Final Year Project Report

"Supply Chain Management System"

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Acknowledgement:

First of all, we thank Almighty Allah who praise us with the ability to think, work and deliver what we are assigned to do. Secondly, we must be grateful to our Dean Mr. Kamran Raza, our Project supervisor and Project Cordinator Mr. Syed Hasan Adil for whom we are deeply grateful, who helped us, his never-ending support, patience and guidance and constant encouragement has become our motivation throughout this project. We consider ourselves very fortunate for being able to work with him. In depth discussions on various research and experiences we acquire by him, grow our knowledge and presented a better approach to complete our project.

Project Objective

Point of Sale Web Portal is designed to help small businesses in keeping track of inventory, customers, suppliers, employees, sales and receiving in order to generate reports for each of them.

We expect that our system would be user friendly, efficient and simple to use sales interface. It could start processing of sales just within seconds; it enables fast execution and response.

Our system facilitates reporting mechanism that makes easy to keep track of anything in the system such as information of employees, customers, suppliers, inventory items and stock available or sales and receiving transactions on particular date, month or overall analysis at real time.

Scope of the Project

The scope of our project intends to facilitate businesses by providing an automated system through maintaining their accounting transactions and other details in computerized, systematized and correlate retail information. It provides with ease man power and reduces chances of human errors.

Our POS system will gather, store and return detailed reports on inventory trends, suppliers, employee and customer information along with tracking records of sales and receiving in the business.

Problem Statement &Solution

Statement:

According to the survey done most of the businesses are facing the same issue, among those owe are taking the example of one. Currently super technical Company facing lot of issues relating to its technology and its integration with in the current operations which they are performing for running their business. The core issues they are facing related to an insufficient inventory management system, poor store to store communication regarding items inventory and as well as no data about the customers and vendors. No record of sales order.

This report analysis the main issues highlighted by reviewing the information provided by Super Technical and applying relevant business Analysis technique in order to deliver a solution the address the core issues and enhance the effectiveness of Super Technical .

Solution:

The created solutions in this report were essentially designed and created in order to overcome deficiencies in the existing Super Technical operations. The solutions themselves address the problems at hand and also provide a basis for better customer service and efficiency in the future.

This involves the creation of data flow diagram to show the flow of data within the system, sequence diagram to illustrate the process with in the system, use case to show the key user and how they will interact with the system and perform their activities. The specification of this system includes both functional and non-functional requirements. In this way these requirements seems useful and we build a system for resolving problems for many businesses.

Achievements:

- Automated system
- Reports enable tracking of transaction and information of business stakeholders
- Establishing summary reports for each of the entity through date or particular month
- Maintain sales and receiving and gives you item price directly with item name and finally total amount

Chapter 1. Introduction

Point of Sale Web Portal is designed to help small businesses in keeping track of inventory, customers, suppliers, employees, sales and receiving in order to generate reports for each of them. We expect that our system would be user friendly, efficient and simple to use sales interface. It could start processing of sales just within seconds; it enables fast execution and response.

1.1 Purpose

Our system facilitates reporting mechanism that makes easy to keep track of anything in the system such as information of employees, customers, suppliers, inventory items and stock available or sales and receiving transactions on particular date, month or overall analysis at real time.

1.2 Product Scope

The scope of our project intends to facilitate businesses by providing an automated system through maintaining their accounting transactions and other details in computerized, systematized and correlate retail information. It provides with ease man power and reduces chances of human errors.

Our POS system will gather, store and return detailed reports on inventory trends, suppliers, employee and customer information along with tracking records of sales and receiving in the business.

Chapter 2. Overall System Description And Requirements

2.1 Project Perspective

The POS and accounting management System is a web based user friendly system. It track record and transactions of the business.

2.2 Project Functions

The POS and Accounting Management System is a web based system which allows business to track their accounting transactions and records of complete information of their stakeholders, the system generates summary reports and are able to view transaction reports at particular date month or year.

2.3 Software Requirement:

2.3.1 Client Side Requirement:

- HTML5, CSS3, JavaScript supported Browsers (Any Platform (Windows, Linux, Mac, Smartphones)).
- Build on MVC framework at codeignitor platform of PHP.

2.3.2 Server Side Requirement:

- Web Hosting supporting PHP Version 5.4.16 and MySQLVersion5.6.12.

2.4 Development Environment:

1. Windows 7 Ultimate.
2. Adode Dreamweaver CC 13.
3. Notepad++.
4. Wamp Server 2.4.
5. PHP Version 5.4.16.
6. MySQL Version 5.6.12.
7. SQL Yog.
8. EDraw.
9. Mysql Workbench.

2.5 Users Type and there Characteristics:

2.5.1 Administrator:

The Administrator will be able to perform the following tasks:

- Manage other employee rights and assign them their required modules display.
- Add customers and supplier details and records and view their information when necessary.
- Has complete control over system
- Add, update, delete; employee, customer, supplier, sales, receiving, inventory items and stock.
- Able to generate reports or view summary reports.
- Able to give rights to reliable employees to login into the system and can add sales, receiving, and view reports, to reduce admin responsibility or any particular forms to be displayed to them.
- Maintain business transactions

2.5.2 Customer:

The Customers will be able to view the products and their prizes through our android application anywhere online and can estimate total amount they need to have for buying certain items.

2.5.3 Supplier:

Suppliers will have no interference in the system just the admin will keep record and details of them, in case of sending orders or complain about their products.

2.5.4 Employee:

Employee will work according to their given rights that will be provided through administrator.
Employee records and detail are kept in the system. Admin can give access rights to each employee.
Each employee will have their login id and password to access the system through their accounts. They can't access them directly.

Chapter 3. SDLC Methodology

System Lifecycle deals with the fulfillment of requirements and falls under the umbrella of Project Lifecycle that deals with all the activities required to complete a project.

3.1 Block diagram:

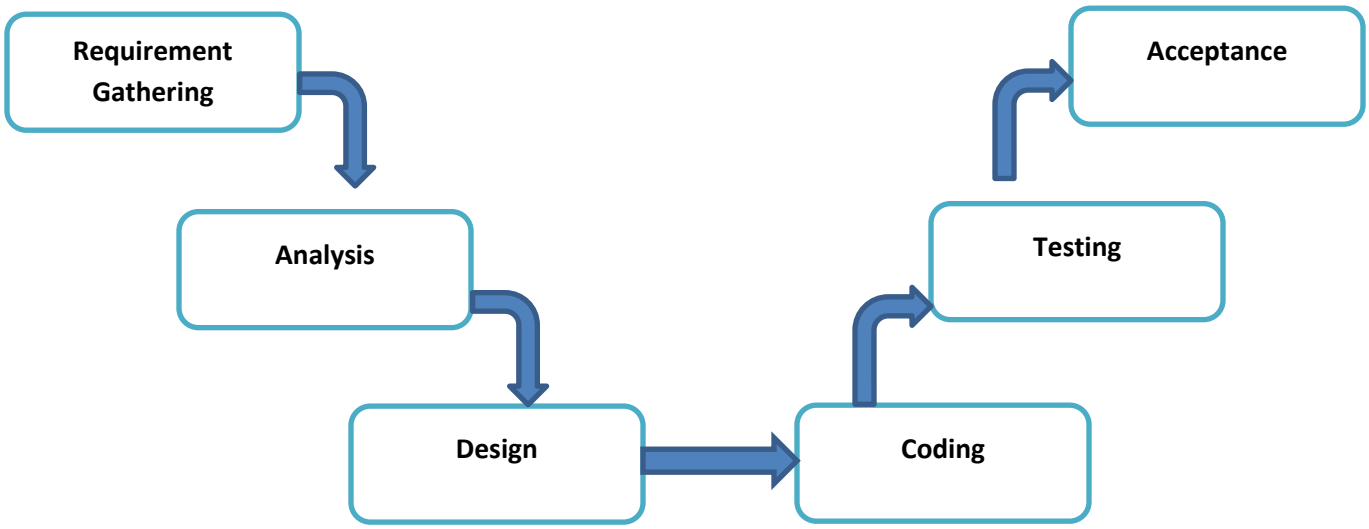


Figure 1 - SDLC Block Diagram

What above mentioned block meant?

- **Requirement Gathering:**

  This phase will be completed when all the data collected from different businesses through all means that we need to require for our system.

- **Analysis:**

All the data collected will be reviewed and hands on manual system will be prior responsibility because new system can work perfectly if the existing system was working properly, regardless of the fact of being a computerized or a manual one.

- **Design:**

Design will include the database which will be storing the information of each student; in short student database will be maintained. Moreover, User Interface will be the part of this phase.

- **Coding:**

This part will include the hands on to the implementation. Database will be designed for which Sql or MySQL database will be used, records of students and teacher will be fed and ERD will be established. User Interface part will include the language PHP and all forms will be design and will be attached to the database.

- **Testing:**

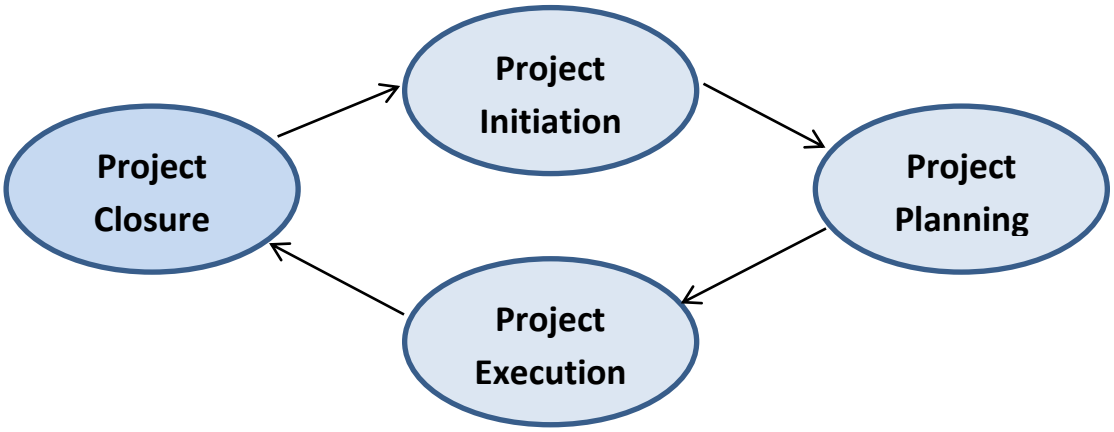
Testing which will ensure that the system coded is working according to the scope set during the analysis phase.

- **Acceptance:**

After successful completion of every phase, this project will get accepted if it can run in one department.

3.2 Project Lifecycle

Project lifecycle consists of events which are mandatory to finish a project. It describes the logical sequence which should be followed in order to satisfy project scope.



3.2.1 **Initiation:**

- Feasibility Study: This part will help to come across technical, operational and scheduling feasibility of the project.
- Project Charter: This part will be consisting of identifying project objectives and scope, customers and stakeholders, key roles and responsibilities of stakeholders, listing all the risks involved in this project.

3.2.2 **Planning:**

- Project Plan: This part will consist of identifying all the phases, activities, write-up of all the inter-dependencies of the project and list of constraints.
- Resource Plan: Among 3 group member this part will help in dividing the tasks of the project.
- Quality Plan: Measures which should be taken in order to assure the quality of the project.
- Risk Plan: Listing all the high and low level risks.
- Acceptance Plan: This part will help us to make quality of the project strong by identifying the users who will be testing this application for acceptance.
- Communications Plan: This plan will help all 3 group members to communicate according to the plan to avoid and false and disturbed communication which could affect the project completion.
- Procurement Plan: This plan will identify list of gadgets needed to complete this project.

3.2.3 **Execution:**

- Build Deliverables: This phase will be dealing with implementation of the project.
- Monitor and Control: This part will be carrying the tasks of performing time management, risk management, change management, quality management, procurement management, acceptance management and communications management.

3.2.4 **Closure:**

- Review Project Completion: Checking the final deliverable with the scope of the project, reviewing the project with the schedules proposed in the start of the project and deciding the final outcome of the project.

Chapter 4. Design

4.1 Use Case Design:

Guidelines for interpretation of Use Cases

This section provides a description of each section in the Final Year Project and Thesis Management System use cases.

Use Case Identification

Use Case Name

A concise, results-oriented name for the use case is stated. These reflect the tasks the user needs to be able to accomplish using the system.

Use Case ID

A unique identifier, in hierarchical form: INITIALX for each use case (i.e. initials of the use case type followed by the number).

Use Case Definition

Preconditions

The list of activities that must take place or any conditions that must be true, before the use case can be started. Each precondition is numbered.

Post Conditions

The list of activities that would have taken place or any conditions that must be true, after the use case is completed. Each post condition is numbered.

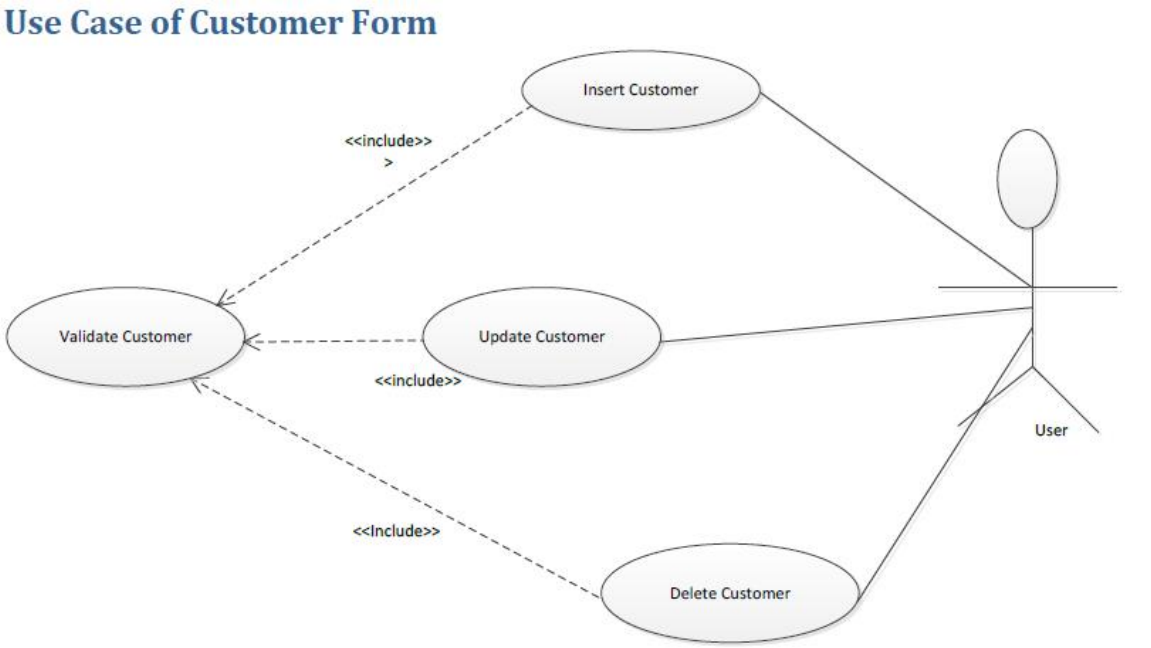
Actors

An actor is a person or other entity external to the software system being specified who interacts with the system and performs use cases to accomplish tasks. Different actors often correspond to different user classes, or roles, identified from the customer community that will use the product. The names of the actor(s) that will be performing this use case are specified here.

