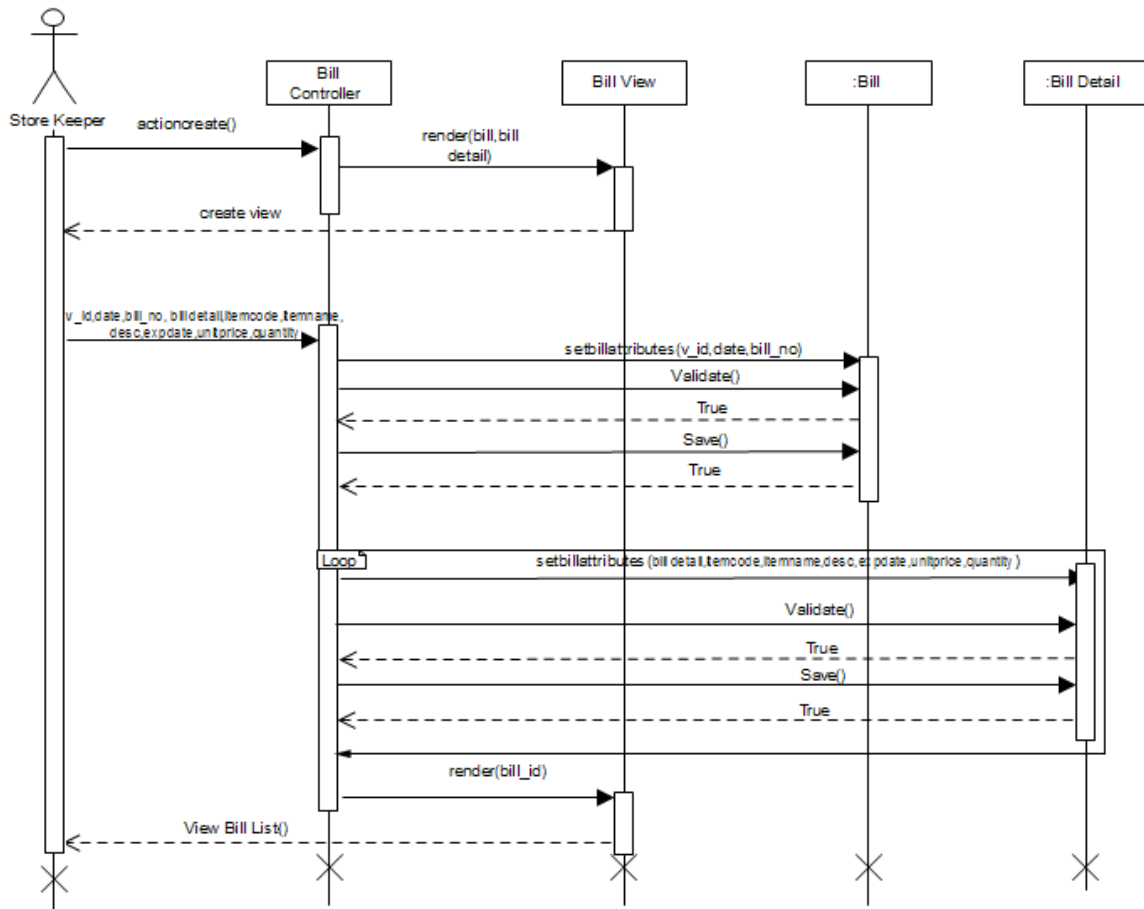**Fig: 4.5 Sequence Diagram (Add Item)**

4.4.3. Add Stock

Fig: 4.6 Sequence Diagram (Add Stock)
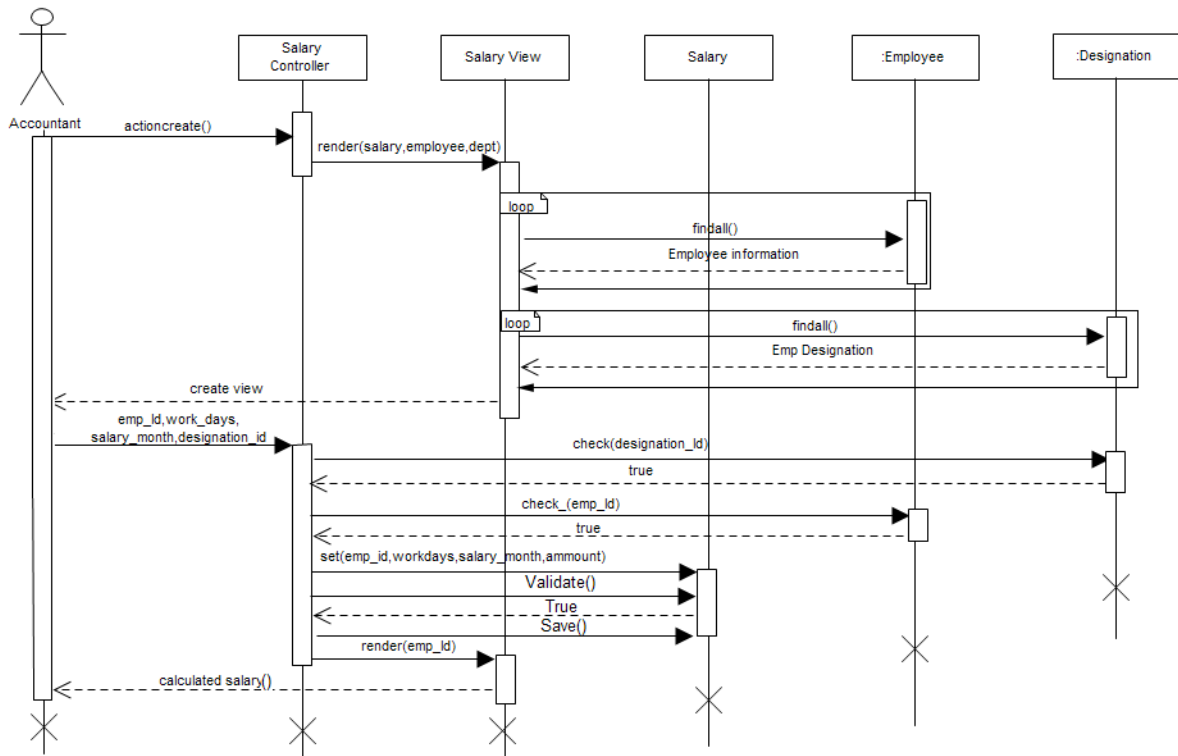
4.4.4. Calculate Salary

Fig: 4.7 Sequence Diagram (Calculate Salary)

4.4.5. **Add Employee**
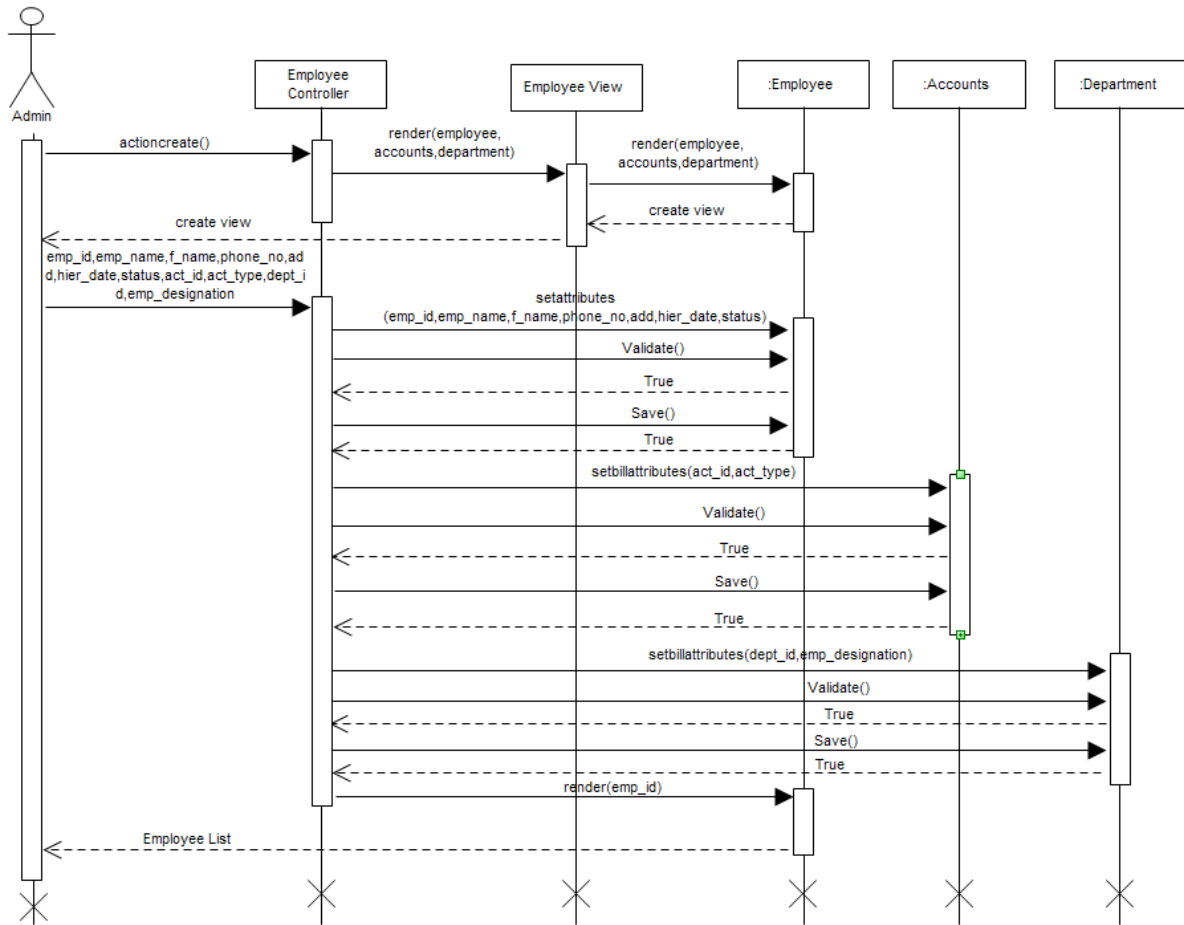
Fig: 4.8 Sequence Diagram (Add Employee)