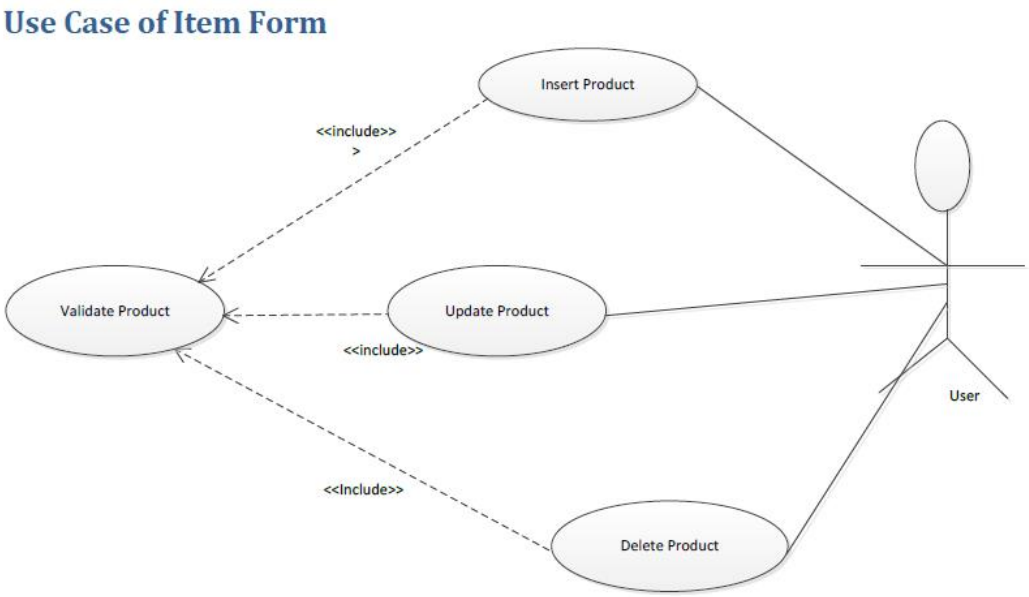
Description

Provides a detailed description of the user actions and system responses which will take place during execution of the use case under normal, expected conditions. This dialog sequence will ultimately lead to accomplishing the goal stated in the use case name and description. Usually, it is best done as a numbered list of actions performed by the actor, alternating with responses provided by the system.

4.1.1

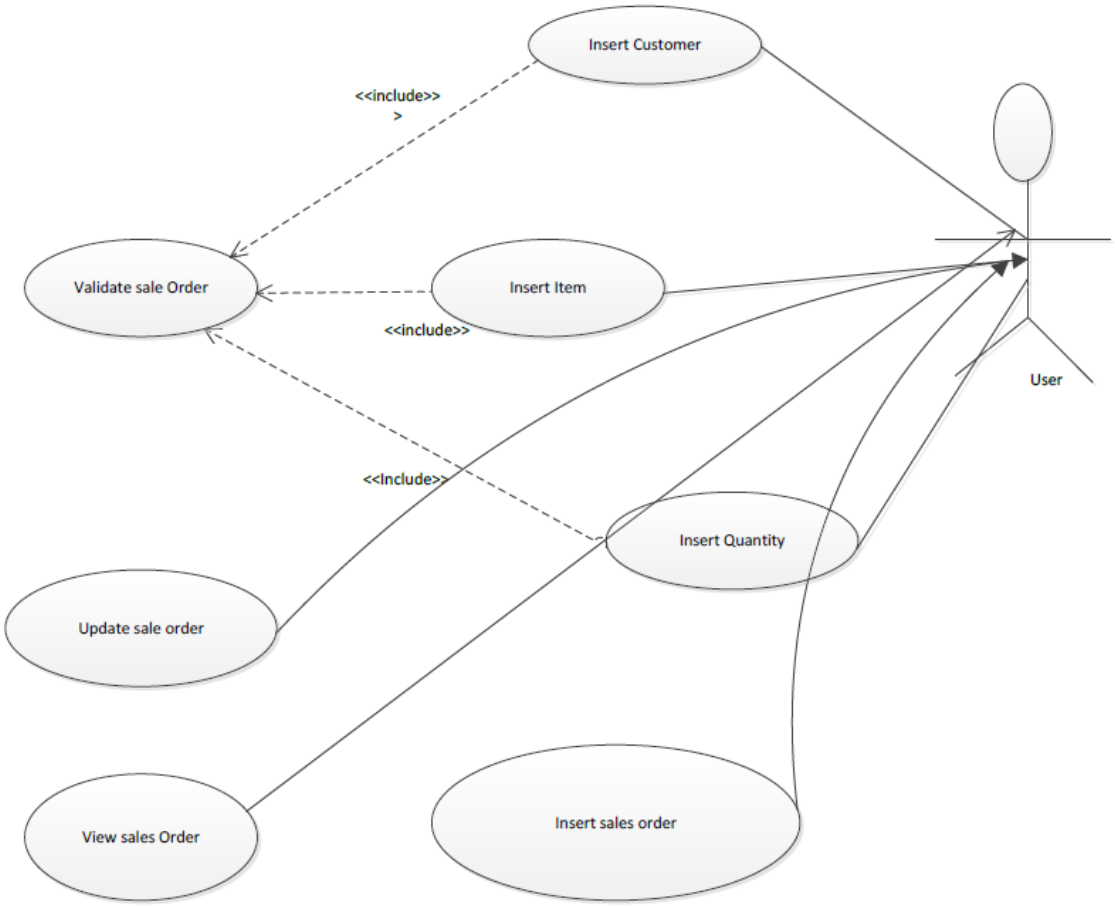

Use Case of Customer Form
Insert Customer
<<include>>
>
Validate Customer
Update Customer
<<include>>
User
<<Include>>
Delete Customer

4.1.2

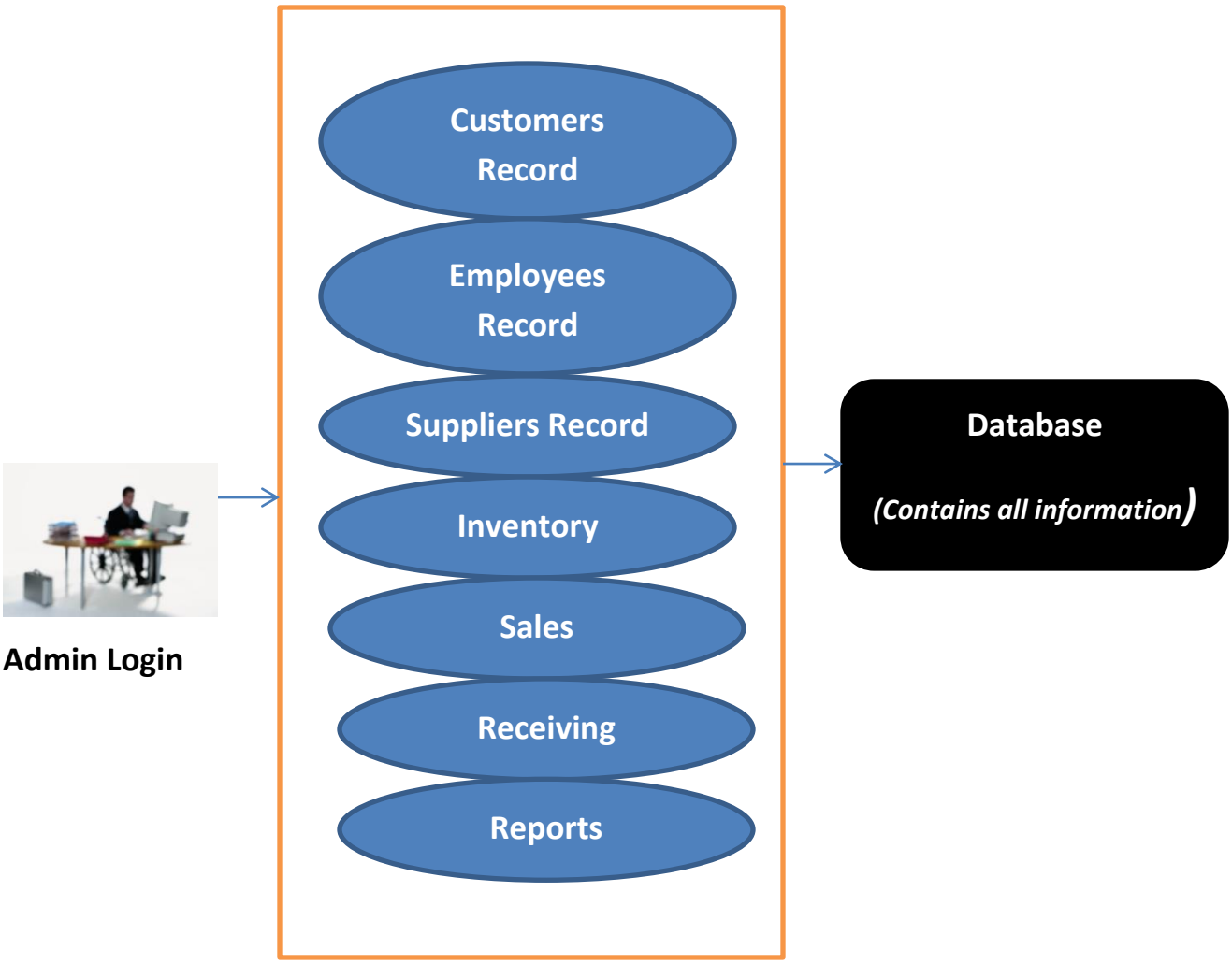

Use Case of Item Form
Insert Product
<<include>>
>
Validate Product
Update Product
<<include>>
User
<<Include>>
Delete Product

4.1.3

Use Case of sale Order Form



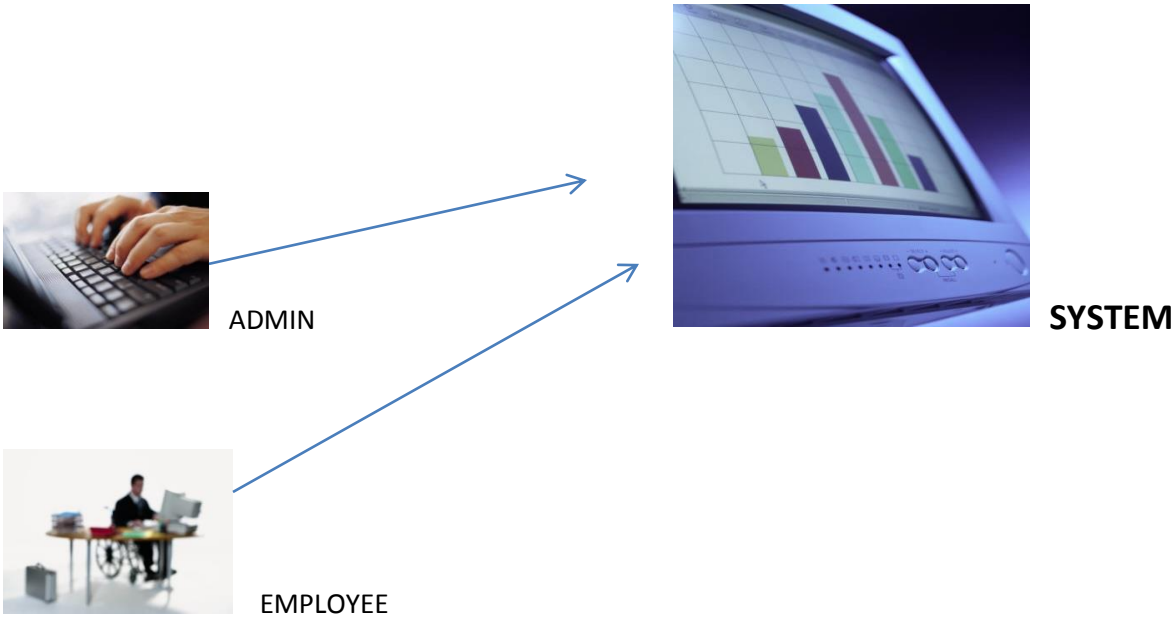
4.1.4 Admin use case diagram



4.1.5 **Use case of Administrator**

Use Case Name:	View, add, update, delete any entity in the system.	
ID:	02	
Actors Involved:	Administrator	
Brief Description	Administrator can view, add, update, and delete any entity in the system.	
Pre-Conditions	01	
Post-Conditions	New Teacher is added into the system	
Normal Flow of Events:	**Actor Action**	**System Response**
	Administrator clicks the Add Employee or Add customer button. Click the submit button.	The employee/customer is saved in the database with its description. Record complete.

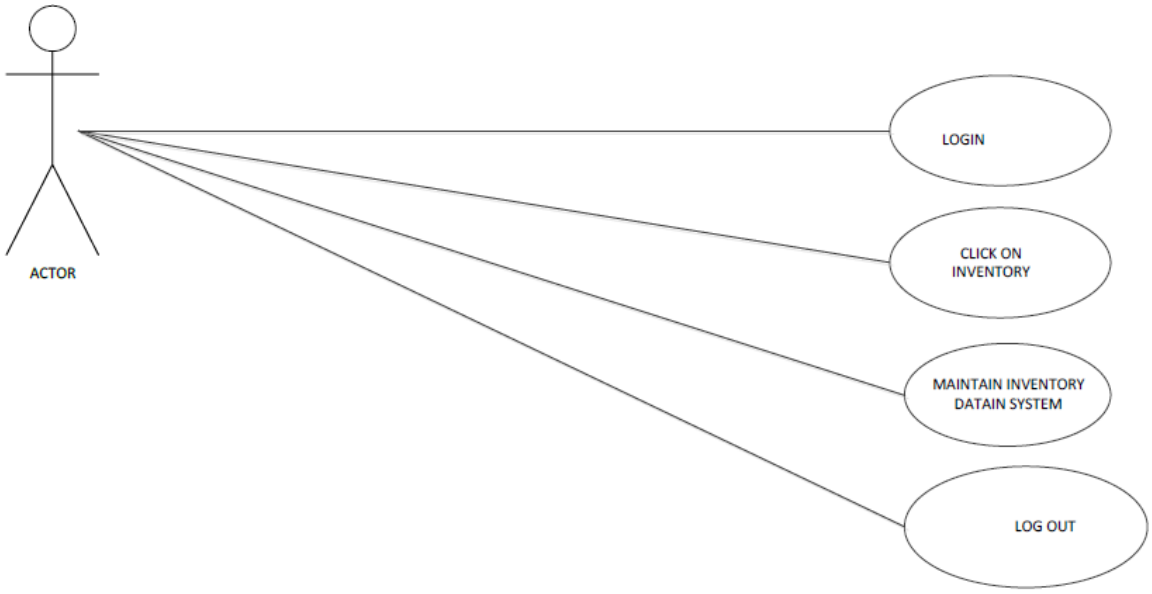
4.1.6 **Login**



4.1.7 Use case of login into the system

Use Case Name:	Login to system	
ID:	01	
Actors Involved:	Administrator, Employee	
Brief Description:	Actor enters the email address and password to login to the system.	
Pre-Conditions:	If employee has provided the right of login by an administrator.	
Post-Conditions:		
Normal Flow of Events:	**Actor Action**	**System Response**
	Enter email address and password. Clicks the submit button.	System displays the actor mail page on successful login. System displays error message on invalid login.

4.1.8 Use Case of Inventory

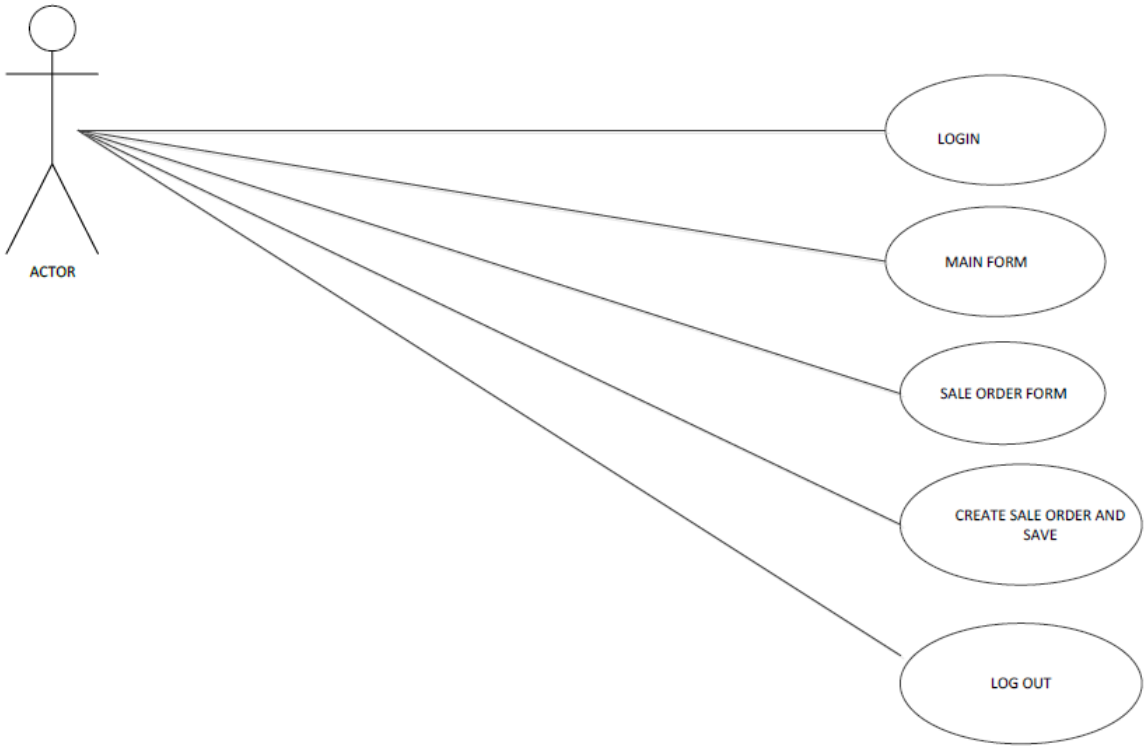


4.1.9 **Extended Use Cases**

This use case begins at the time of item sales. The sales staff processes the sales.	
	User will login in to the system.
User will enter valid id or pass word for login in to the system for performing required task.	
	Validates login and if id and pass word will correct then it will open new window with menu options. And if user enters wrong id and password then system will throw a message to user that please enter valid pass word for access.
User / actor will select item from the list.	
	Matches the item id to supplier.
Actor enter the inventory of purchases items	
	System will update the related item stock.
Actor after performing whole process then logs out/ exit from the system.	