4.4.6. Issue Stock
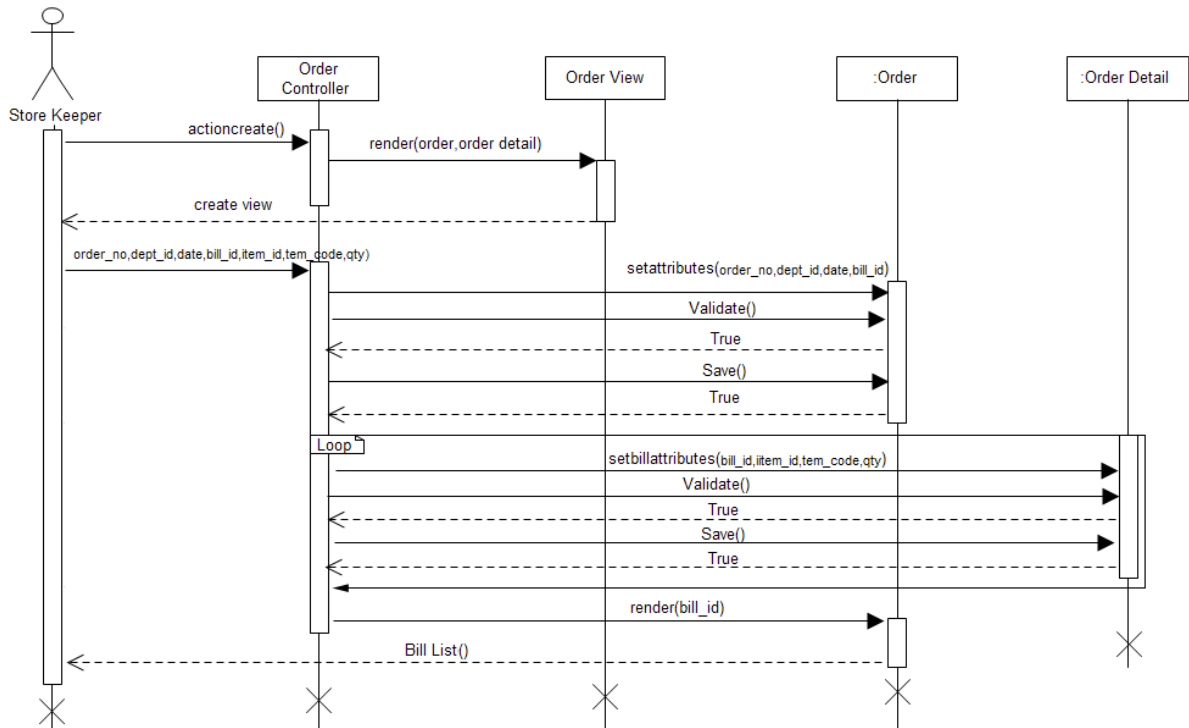
Fig: 4.9 Sequence Diagram (Issue Stock)

4.4.7. Vendor Account Transaction
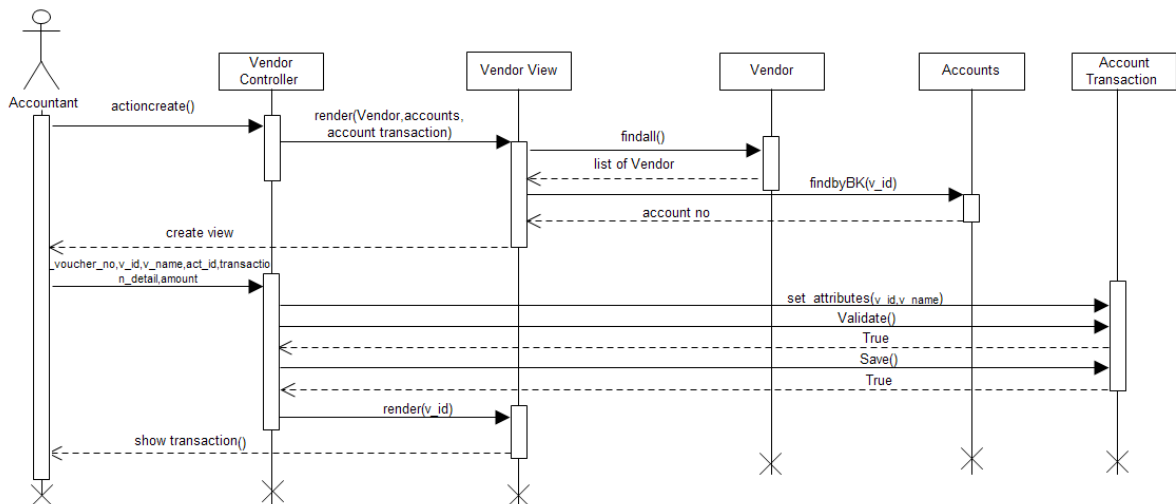
Fig: 4.10 Sequence Diagram (Vendor Account Transaction)