4.1.10

Sale Order – Use Case Diagram



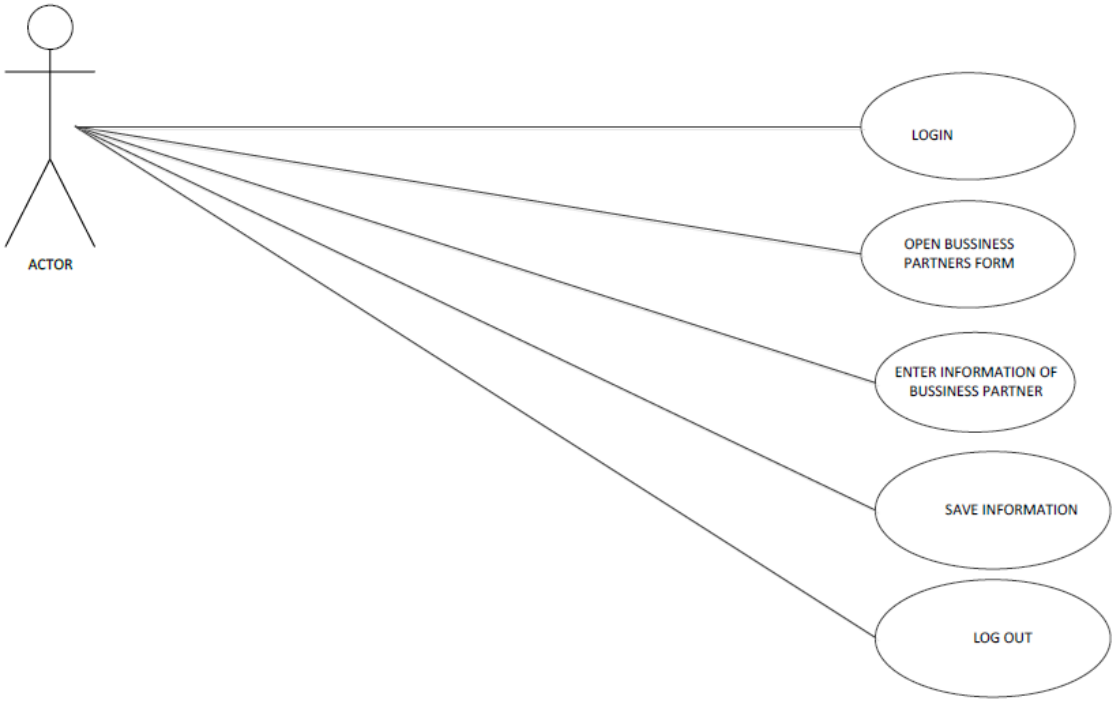
4.1.11

Extended Sale Order use Case

User /Actor	System Response
This use case will begin when user wants to create new sale order. For this user must login in to system for creating sale order.	
	Main window form will appear.
User click on sale order user for create sale order must select customer by clicking button on customers which is given at the top of the sale order form. Similarly for item selecting.	
	System will open both list one by one on clicking.
User will fill the data in the textboxes. And save.	
	System will save data in to database.
User will log out after performing all related activities with sale order.	

4.1.12

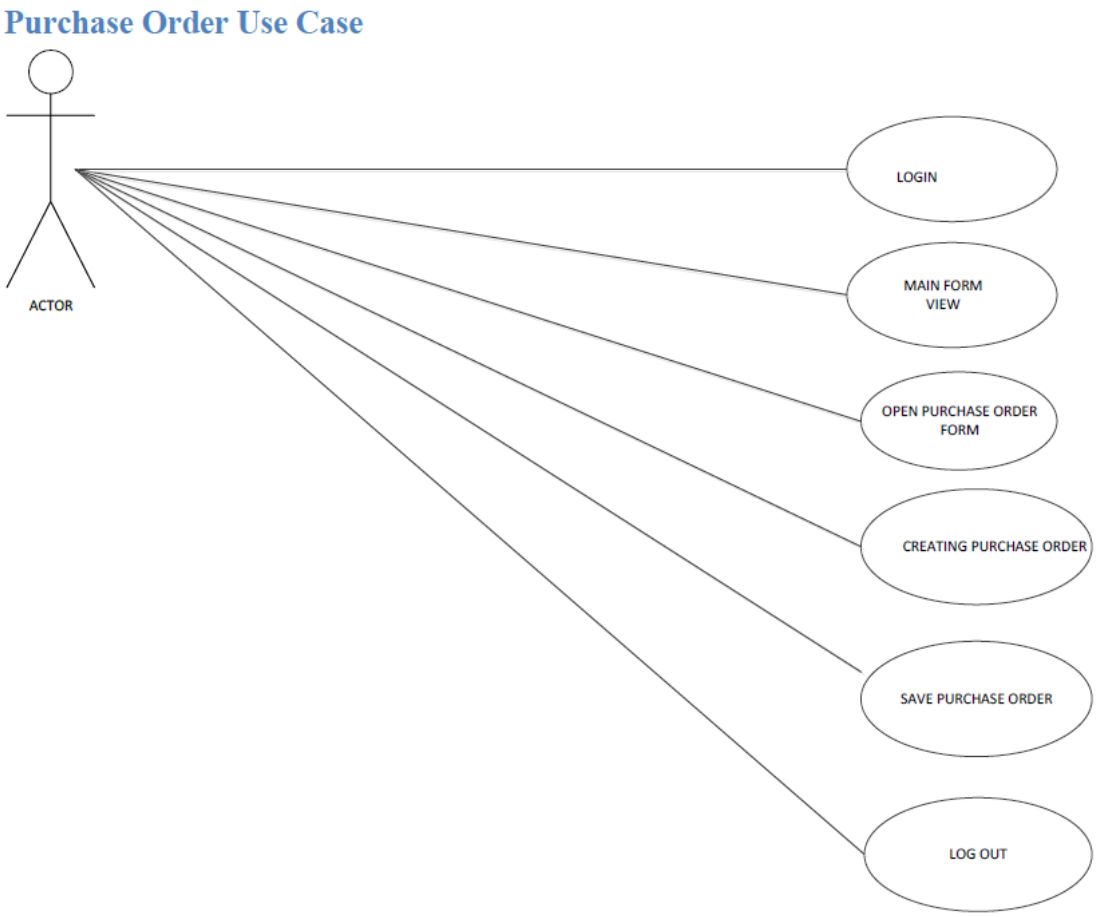
Use Case – Supplier Information



4.1.13

Actor/ Action	System Response
This use case begins with the new supplier information.	
Supplier administrator select "Supplier"	
	Displays a list of Supplier options
Supplier Administrator enters data in to text fields.	
	Store data in RAM
Supplier administrator clicks **"Save".**	
	Validates Mandatory text fields are must be fill before saving data in to database.
Supplier administrator click exit	

4.1.14


Purchase Order Use Case
ACTOR
LOGIN
MAIN FORM VIEW
OPEN PURCHASE ORDER FORM
CREATING PURCHASE ORDER
SAVE PURCHASE ORDER
LOG OUT

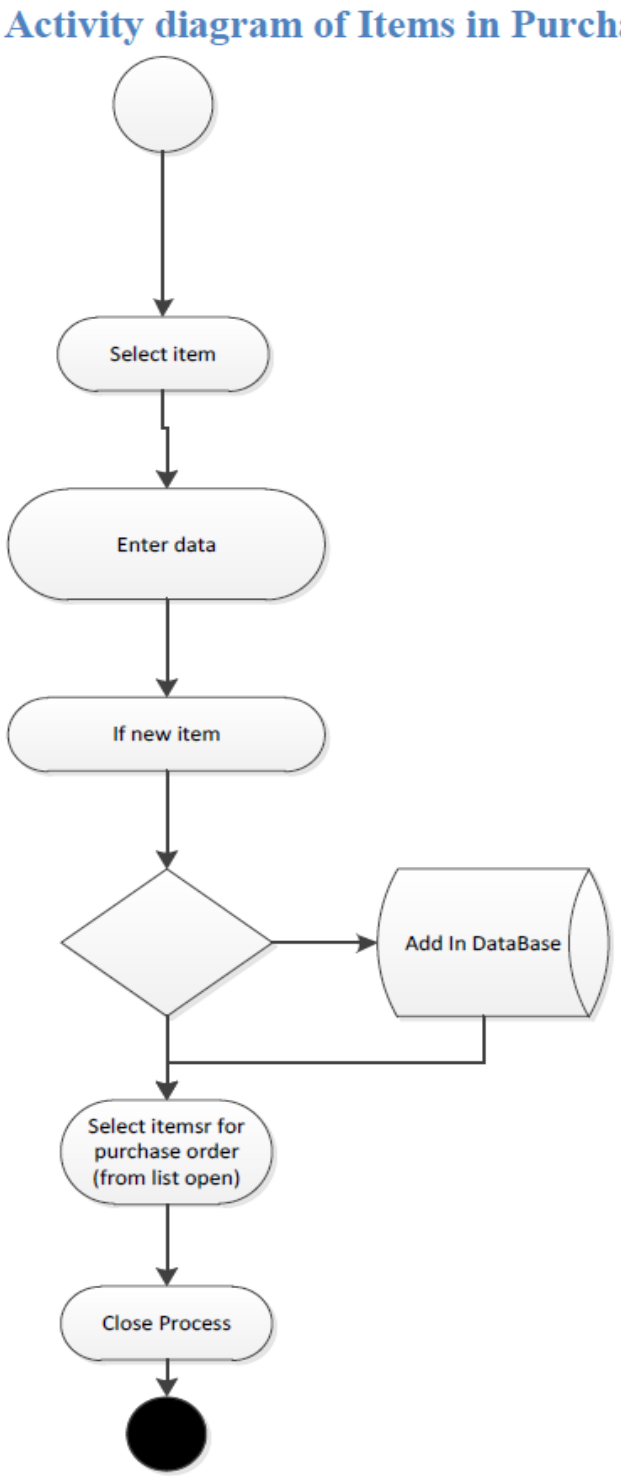
4.1.15

Extended – use case of Purchase Order

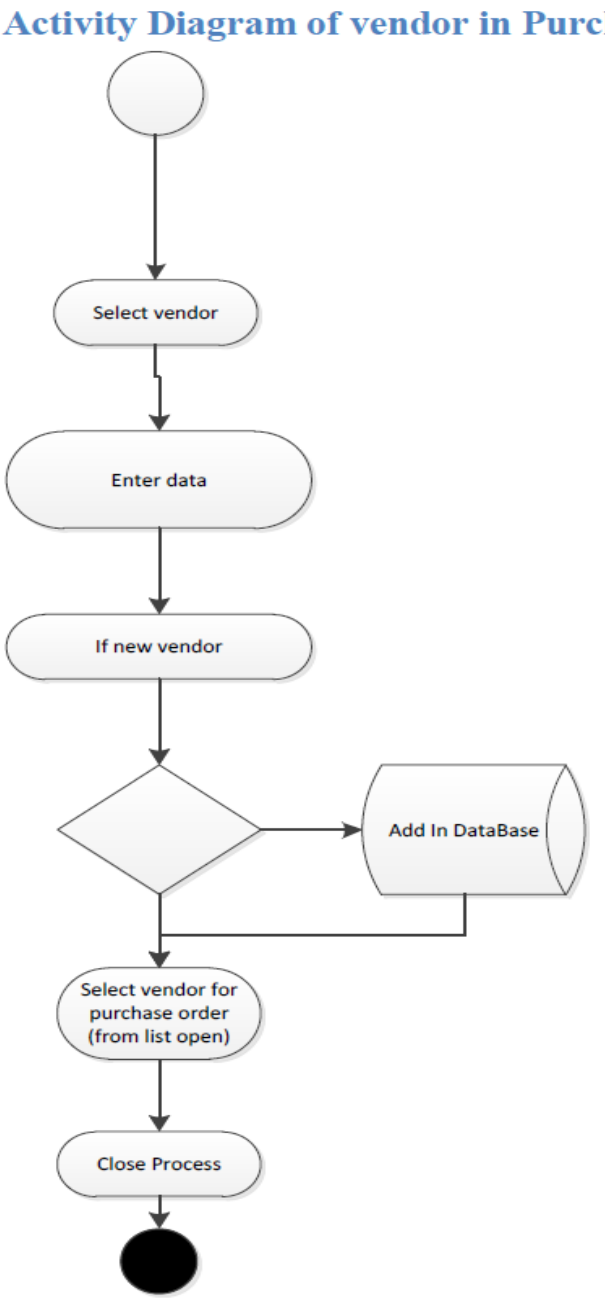
Actor / User	system Response
This use case begins when user wants to purchase some items from their vendor. For this activity or task user must login in to system first.	
	Validate id and password.
User must enter correct id and password for login in to system.	
	Main menu will be open.
User will click on purchase.	
	Purchase form will be open in front of user.
User will click on select vendor button given at the top of the form and for item click on item button which is also given at the top of the form.	
	Vendor list form will be open and item list also.
User select vendor and items from appeared lists. Enter required data for purchase order in blank textboxes after selecting vendor and items, then press save button.	
	Data will save in database.
User will be log out.	