4.4.8. Update Employee
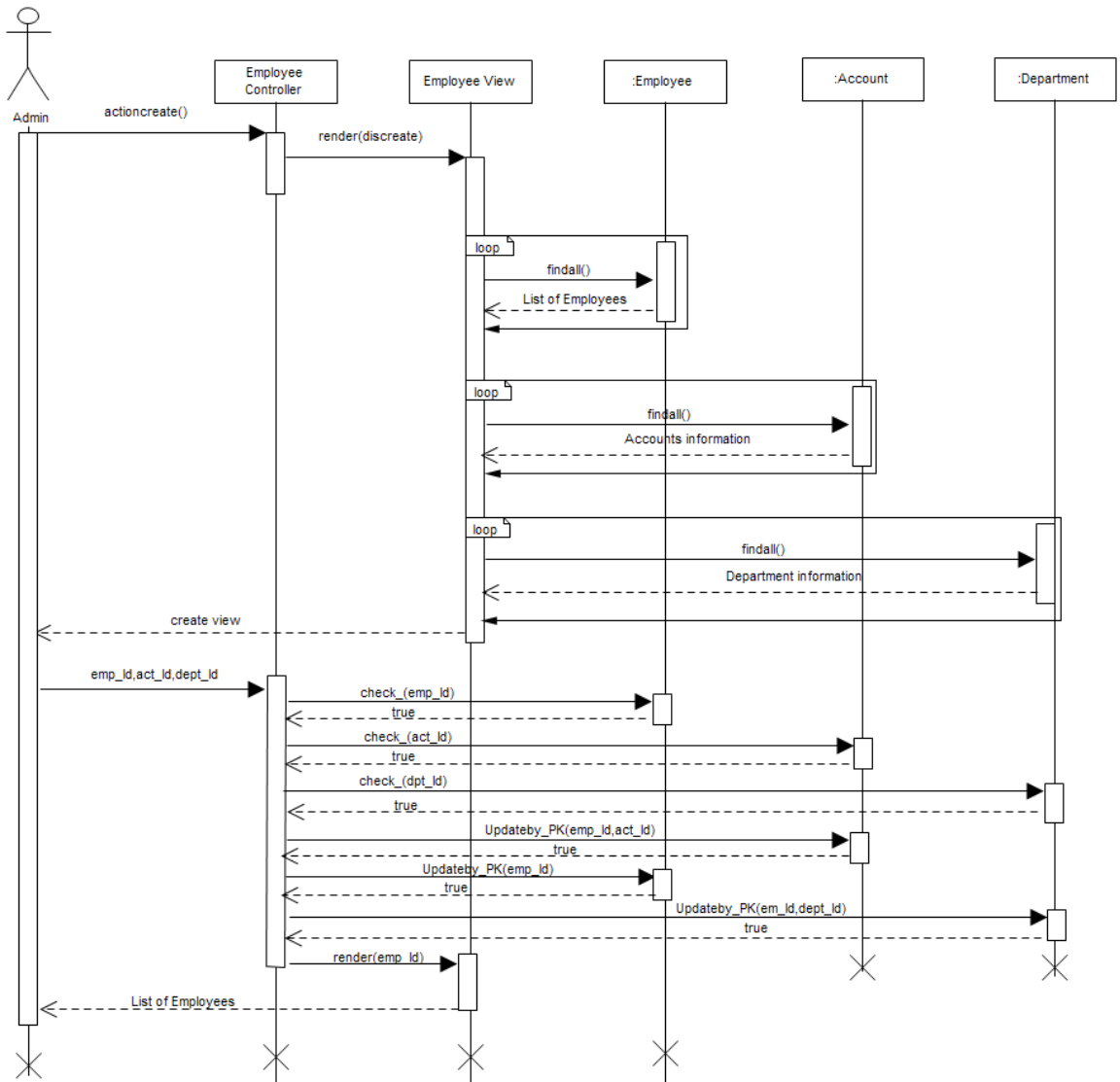
Fig: 4.11 Sequence Diagram (Update Employee)

4.4.9. **Update Item**
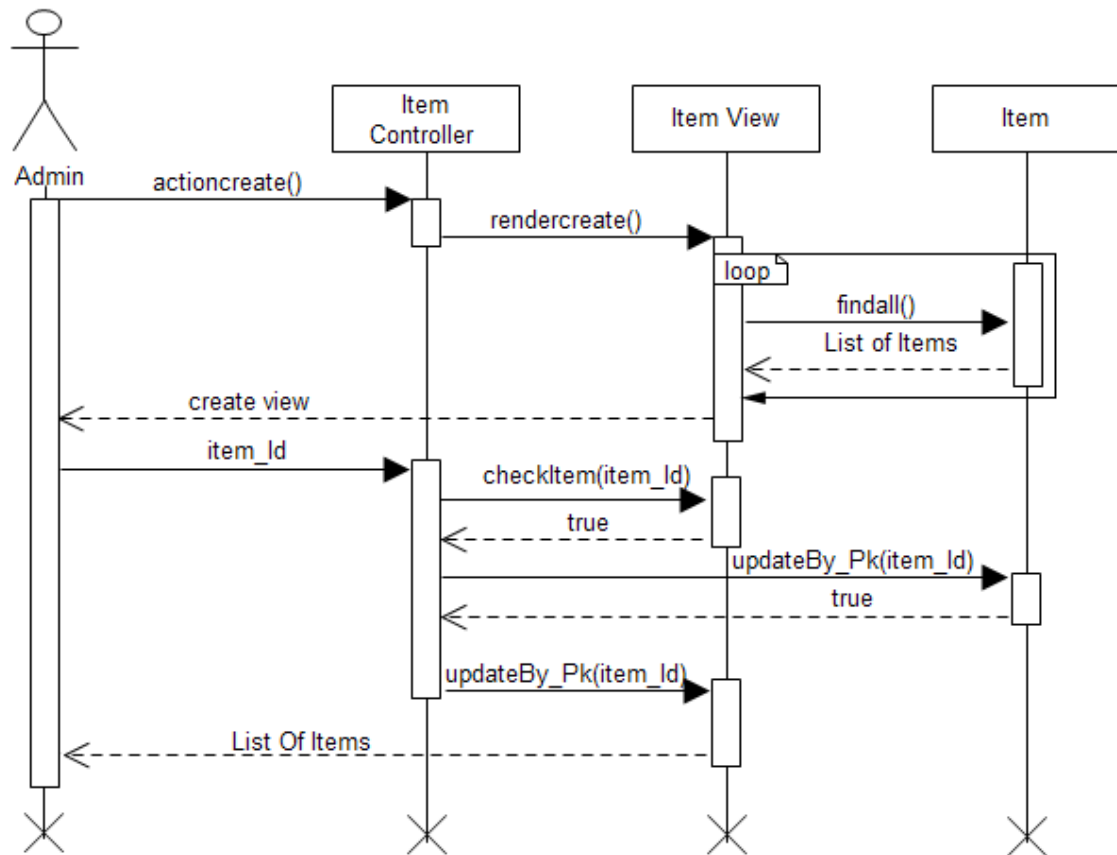
Fig: 4.12 Sequence Diagram (Update Store Item)

4.4.10. Update Vendor
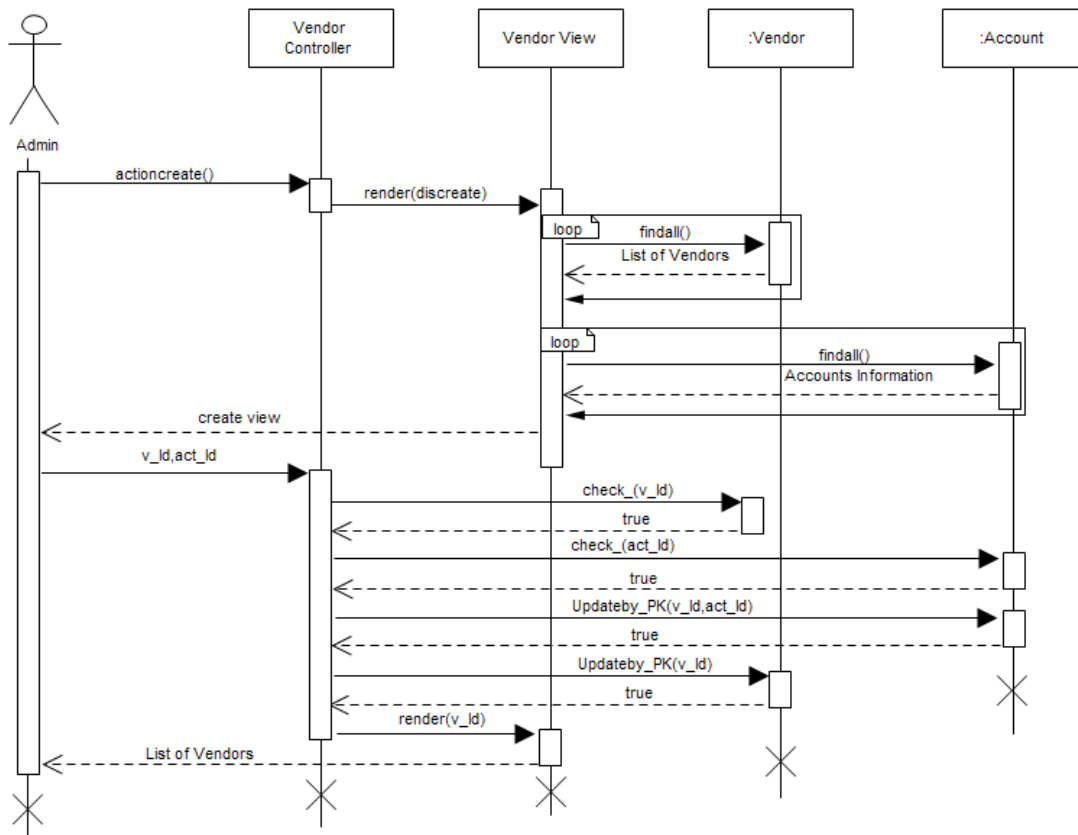
Fig: 4.13 Sequence Diagram (Update Vendor)

4.4.11. **View Employee Account**
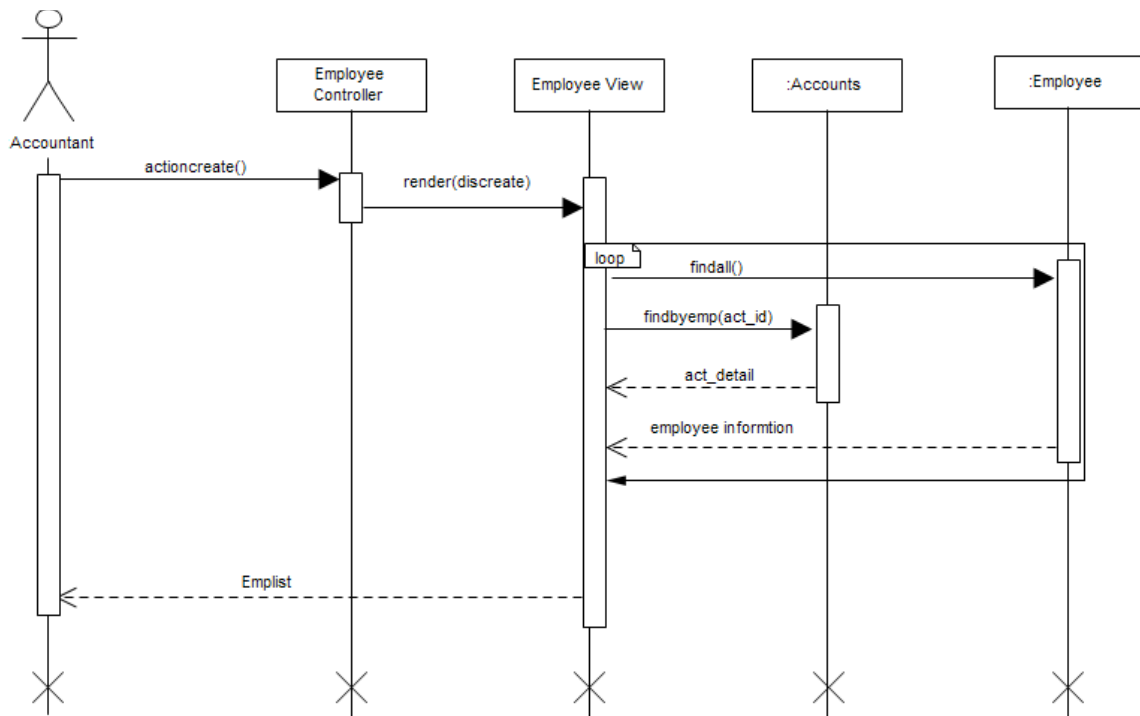
Fig: 4.14 Sequence Diagram (View Employee Account)

4.4.12. **View Store Status**
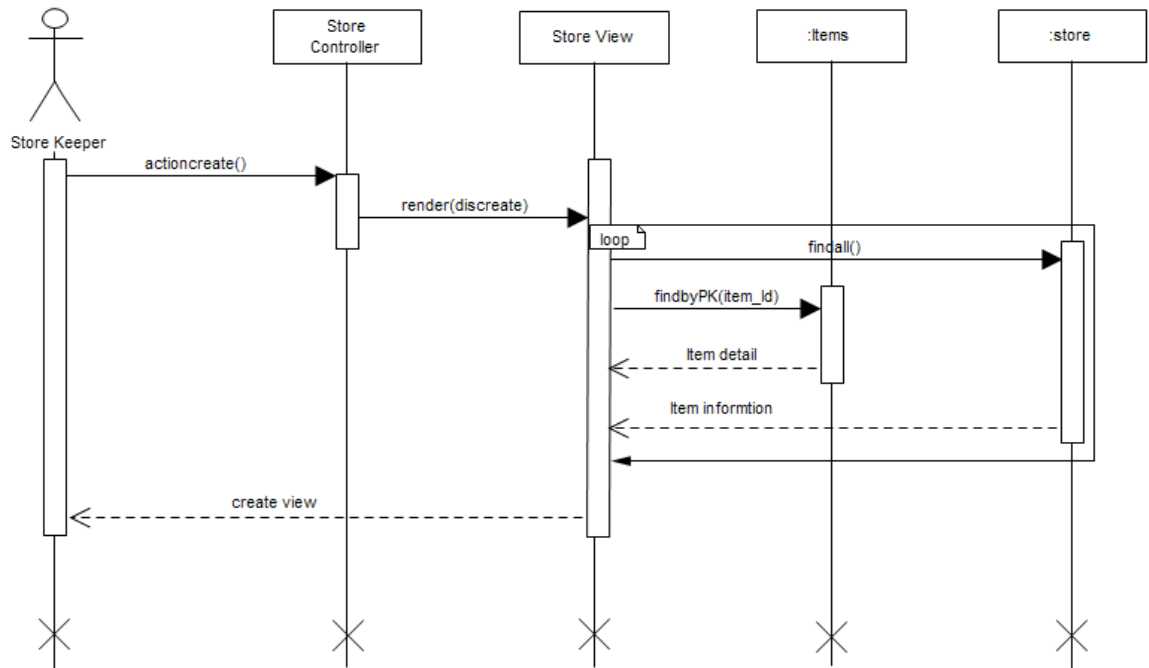
Fig: 4.15 Sequence Diagram (View Store Status)