4.2 **Activity Diagram**

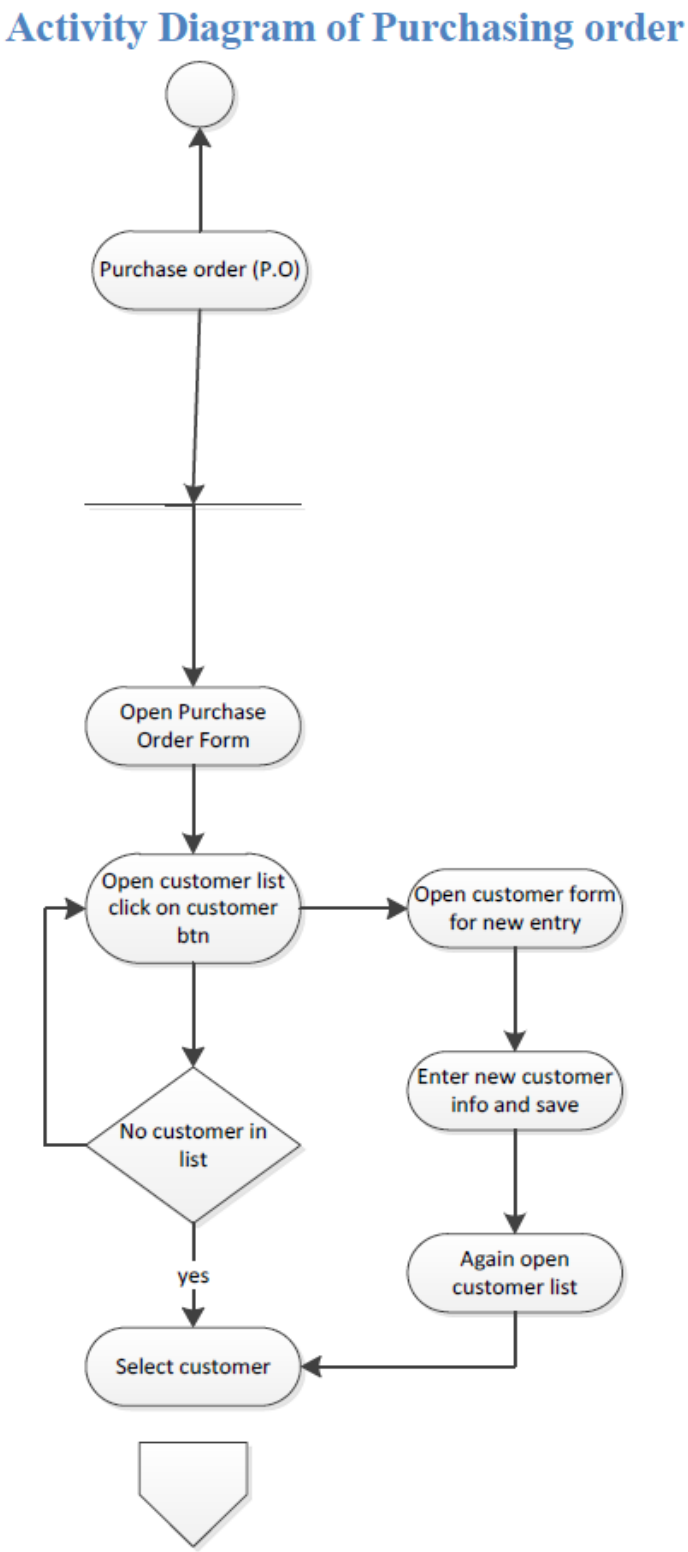
4.2.1

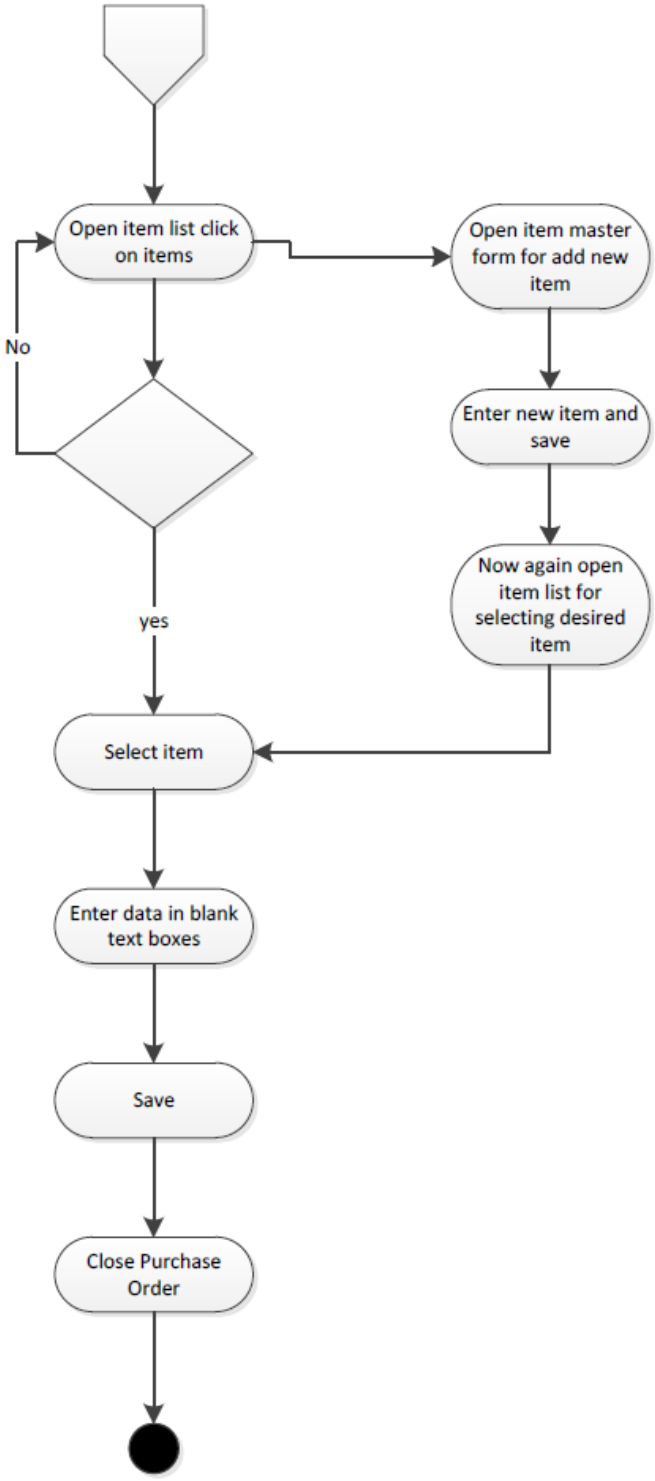


4.2.2


Activity Diagram of vendor in Purchase order
Select vendor
Enter data
If new vendor
Add In DataBase
Select vendor for purchase order (from list open)
Close Process

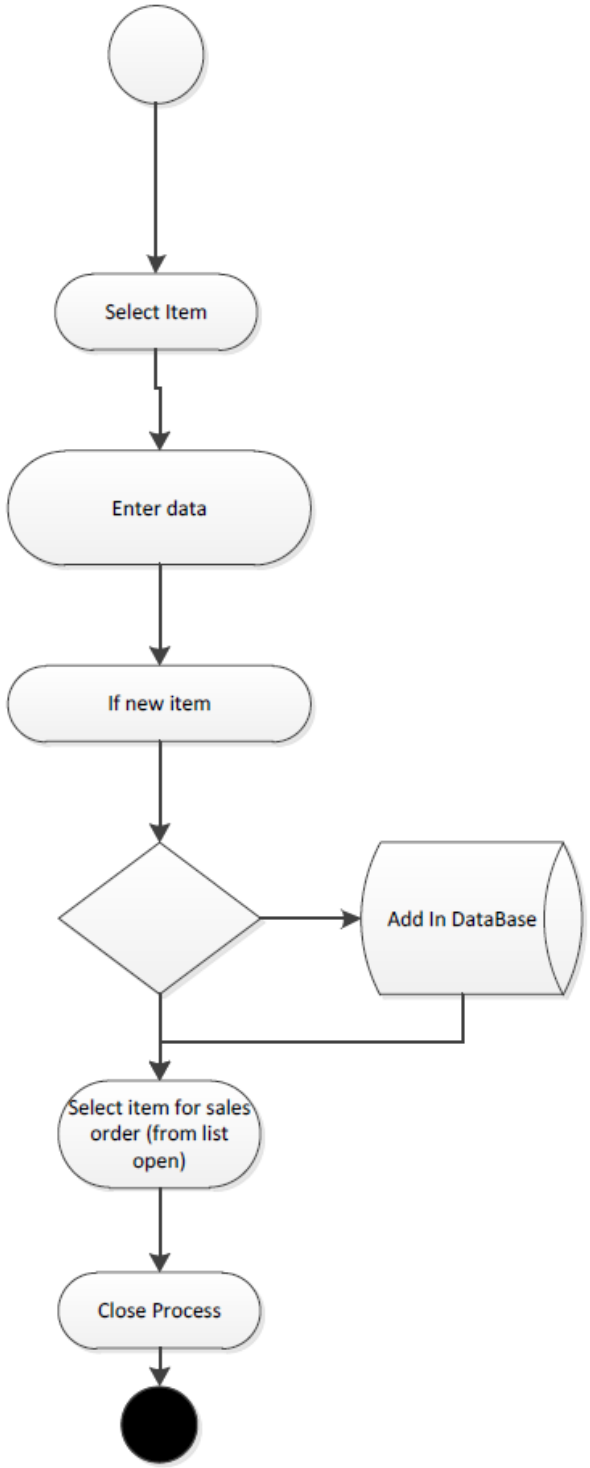
4.2.3


Activity Diagram of Purchasing order
Purchase order (P.O)
Open Purchase Order Form
Open customer list click on customer btn
Open customer form for new entry
Enter new customer info and save
Again open customer list
No customer in list
yes
Select customer


Open item list click on items
Open item master form for add new item
No
Enter new item and save
Now again open item list for selecting desired item
yes
Select item
Enter data in blank text boxes
Save
Close Purchase Order