4.4.13. View Vendor Account
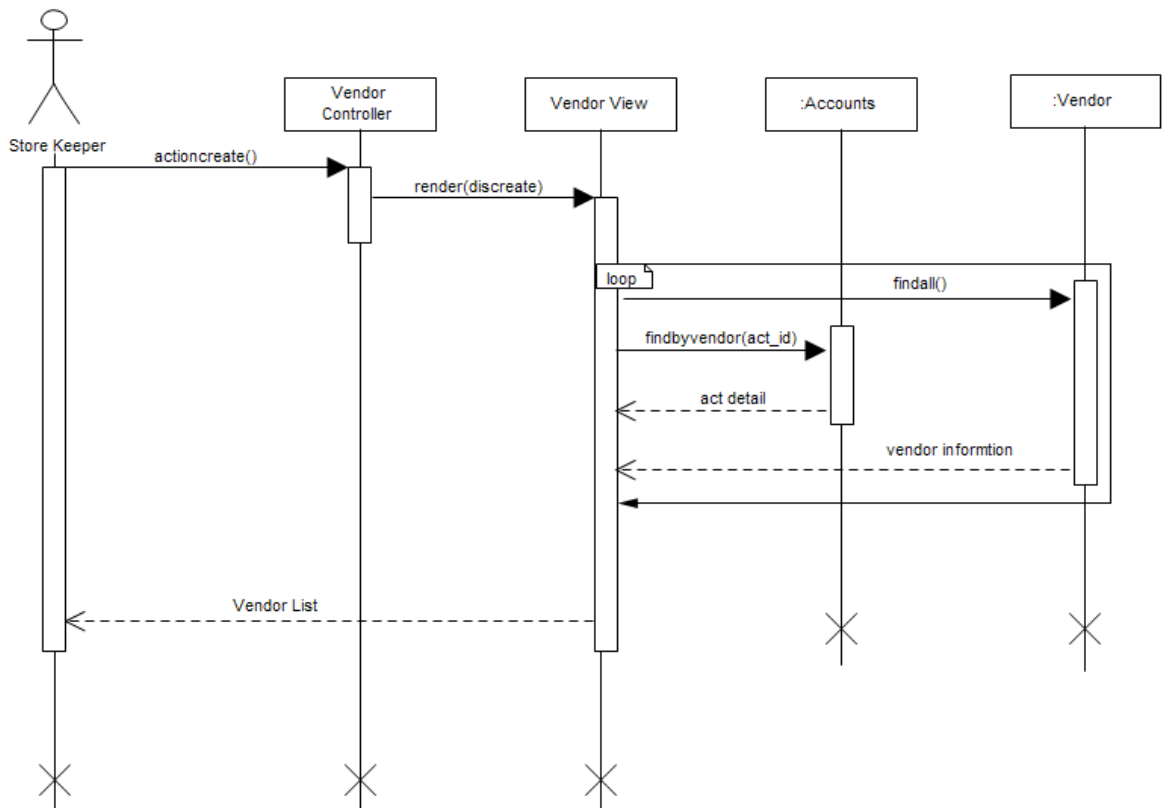
Fig: 4.16 Sequence Diagram (View Vendor Account)

4.5. Class Diagram

In software engineering, a class diagram in Unified Modeling Language (UML) is a sort of static arrangement chart that describes the structure and organization of a system by presenting the system's classes, their attributes, procedure (or operations), and the associations among objects.
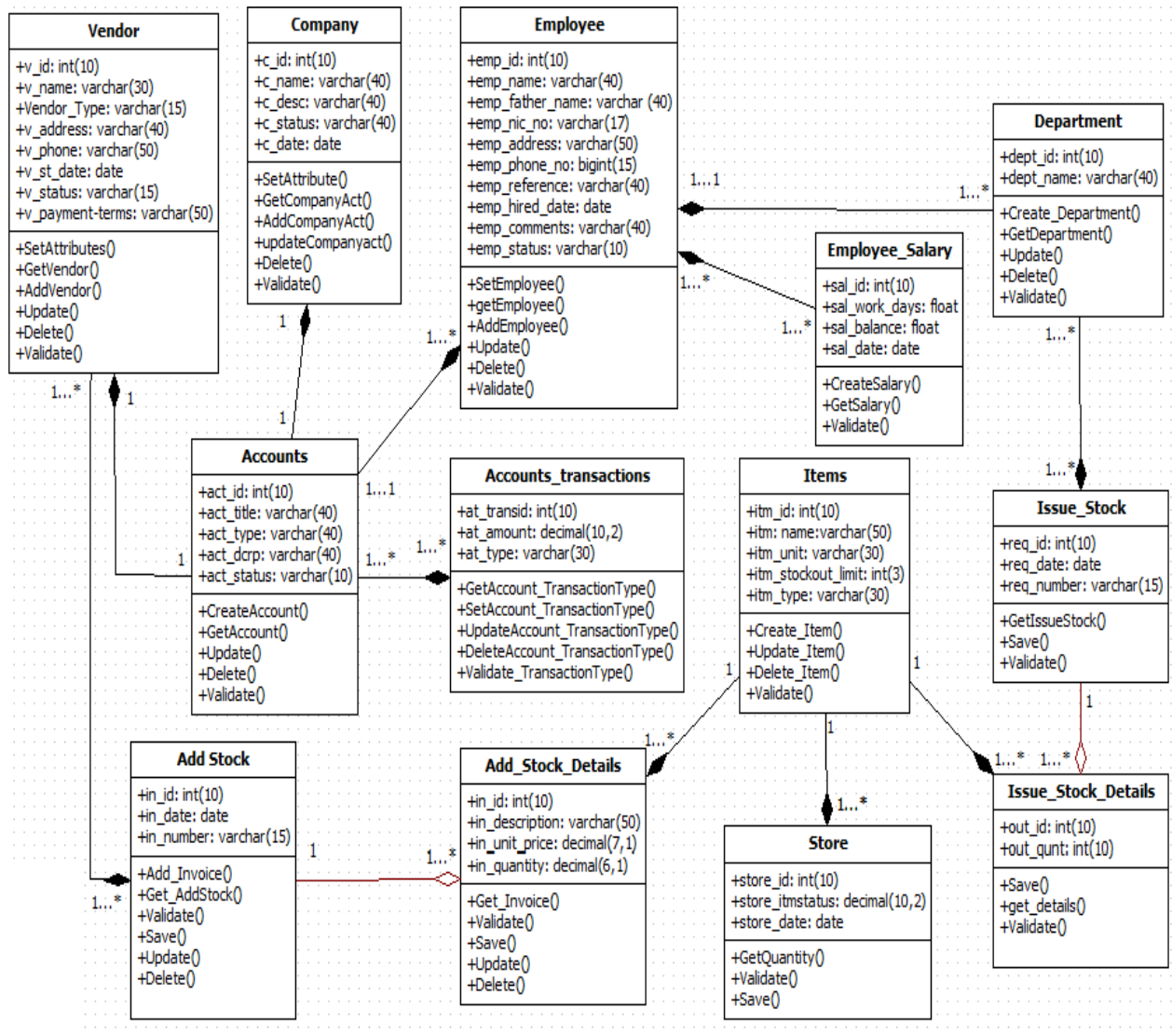
Fig: 4.17 Class Diagram

Chapter # 5

System Implementation

5.1. Language selection

PHP is used for implementing web application. It is an open source server-side scripting language designed for Web development to produce dynamic Web pages. It is one of the first developed server-side scripting languages to be embedded into an HTML source document rather than calling an external file to process data. The code is interpreted by a Web server with a PHP processor module which generates the resulting Web page. PHP can be deployed on most Web servers and on almost every operating system and platform, free of charge. Web application developed in PHP run relatively faster than those developed in other languages like ASP.NET. [4]

5.1.1. CSS

Cascading Style Sheets (CSS) is a style sheet language used to describing the presentation and layout and formatting of a document written in a markup language (HTML). It's most common application is to style web pages written in HTML and XHTML [5].

5.1.2. JavaScript

JavaScript (JS) is an open source client-side scripting language commonly implemented as part of a web browser in order to create enhanced user interfaces and dynamic websites [6].

5.2. Framework selection

Yii (Yes It Is) is MVC based framework for PHP which is used to develop the system. Yii is a free, open-source Web application development framework written in PHP5 that promotes clean design and encourages rapid development. It works to streamline your application development and helps to ensure an extremely efficient, extensible, and maintainable end product. There are a lot of free, open-source extensions and widgets which ensures rapid development.

"Yii implements the model-view-controller (MVC) design pattern, which is widely adopted in Web programming. MVC aims to separate business logic from user interface considerations, so that developers can more easily change each part without affecting the other. In MVC, the model represents the information (the data) and the business rules; the view contains elements of the user interface such as text, form inputs; and the controller manages the communication between the model and the view.

5.2.1. Controller

A controller is an instance of CController or of a class that extends CController. It is created by the application object when the user requests it. When a controller runs, it performs the requested action, which usually brings in the needed models and renders an appropriate

view. An action, in its simplest form, is just a controller class method whose name starts with action.

A controller has a default action. When the user request does not specify which action to execute, the default action will be executed. By default, the default action is named as index.

5.2.2. Model

A model is an instance of CModel or a class that extends CModel. Models are used to keep data and their relevant business rules.

A model represents a single data object. It could be a row in a database table or an html form with user input fields. Each field of the data object is represented by an attribute of the model. The attribute has a label and can be validated against a set of rules.

5.2.3. View

A view has a name which is used to identify the view script file when rendering. The name of a view is the same as the name of its view script. For example, the view name edit refers to a view script named edit.php. To render a view, call CController::render() with the name of the view. The method will look for the corresponding view file." [7]
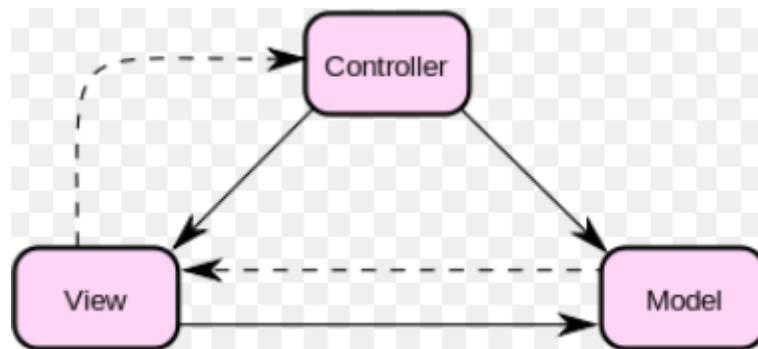
Fig 5.1 Model View Controller [8]

5.3. Software used

Software's that are used in implementing the system are listed

5.4. WAMP

WAMP is a windows web development environment. It allows you to create web applications with Apache2, PHP and a MySQL database. Alongside, PhpMyAdmin allows you to manage easily your Database. [9]

5.5. **Notepad++**

Notepad++ is a source code editor and Notepad replacement that supports several languages. Notepad++ is written in C++ and uses pure Win32 API and STL (Standard Template Library) which ensures a higher execution speed and smaller program size. When using less CPU power, the PC can throttle down and reduce power consumption, resulting in a greener environment.[10]

Chapter # 6

System Testing

6.1. System Testing

System testing contains User Acceptance Test (UAT) specification which is built against use cases stated in Requirement Analysis. Testing is the process of exercising a program with the intention of finding errors prior to delivery to   the end user. Testing may also uncover requirement related issues.

The UAT specification will be helpful to verify requirements finalized in SRS and to check whether all the requirements have been fulfilled or not.

The technique used to test the system is Black box testing, in this type of testing the code is not considered as testing criteria but the inputs and outputs are observed to measure the functionality of system.

6.2.   Test Cases

ID	TC1	TC2
Use case	Login	Login
Username	Admin	-
Password	12345	-
Expected Output	User is logged in	User is not logged in
Actual Output	User is logged in	User is not logged in
OK/NOT OK	Not OK	OK

ID	TC3	TC4
Use case	Add Department	Add Department
Department Name	Kitchen	-
Expected Output	Department With name Kitchen is saved in the system	Error Message
Actual Output	Department With name Kitchen is saved in the system	Error Message
OK/Not OK	Not OK	OK

ID	TC5	TC6
Use case	**Add Store Item**	**Add Store Item**
Item Name	Mutton Keema	-
Item Unit	KG	-
Stock out Limit	25	-
Expected Output	Store Item With name Mutton Keema, Unit KG and Stock out Limit 25 is saved in the system	Error Message
Actual Output	Store Item With name Mutton Keema, Unit KG and Stock out Limit 25 is saved in the system	Error Message
OK/Not OK	Not OK	OK

ID	TC7	TC8
Use case	**Add Stock Item**	**Add Stock Item**
Supplier Name	Abdul Qadir	-
Date	2014-01-27	-
Tracking Number	11	-
Item Code	29	
Item Name	Bar B Q Masala	
Expiry Date	2014-08-15	
Unit Price	85	-
Quantity	10	
Expected Output	Add Stock with the Following information Supplier Name "Abdul Qadir", Date "2014-01-27", Tracking Number "11", Item Code "29", Item name "Bar B Q Masala", Expiry Date "2014-08-15", Unit Price "85" Quantity "10" is saved in the system	Error Message
Actual Output	Add Stock with the Following information Supplier Name "Abdul Qadir", Date "2014-01-27", Tracking Number "11", Item Code "29", Item name "Bar B Q Masala", Expiry Date "2014-08-15", Unit Price "85" Quantity "10" is saved in the system	Error Message
Ok/NotOk	Not OK	OK

ID	TC9	TC10
Use case	**Add Employee Account**	**Add Employee Account**
Name	Muhammad Anwer	-
Father name	Muhammad Saeed	-
CNIC	3189178956739	-
Address	Rawalpindi	-
Phone #	3345536949	-
Department	Accounts	-
Designation	Manager	-
Hired Date	2013-01-23	-
Account Type	Liability, Payable	-
Expected Output	Employee Account with the Following information name "Muhammad Anwer, Father name Muhammad Saeed, CNIC "3189178956739" Address "Rawalpindi" Phone# "3345536949" Department "Accounts", Designation "Manager", Hired Date "2013-01-23" Account Type "Liability, Payable" is saved in the system	Error Message
Actual Output	Employee Account with the Following information name "Muhammad Anwer, Father name Muhammad Saeed, CNIC "3189178956739" Address "Rawalpindi" Phone# "3345536949" Department "Accounts", Designation "Manager", Hired Date "2013-01-23" Account Type "Liability, Payable" is saved in the system	Error Message
OK/Not OK	Not OK	OK