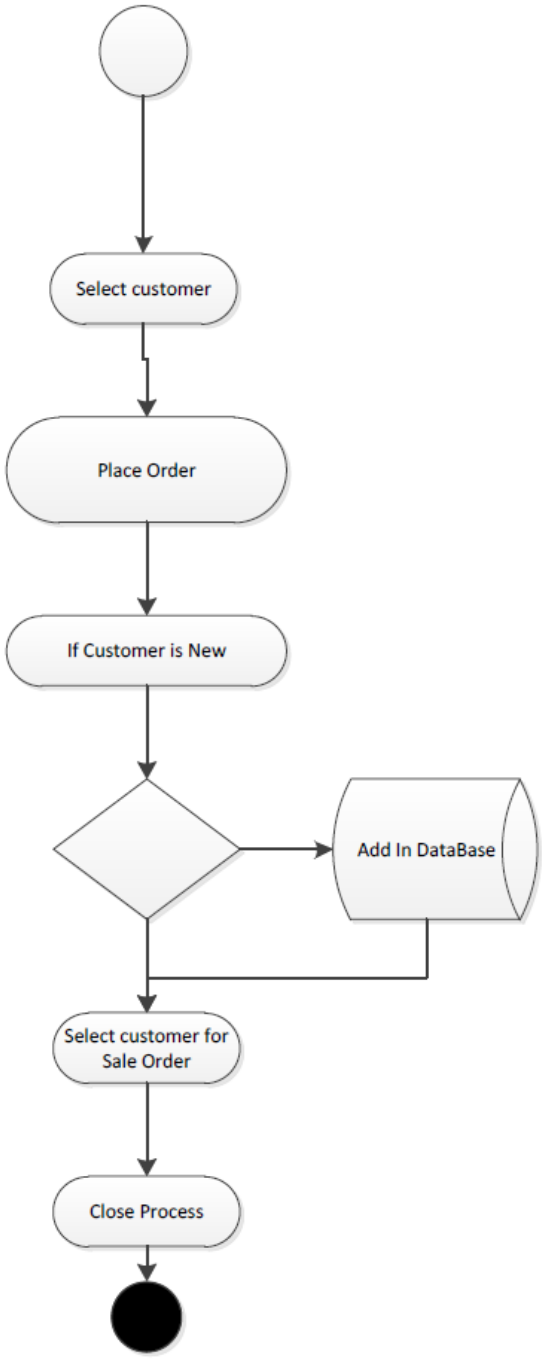
4.2.4

Activity Diagram of Items in Sale Order Form

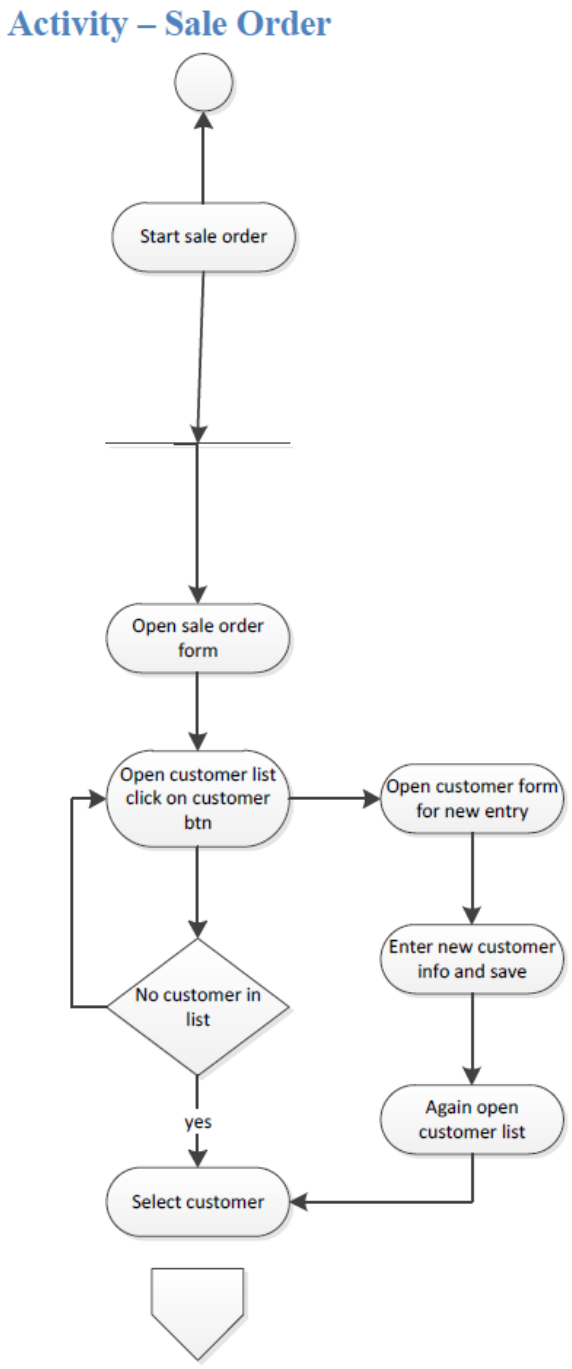


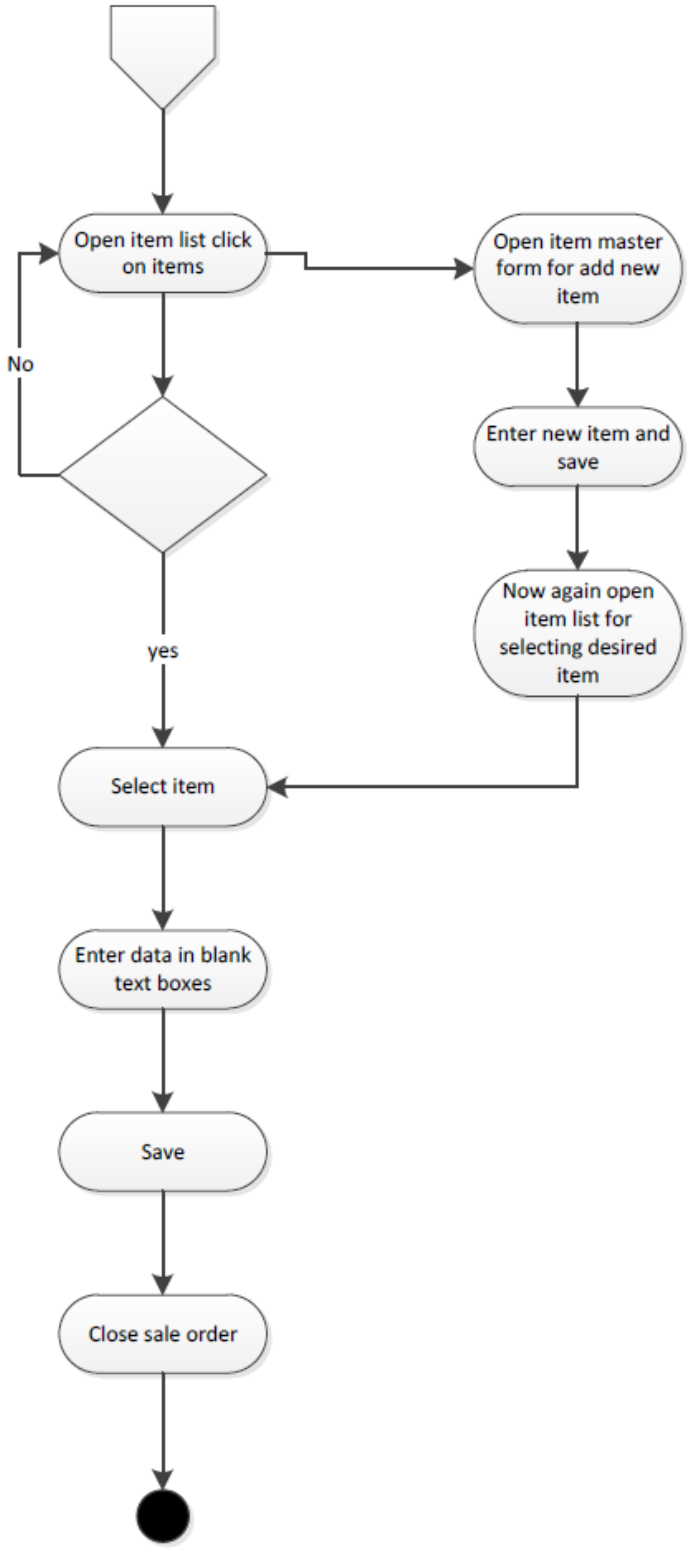
4.2.5

Activity Diagram of Customers in Sales Order Form



4.2.6

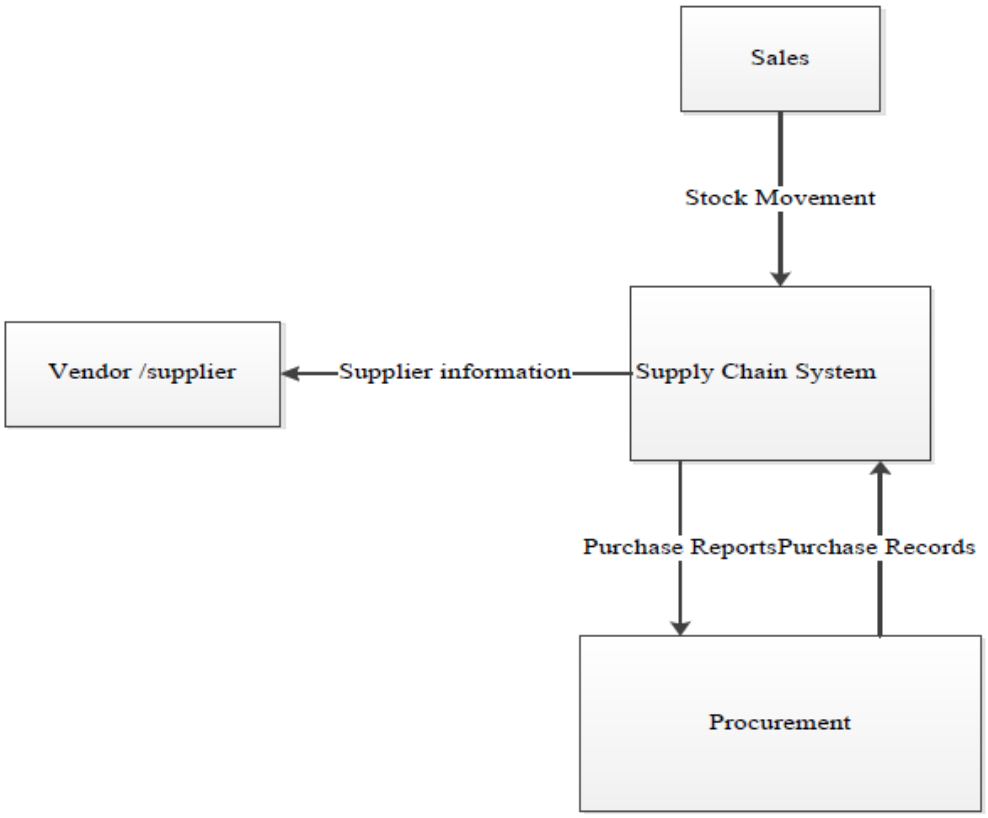

Activity – Sale Order
Start sale order
Open sale order form
Open customer list click on customer btn
Open customer form for new entry
Enter new customer info and save
No customer in list
yes
Again open customer list
Select customer


Open item list click on items
Open item master form for add new item
Enter new item and save
Now again open item list for selecting desired item
No
yes
Select item
Enter data in blank text boxes
Save
Close sale order

4.3 Data Flow Diagrams

Supplier Data flow Diagram

The data flow diagram illustrate the activity related vendor which is perform with in the system that user will interact with it. The data flow diagram of supplier is as follows.



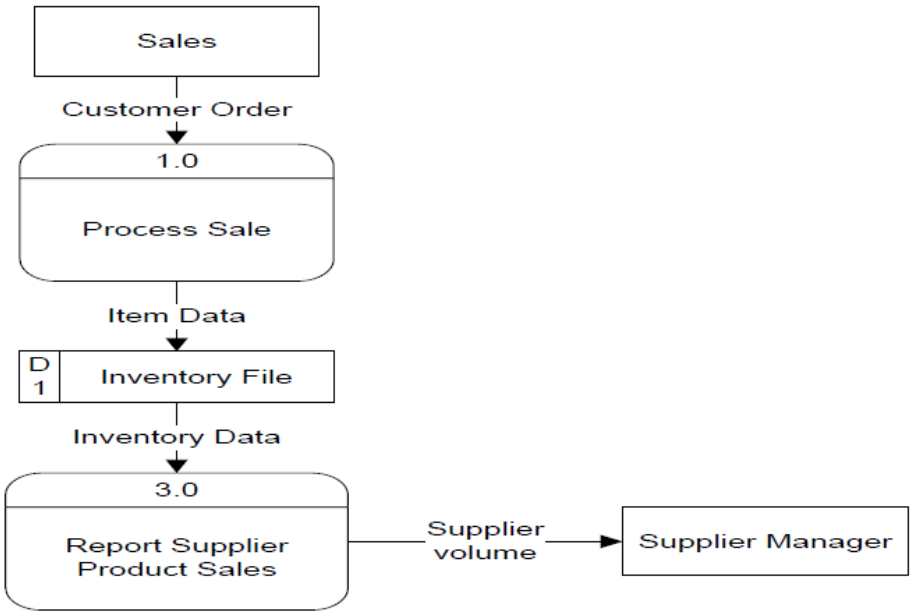
4.3.1

Maintain Stock

The store manager manages all the data regarding inventory/ stock. Store manager manage inventory data related sales and purchases. Both positive and negative feedback from sales and customers as to the quality of goods. Overall report relies on input from store to produce reliable output report to supplier manager.

In maintaining the stock store man enters invertor as new item in or the purchases inventory received by the supplier. Also check and balance of the inventory item wise. The following use case diagram will show the activities perform by the store man.

Data flow Diagram manage Stock

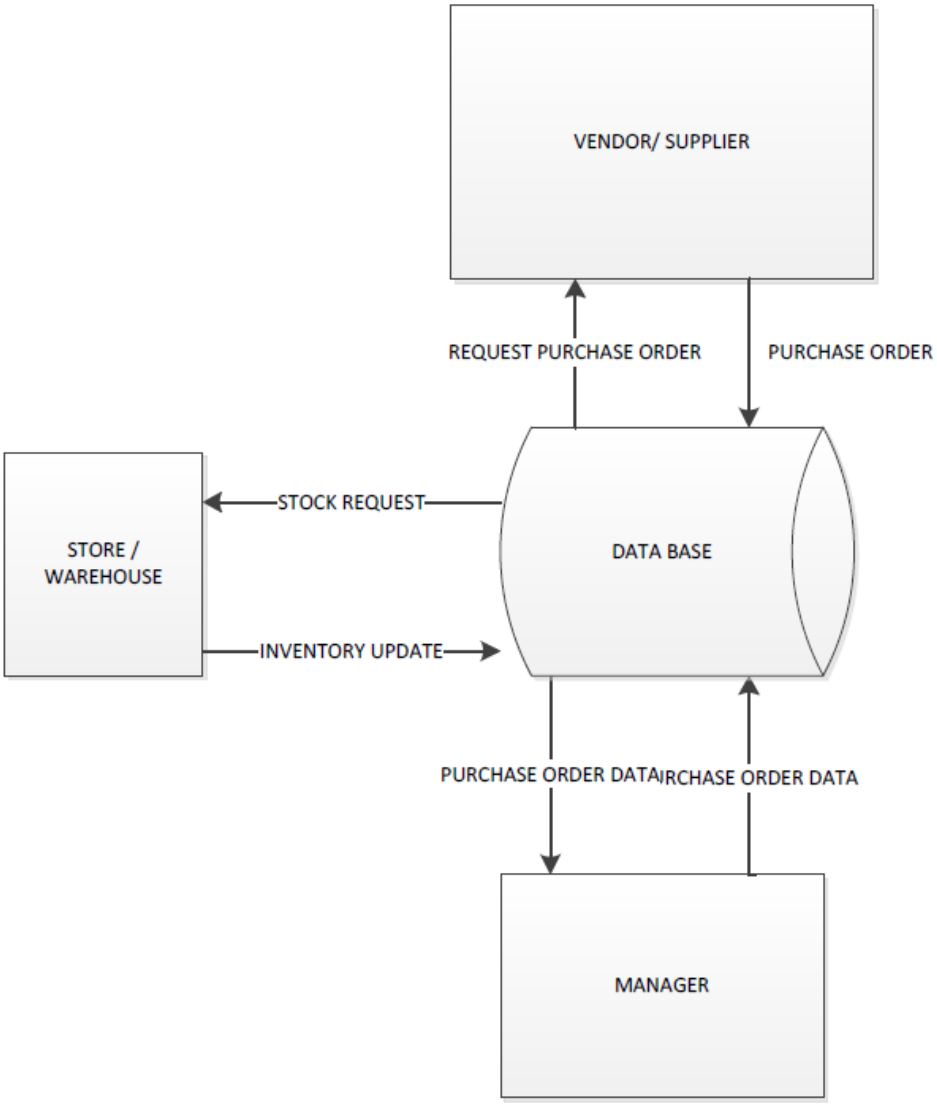


Data dictionary

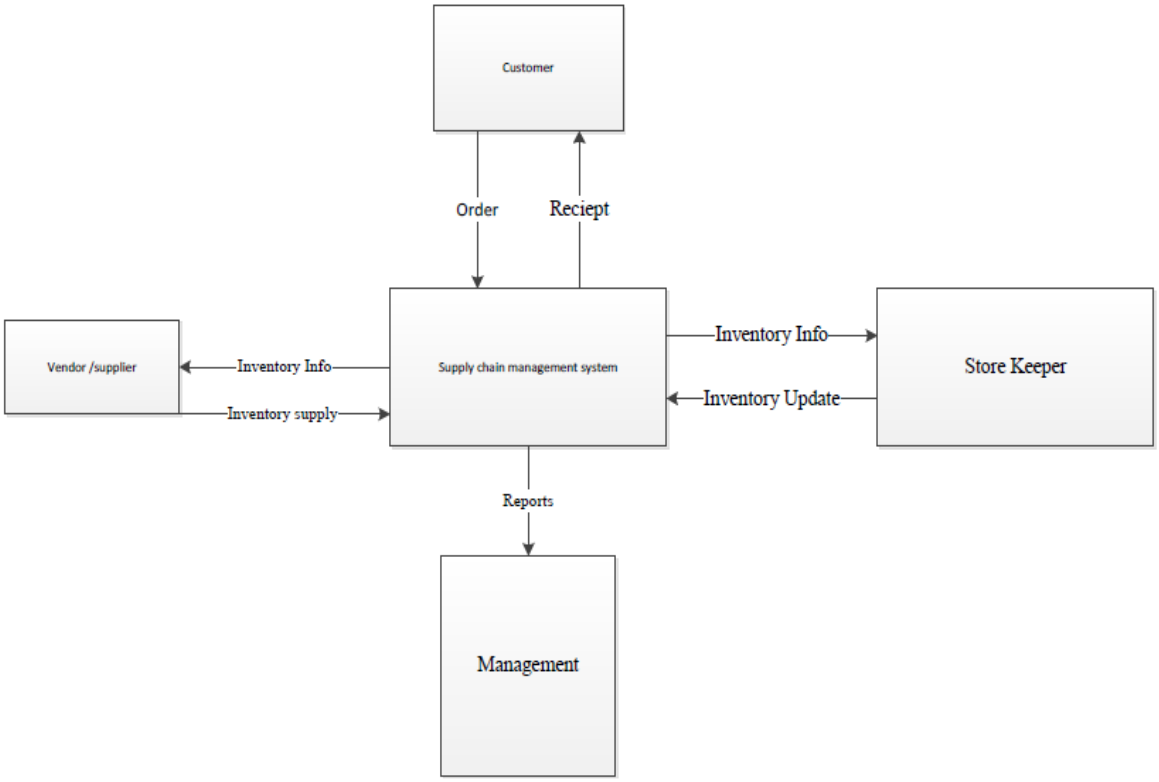
Customer data	Customer select items for purchase
Item Data	At the point of sale information about the Item
Inventory Data	No of items available for sale
Supplier Volume	Number of stock moved by each supplier/ purchases by supplier.

4.3.2

Data Flow Diagram (Purchases)

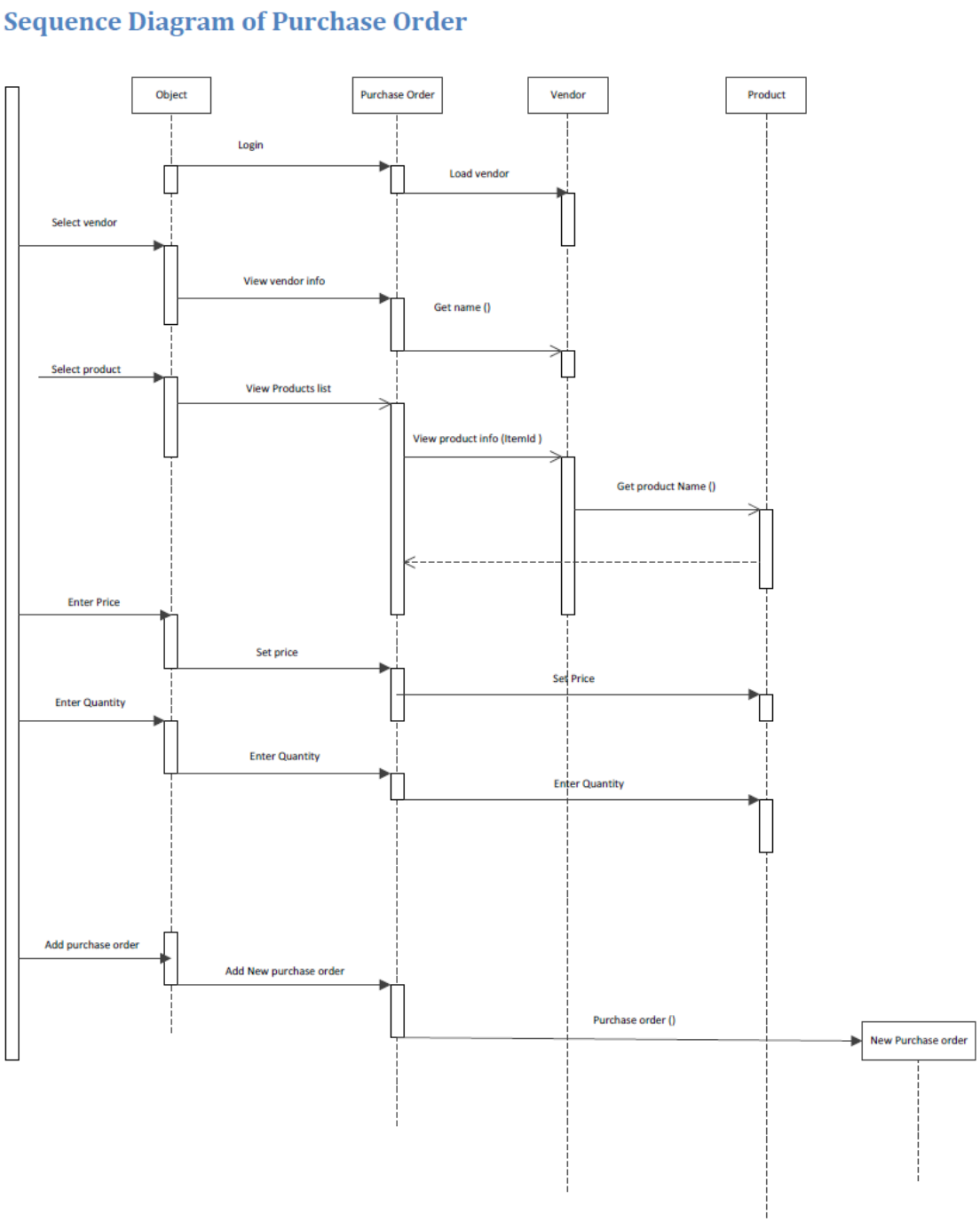


4.4 Context Diagram of the System



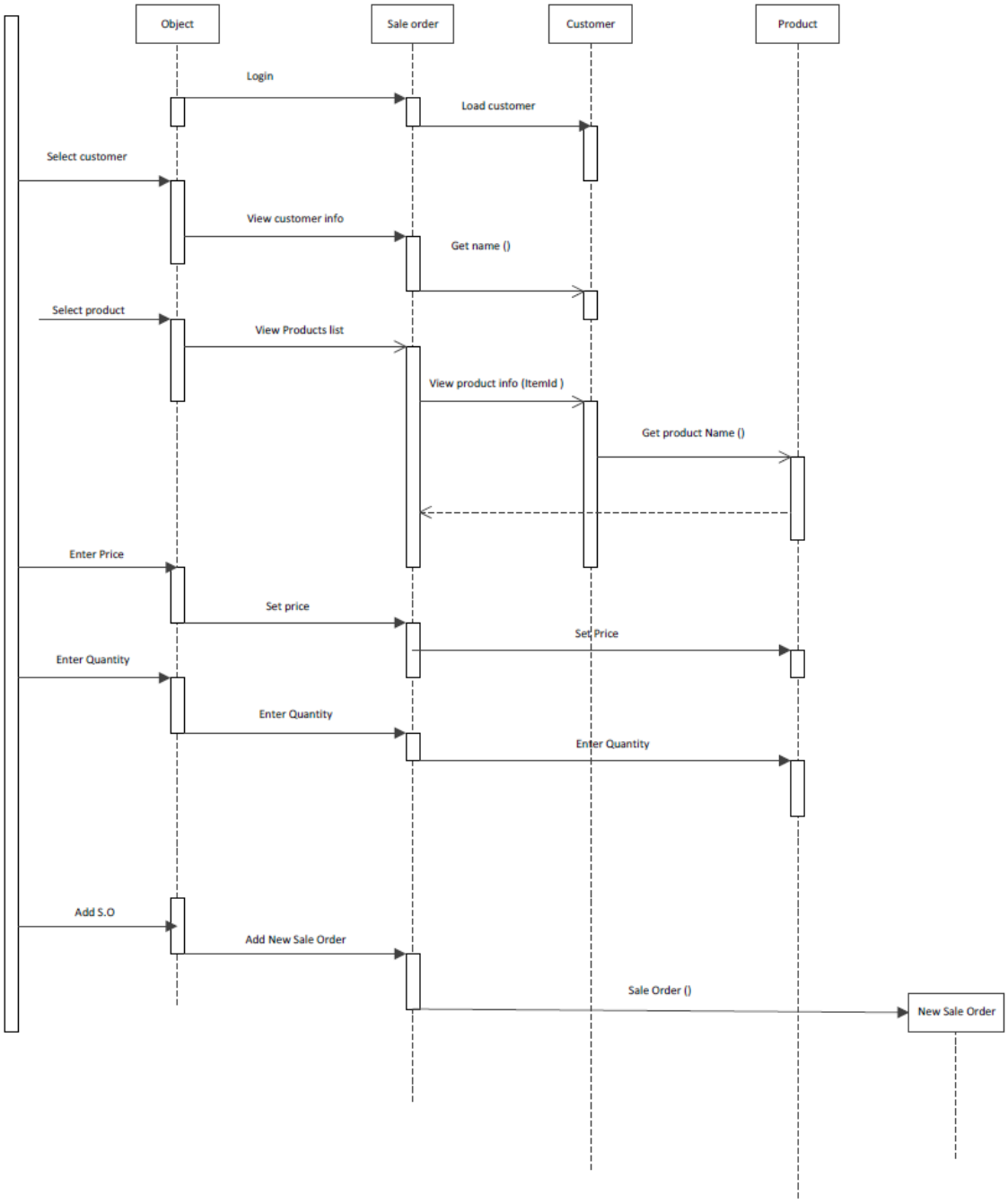
4.5 **Sequence/State Diagrams**

4.5.1



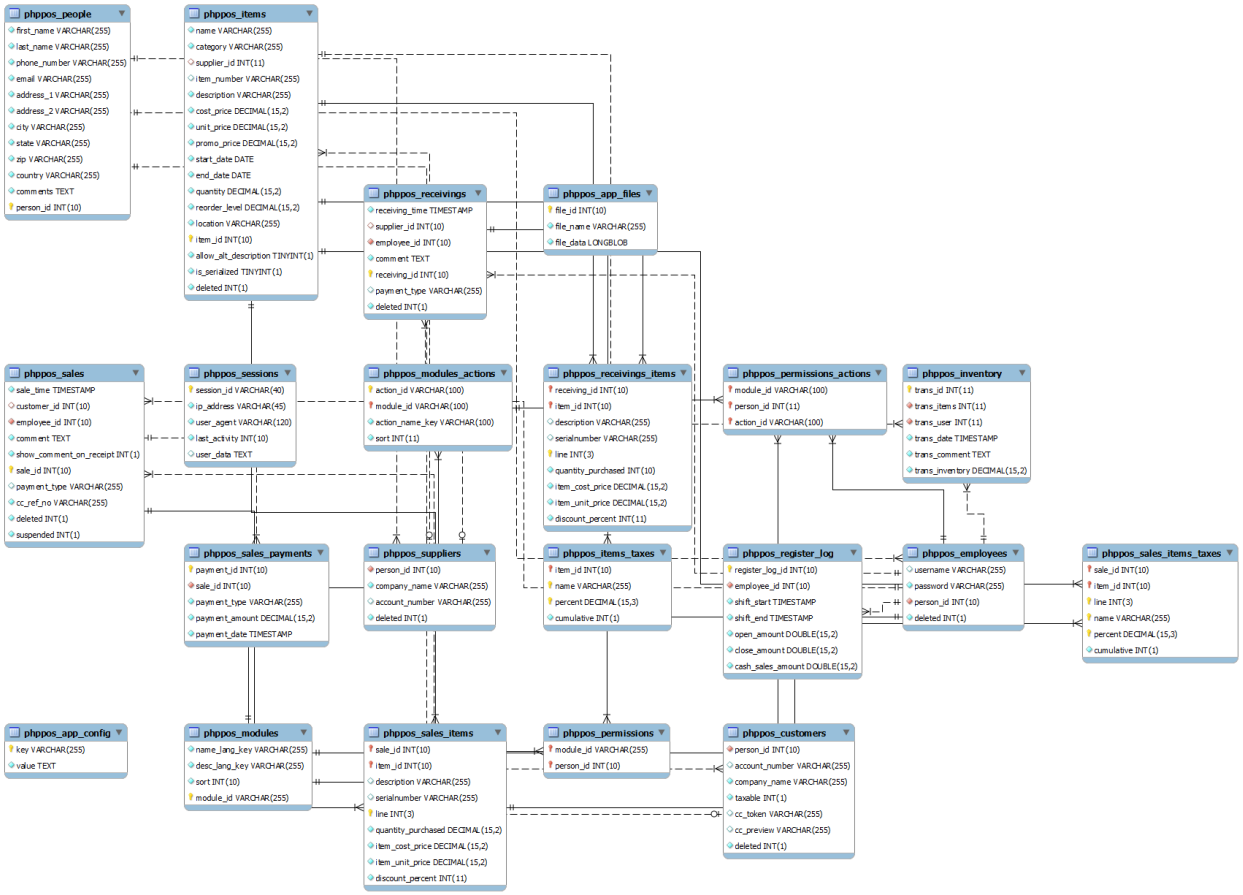
4.5.2

Sequence – Sale Order



4.6 **Database Design:**

4.6.1 **ERD Diagram**



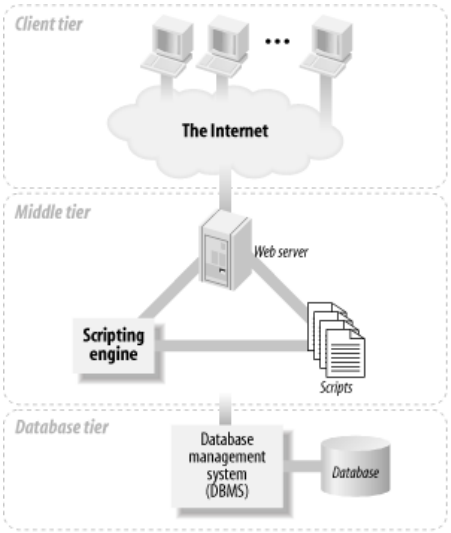
Chapter 5. Development

The following tool and technologies have been used for the development of this project:

5.1 PHP

PHP is a server side scripting language which resembles the PERL and C programming language in structure and semantic. It is a recursive acronym which stands for “Hypertext Preprocessor”. It is a language that allows us to change static web pages into dynamic ones. It was developed by the PHP group and designed by Rasmus Lerdorf. It was first released in the year 1995 and since then has evolved into the modern day PHP language that we know. It is usually run on the Apache web server.

A typical web request starts with the web browser requesting a file/resource from the server using http headers. The server locates this file/resource and returns it to the browser in data packets. With a server running PHP, this cycles changes fractionally. The browser requests a PHP page using http headers. The server locates this PHP page and the code inside it is executed on the server first. Once the processing has finished on the server side, the results are then returned to the browser using data packets. This is shown in the following figure.

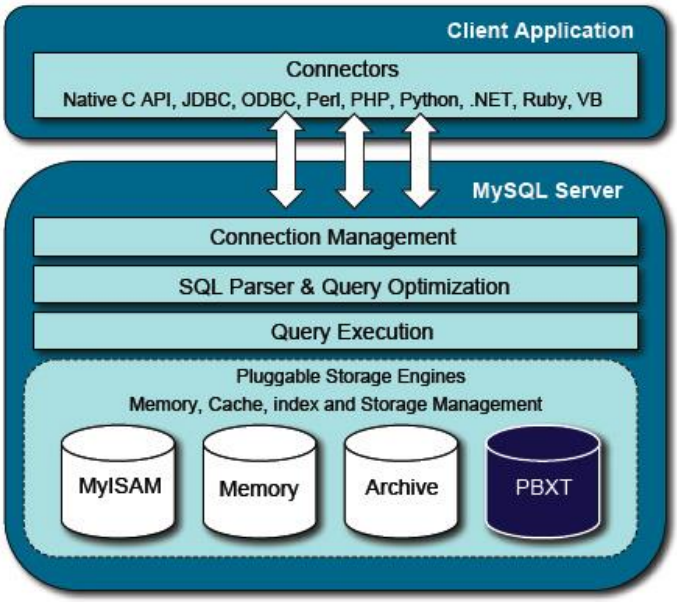


PHP is a multi-purpose scripting language. It allows us to carry out many tasks on the server such as generating files as excel files, word files. It also allows us to communicate with a database server. It can even allow us to run certain commands on the server which truly demonstrates how powerful a language it is. PHP is an open source language and its source is available under the GNU General Public License. The PHP code is usually contained in PHP file with the extension “.php”.

5.2 MYSQL

MYSQL is a relational database management system which was initially released in May, 1995. It runs as a server and allows multi user access. Like all relational database management systems, it has a query language which is based on the standard structured query language which most database management systems have.

Web applications can be built upon MYSQL. The setup usually includes PHP in the mix of things. A user requests a page that contains some PHP code. PHP can talk to the MYSQL database and extract data from it. In the end, it can present this data from the database as simple HTML. The following figure illustrates this.



5.3 HTML

HTML stands for Hypertext Markup Language. It is a markup language used to add content in web pages. It allows us to add text, images, videos, and audio in web pages by using simple tags such as “<p>” for paragraph which is used to add text to webpages. Likewise, it has a range of tags that can be used to add different content to a webpage.

A webpage which contains HTML tags is parsed by a web browser which parses the HTML tags and presents the output of the webpage. Mozilla Firefox and Internet Explorer are the most common web browsers in use today.

HTML version 5 has been developed and is supported by some of the browsers but has not gained worldwide acceptance as there are still some compatibility issues with some of the modern browsers. The HTML code is usually contained in a HTML file with the extension “.html”.

5.4 **CSS**

CSS stands for cascading style sheets. Just as HTML tags are used to add content to a webpage, cascading style sheets are used to style the content in a webpage. Cascading style sheets allow us to style each HTML tag such as “<p>” as well as apply classes and id to them such as “.highlight” and “#next” respectively. CSS styles are usually contained in a CSS file with the extension “.Css”.

Chapter 6. Specific Requirement

6.1 Usability

- POS and accounting management system has user friendly interface
- It will provide a controlled and automated system
- Administrator, support will be able to view complete system detail and have complete access of the system and assignment of rights to other employees

6.2 Performance

- Robust
- Real time data access
- High Response time
- Fast data access from database

Chapter 7. Other Nonfunctional Requirements

7.1 Software Quality Attributes

- Correctness
- Flexible process designing
- Robust

7.2 Security Requirements

- Authentication
- Authorization
- Session State
- SQL Injection

Chapter 8. User Interface

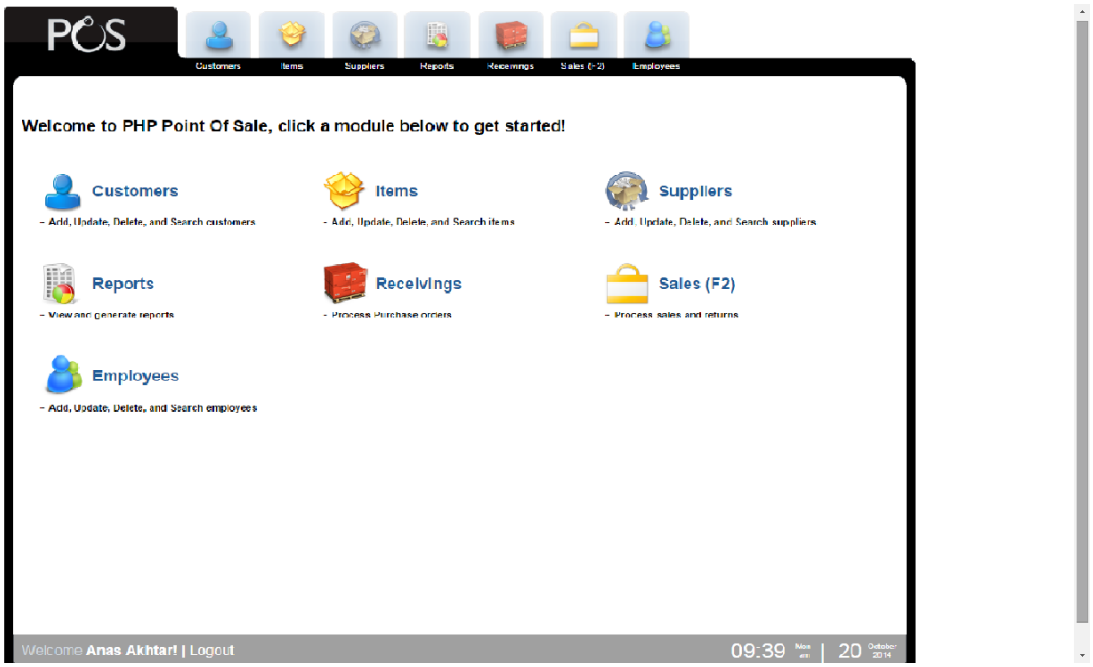
8.1 Short Description of the System:

Supply chain management system comprises of many modules.

1. Administrator has complete control and access of the system. Administrator can also assign access rights to employees, if they require accessing the system.
2. Employees have login facility through their email id and password provided. Employee record can be added, updated or deleted.
3. Customer records can be added, updated or deleted.
4. Supplier records can be added, updated or deleted.
5. Sales are added through selecting item from the dropdown table and new item and new customer can be added from their directly.
6. Similarly in receiving received goods or purchases are recorded. From their new item and new supplier could also be added directly.
7. Reports are generated on particular date, month or year of any record from the database.