ID	TC11	TC12
Use case	**Add Vendor Account**	**Add Vendor Account**
Name	Ali Naveed	-
Company	Ali Naveed and CO (Rice Supplier)	-
Vendor Type	Inventory Items Supplier	-
Address	Rawalpindi	-
Phone #	03018763080	-
Payment Terms	Net 10	-
Expected Output	Vendor Account with the Following information Name "Ali Naveed", Company "Ali Naveed and CO (Rice Supplier", Vendor Type "Inventory Items Supplier", Address "Rawalpindi", Phone # "03018763080" and Payment Terms "Net 10" is saved in the system	Error Message
Actual Output	Vendor Account with the Following information Name "Ali Naveed", Company "Ali Naveed and CO (Rice Supplier", Vendor Type "Inventory Items Supplier", Address "Rawalpindi", Phone # "03018763080" and Payment Terms "Net 10" is saved in the system	Error Message
OK/Not OK	Not OK	OK

ID	TC13	TC14
Use case	**Employee Search**	**Employee Search**
Employee Acct#	75	-
Expected Output	Employee account # 75 with following information's Name, Father Name, Address, CNIC, Address, Hired Date, Available Balance and detail of Transactions with date, voucher # and Amount displayed.	Error Message
Actual Output	Employee account # 75 with following information's Name, Father Name, Address, CNIC, Address, Hired Date, Available Balance and detail of Transactions with date, voucher # and Amount displayed.	Error Message
OK/Not OK	Not OK	OK

ID	TC15	TC16
Use case	**Add Company Account**	**Add Company Account**
Name	Gass Bill	-
Account Type	Expense	-
Child Of	Utility Bill	-
Description	Monthly Bill	-
Expected Output	Company Account with the Following information Name "Gas Bill", Account Type "Expense", Child of "Utility Bill", Description "Monthly Bill" is saved in the system	Error Message
Actual Output	Company Account with the Following information Name "Gas Bill", Account Type "Expense", Child of "Utility Bill", Description "Monthly Bill" is saved in the system	Error Message
OK/Not OK	Not OK	OK

ID	TC17	TC18
Use case	Issue Stock Item	Issue Stock Item
Department Name	Bar B Q	-
Date	2014-01-27	-
Tracking Number	86	-
Item Code	13	
Quantity	10	
Expected Output	Issue Stock with the Following information Department Name "Bar B Q", Date "2014-01-27", Tracking Number "86", Item Code "13", Quantity "10" Stock issued successfully.	Error Message
Actual Output	Issue Stock with the Following information Department Name "Bar B Q", Date "2014-01-27", Tracking Number "86", Item Code "13", Quantity "10" Stock issued successfully.	Error Message
Status	Not OK	OK

ID	TC19	TC20
Use case	Search Invoice	Search Invoice
Invoice #	10	-
Expected Output	Invoice 10 With Supplier name date and also detail of that invoice displayed.	Error Message
Actual Output	Invoice 10 With Supplier name date and also detail of that invoice displayed.	Error Message
OK/Not OK	Not OK	OK

ID	TC21	TC22
Use case	Update Employee Account	Update Employee Account
Name	Muhammad Anwer	-
Father name	Muhammad Saeed	-
CNIC	3189178956739	-
Address	Islamabad	-
Phone #	03423808788	-
Department	Accounts	-
Designation	Manager	-
Expected Output	Employee Account with the Following information name "Muhammad Anwer, Father name Muhammad Saeed, CNIC "3189178956739" Address "Rawalpindi" Phone# "3345536949" Department "Accounts", Designation "Manager", has been Updated Successfully	Error Message
Actual Output	Employee Account with the Following information name "Muhammad Anwer, Father name Muhammad Saeed, CNIC "3189178956739" Address "Rawalpindi" Phone# "3345536949" Department "Accounts", Designation "Manager", has been Updated Successfully	Error Message
OK/Not OK	Not OK	OK

ID	TC23	TC24
Use case	Update Vendor Account	Update Vendor Account
Name	Ali Naveed	-
Company	Ali Naveed and CO (Rice Supplier)	-
Vendor Type	Inventory Items Supplier	-
Address	Raja Bazar Rawalpindi	-
Phone #	03068763080	-
Payment Terms	Net 7	-
Expected Output	Vendor Account with the Following information Name "Ali Naveed", Company "Ali Naveed and CO (Rice Supplier", Vendor Type "Inventory Items Supplier", Address "Raja Bazar Rawalpindi", Phone # "03068763080" and Payment Terms "Net 7" has been updated successfully.	Error Message
Actual Output	Vendor Account with the Following information Name "Ali Naveed", Company "Ali Naveed and CO (Rice Supplier", Vendor Type "Inventory Items Supplier", Address "Raja Bazar Rawalpindi", Phone # "03068763080" and Payment Terms "Net 7" has been updated successfully.	Error Message
OK/Not OK	Not OK	OK

ID	TC25	TC26
Use case	Update Store Item	Update Store Item
Item Name	Mutton Keema (Kabab)	-
Item Unit	KG	-
Stock out Limit	20	-
Expected Output	Store Item With name "Mutton Keema (kabab)", Unit "KG" and Stock out Limit "20" is Updated Successfully	Error Message
Actual Output	Store Item With name "Mutton Keema (kabab)", Unit "KG" and Stock out Limit "20" is Updated Successfully	Error Message
OK/Not OK	Not OK	OK

Summary

7.1. Conclusions

AIMS (Accounts and Inventory Management System) will provide all accounting transactions of company whether vendors or employees along with the other ledgers and reports like income statement. It will also keep record of the inventory in/out transactions and related departments.

AIMS also alert users for the items reaching their expiry date, and it will also inform about those items which are running out of stock. It also notify user about the due payments of vendors.

AIMS provide hand on search facility of employees and vendor ledgers. It will be used by Business Owners, Accountants and Storekeepers as per their ease.

7.2. Future Enhancements

1. Mostly in Pakistan the businessmen and the employees are not much skilled and trained and to cope with this, the system will be provided in URDU language accompanied with English language, so that it will be made more effective and useable in typical Pakistani environment.

2. Reporting will be transformed into android environment so that the owner receives alerts about the business transactions and can remain in touch with his business status at real time.

3. The system will be synchronized with another existing System (Point of Sale) of the organization.

4. This module of AIMS will be further enhanced to become ERP (Enterprise Resource Planning) Software.

References

[1] http://en.wikipedia.org/wiki/Use-case_analysis

[2] Pressman, WE 2009

[3] http://en.wikipedia.org/wiki/Sequence_diagram

[4] http://en.wikipedia.org/wiki/PHP

[5] http://en.wikipedia.org/wiki/CSs

[6]http://en.wikipedia.org/wiki/JavaScript

 [7] www.nishta.in/technologies/open-source-technologies/yii

[8] http://mn.wikipedia.org/wiki/Model_View_Controller

[9] www.wampserver.com/en/

[10] http://en.wikipedia.org/wiki/Notepad