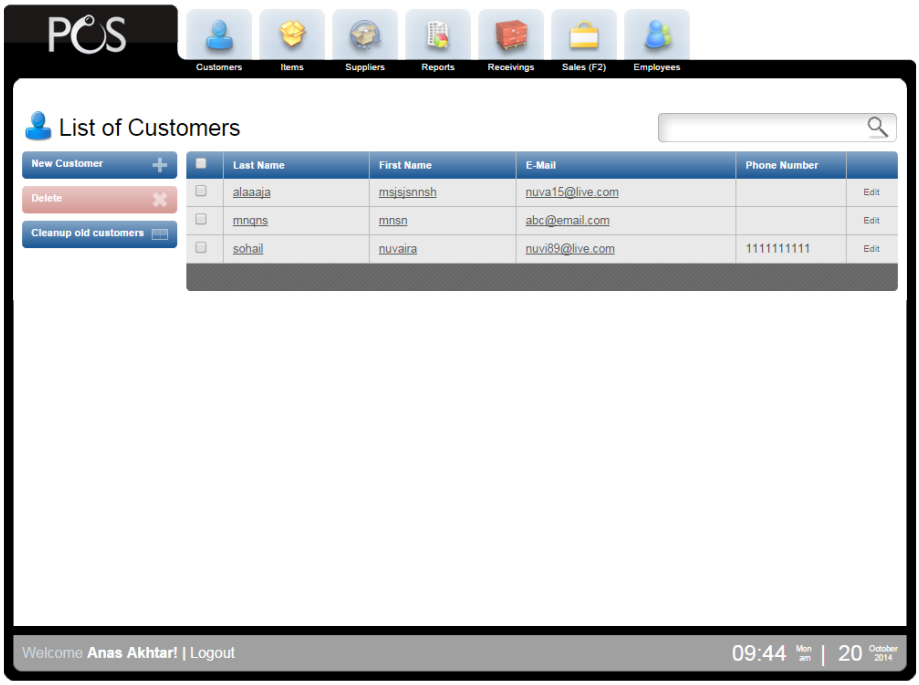
8.2 MainScreen:

This is the main screen of the system that displays all modules.



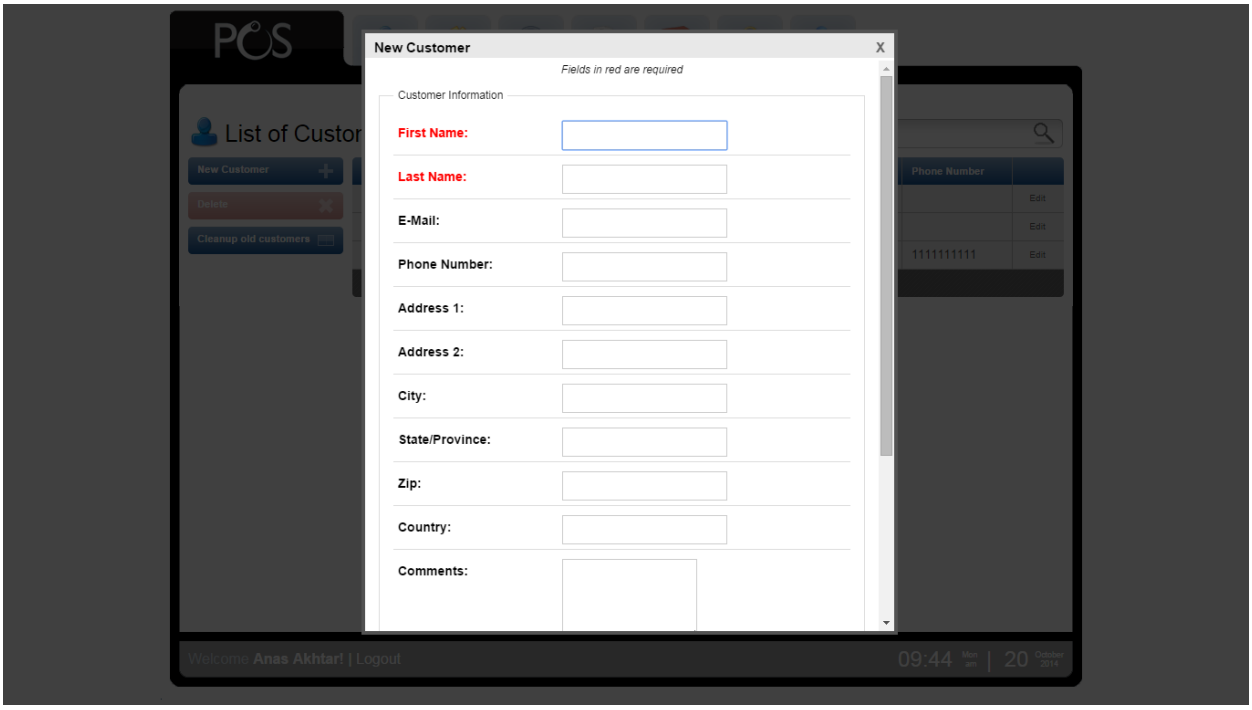
8.3 **Customers:**

This page is displayed on click of customer module. This shows the total customers' record present in the system. On right top corner have the searching option for searching the customer, if you need to find the customer by its name for quick access, apart from viewing and searching the particular customer from all records, in case of hundreds of records. Left panel shows three buttons, 1. New customer: for adding new customer, 2. Delete: this button is enabled when one or many record are marked for deleting, 3. Cleanup old customers: for deleting all customers together.



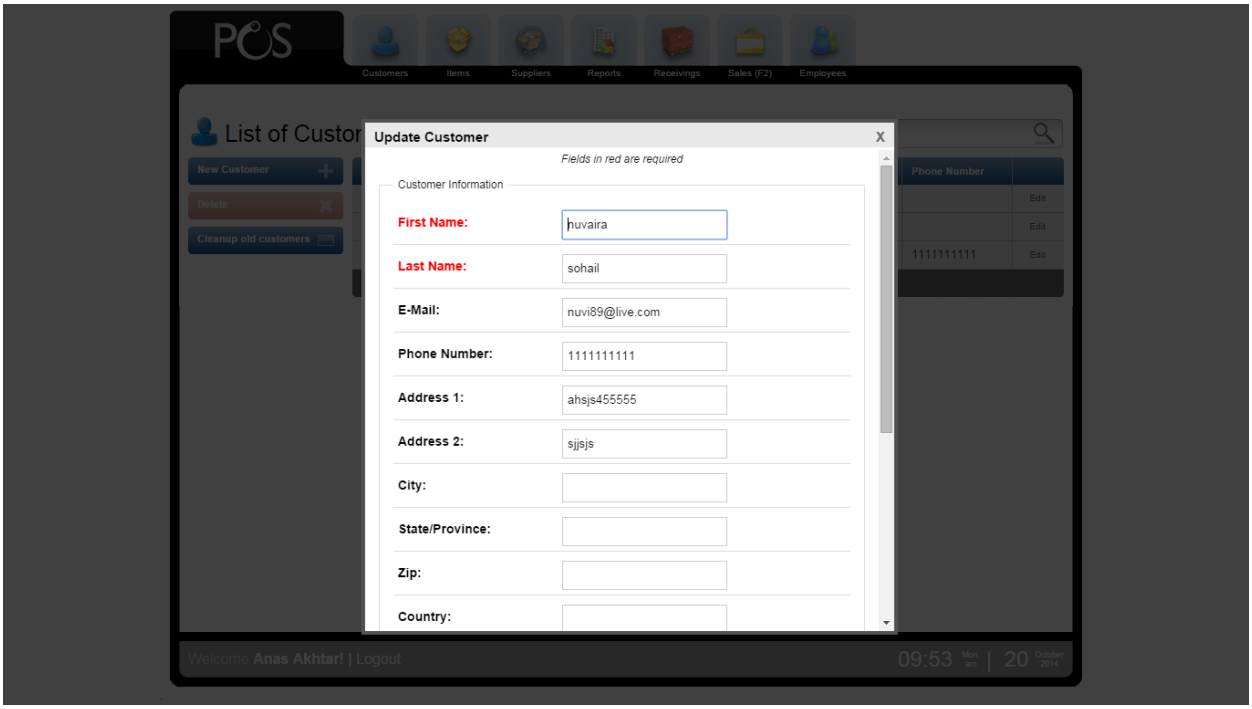
8.4 **Add Customer:**

This is the page of adding new customer.



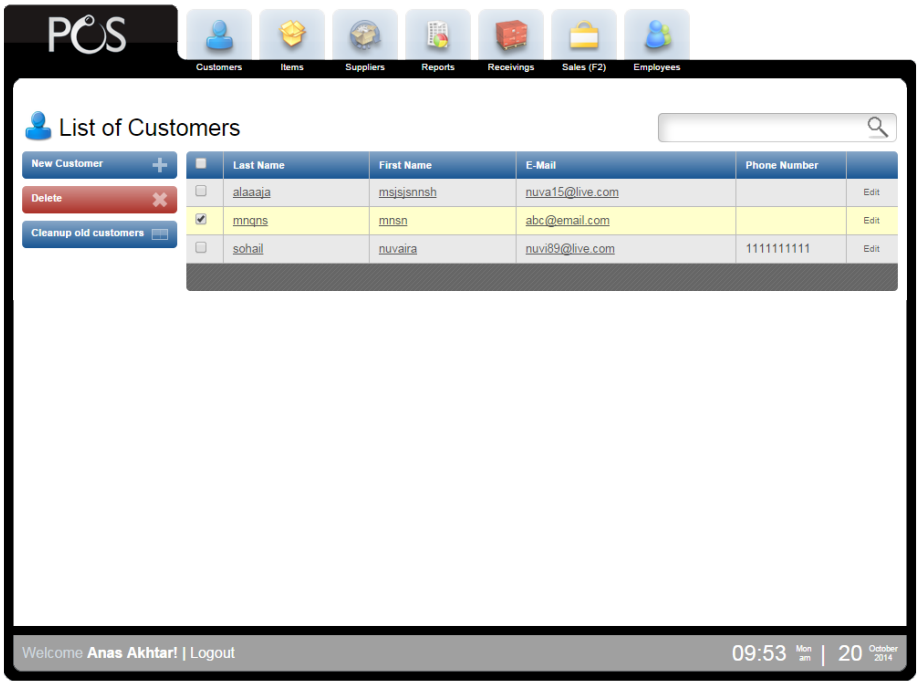
8.5 **Edit/Update Customer:**

This form is opened on the customers page for updating record of any customer, on click of edit on the right side of the record.



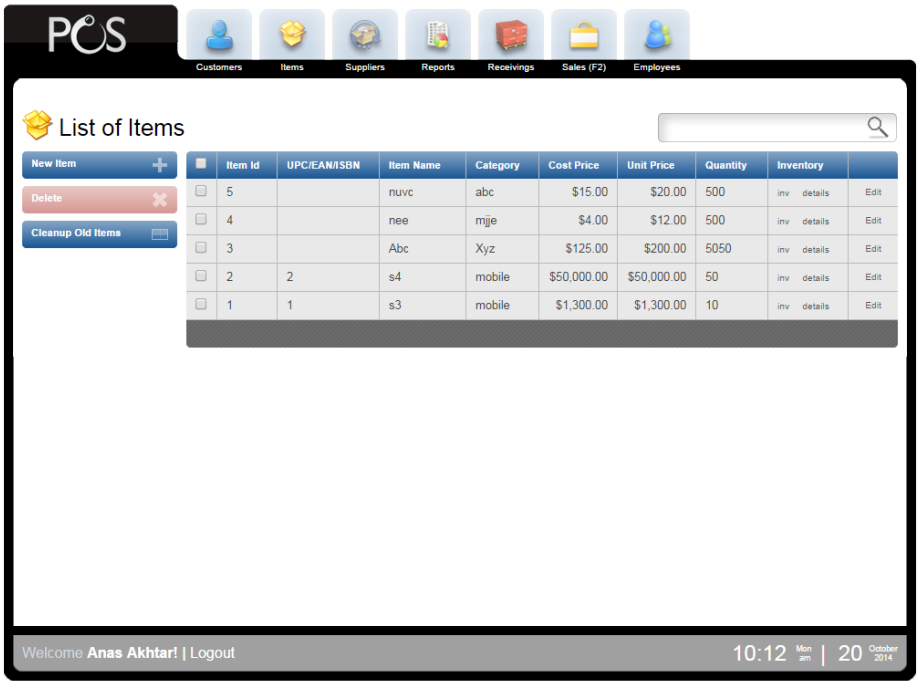
8.6 Delete Customer:

On marking of any record delete button is enabled, on click of delete button will delete that marked customer record.



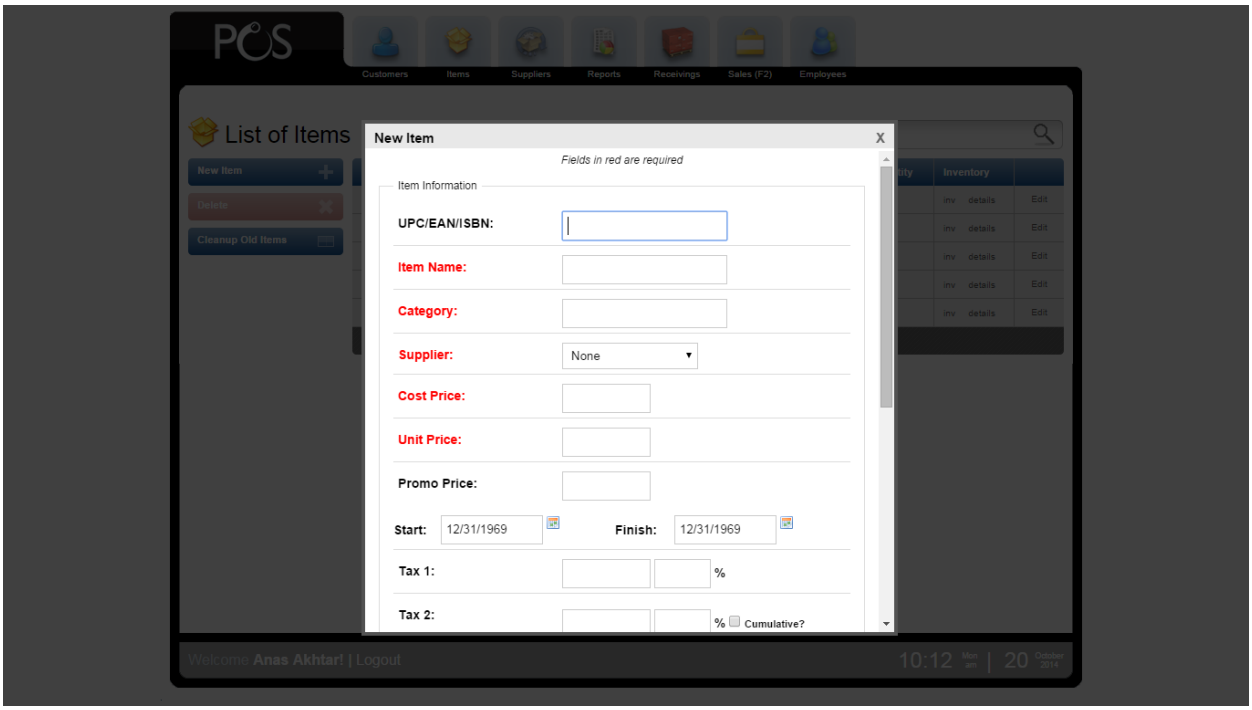
8.7 **Items:**

This page is displayed on click of items module. This shows the total items record present in the system. On right top corner have the searching option for searching any item, if you need to find the any item by its name for quick access, apart from viewing and searching from all records, in case of hundreds of records. Left panel shows three buttons, 1. New Item: for adding new item in inventory, 2. Delete: this button is enabled when one or many record are marked for deleting, 3. Cleanup old Items: for deleting all item together.



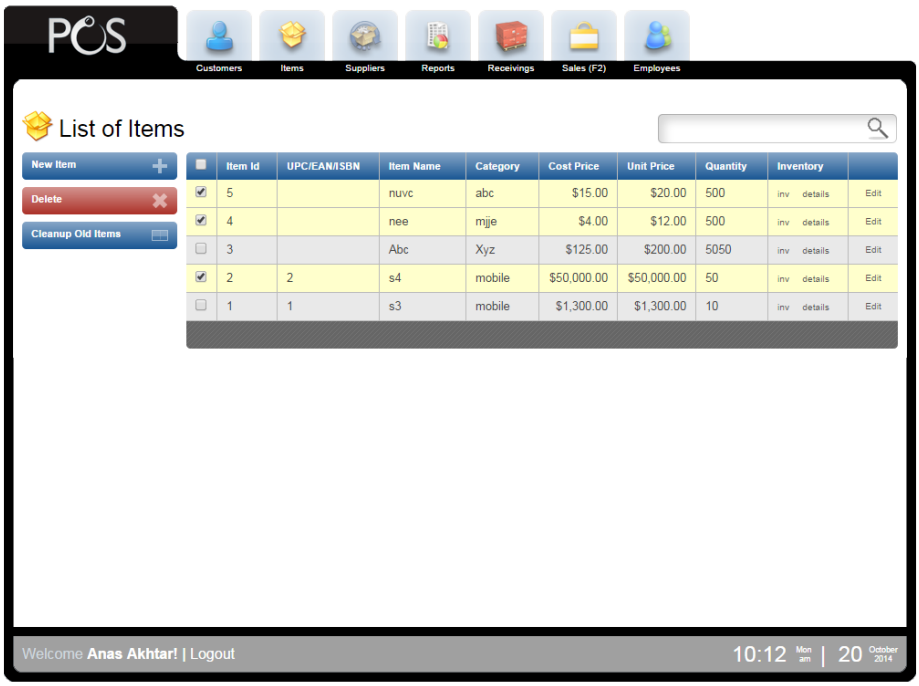
8.8 **New Item:**

This form opens on click of new Item button at left panel, this adds new item in the systems record and database.



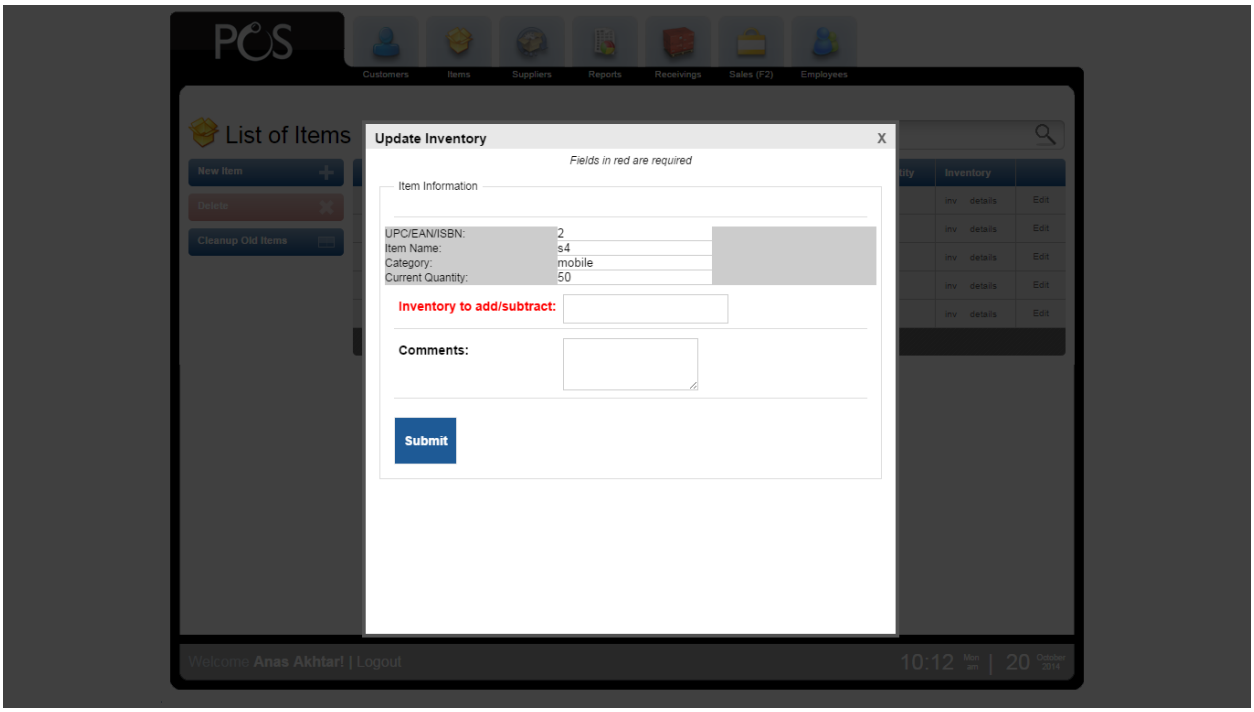
8.9 **Delete Item:**

On marking of any record delete button is enabled, on click of delete button will delete that marked items record.



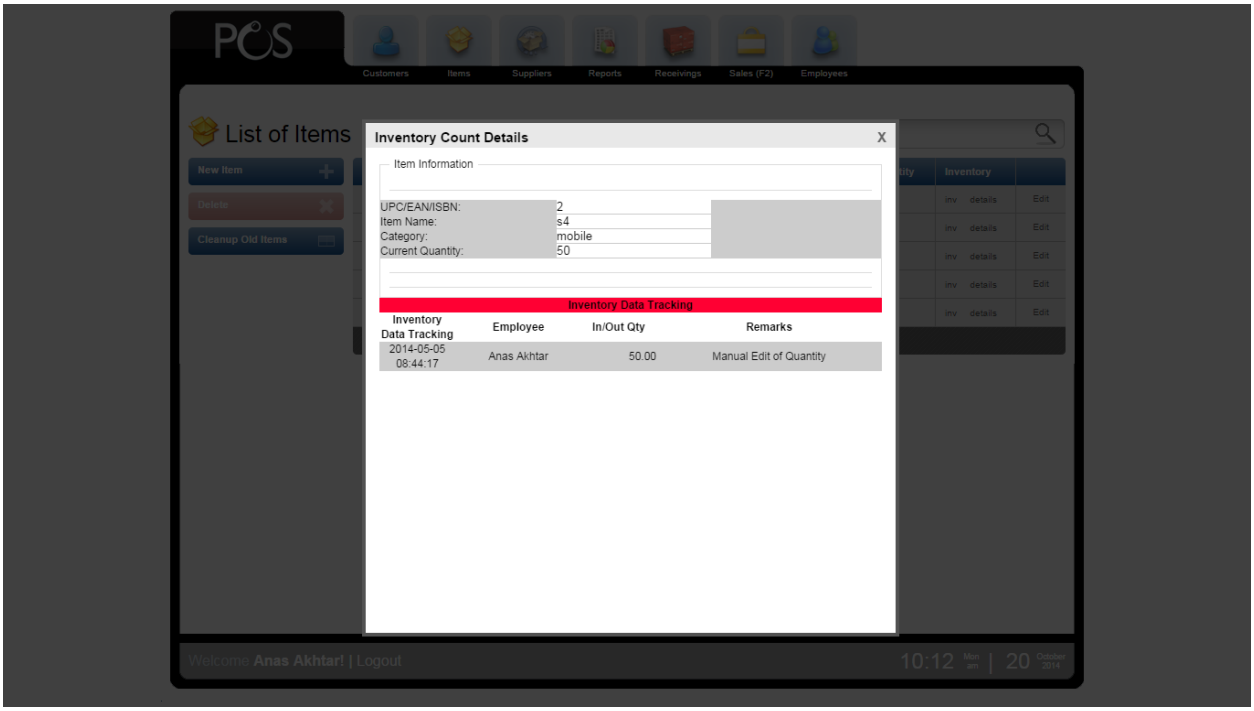
8.10 **Checking/Updating item stock in inventory:**

This tells the amount of particular stock in inventory, or you can add or subtract the quantity here in this form. It's actually the quick access of inventory.

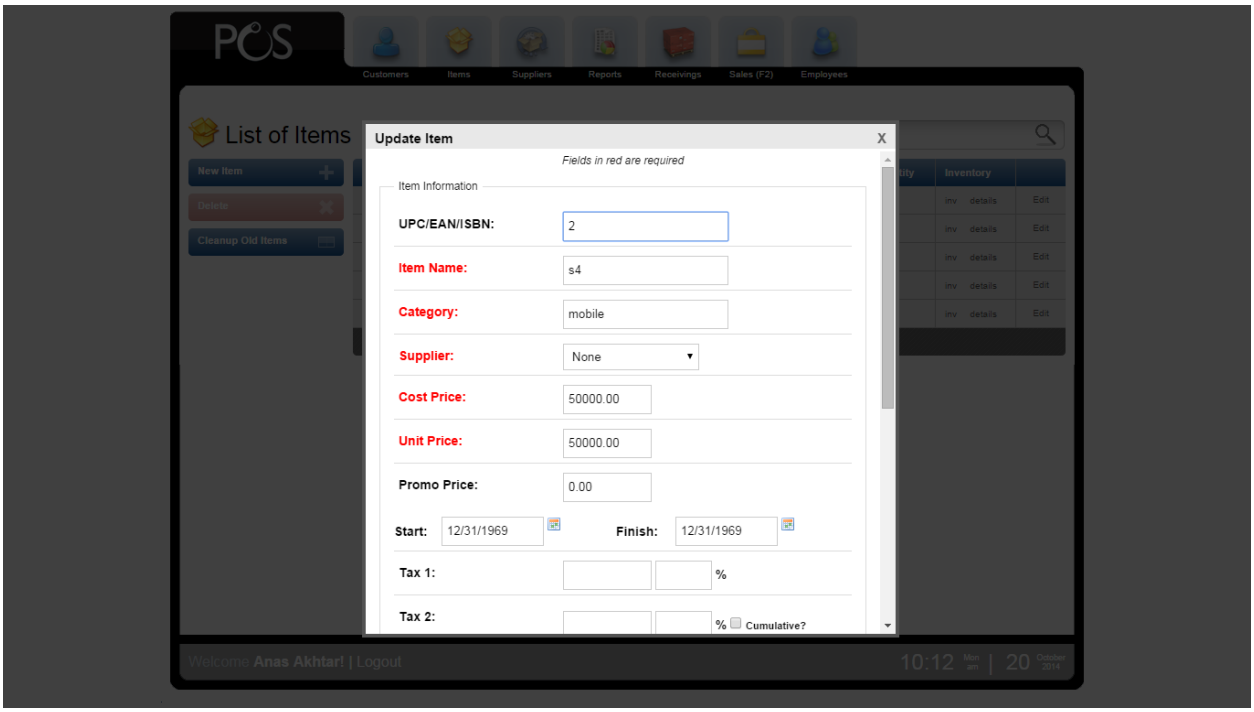


8.11 **Checking Details of item in inventory:**

This form shows the inventory details as per its employee, date, in/out quantity, and remarks too.

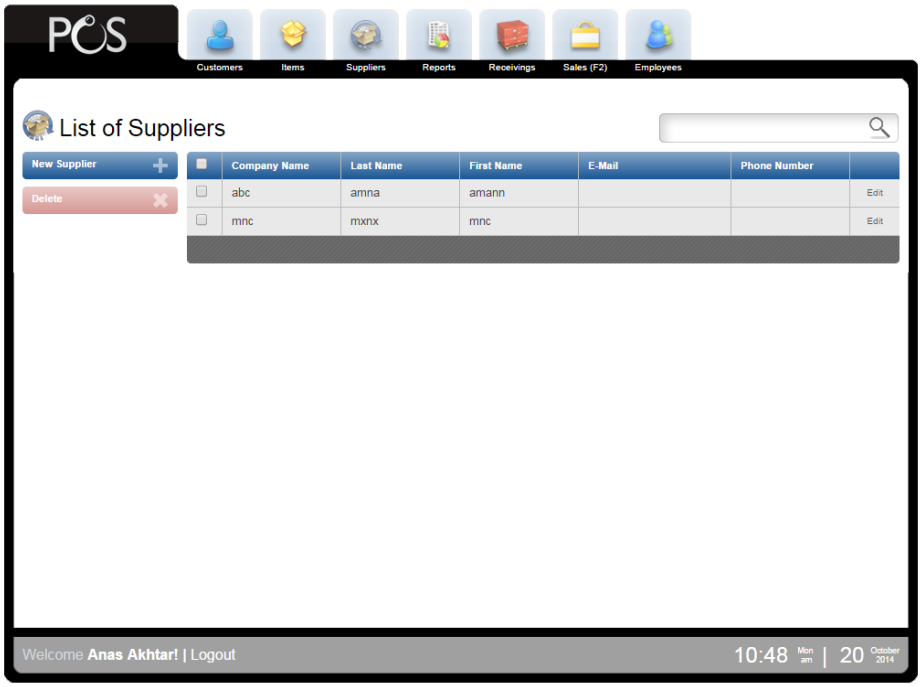


8.12 **Update Item:**



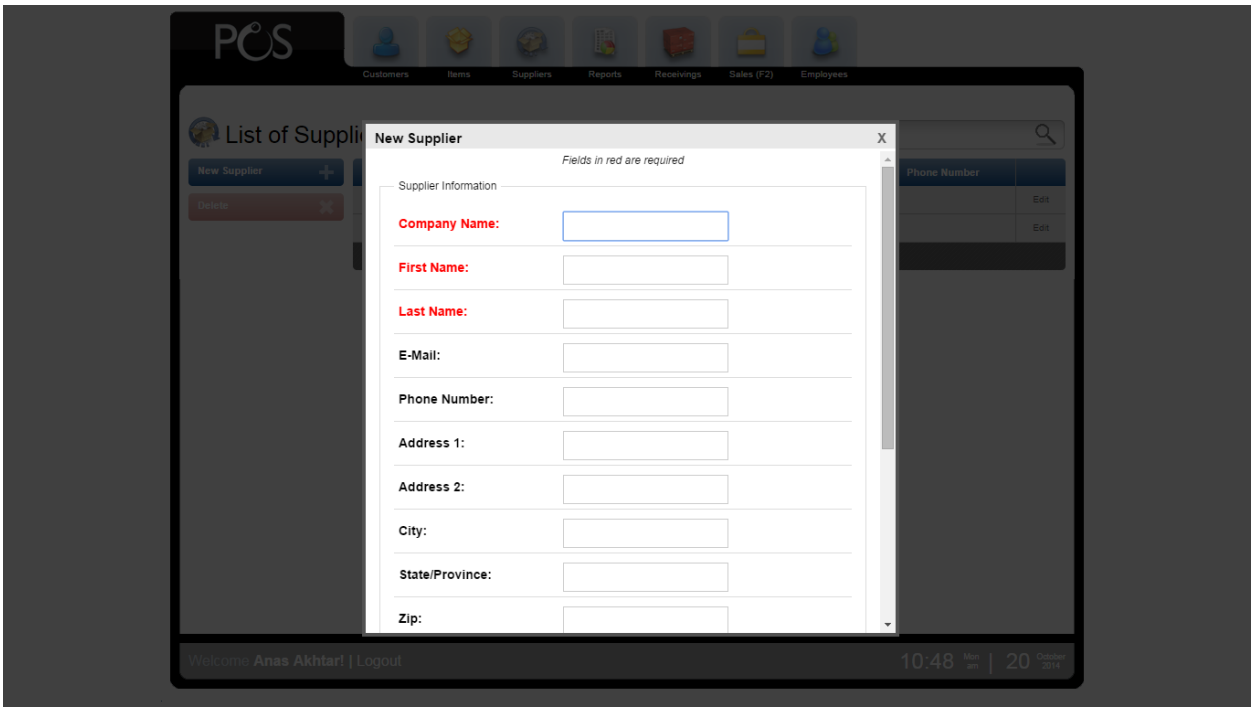
8.13 **Suppliers:**

This page is displayed on click ofsuppliers module. This shows the total suppliers record present in the system. On right top corner have the searching option for searching supplier, if you need to find the any supplier by its name for quick access, apart from viewing and searching from all records, in case of hundreds of records. Left panel shows three buttons, 1. New Supplier: for adding new supplier in database, 2. Delete: this button is enabled when one or many record are marked for deleting, 3. Cleanup old Suppliers: for deleting all supplier records together.



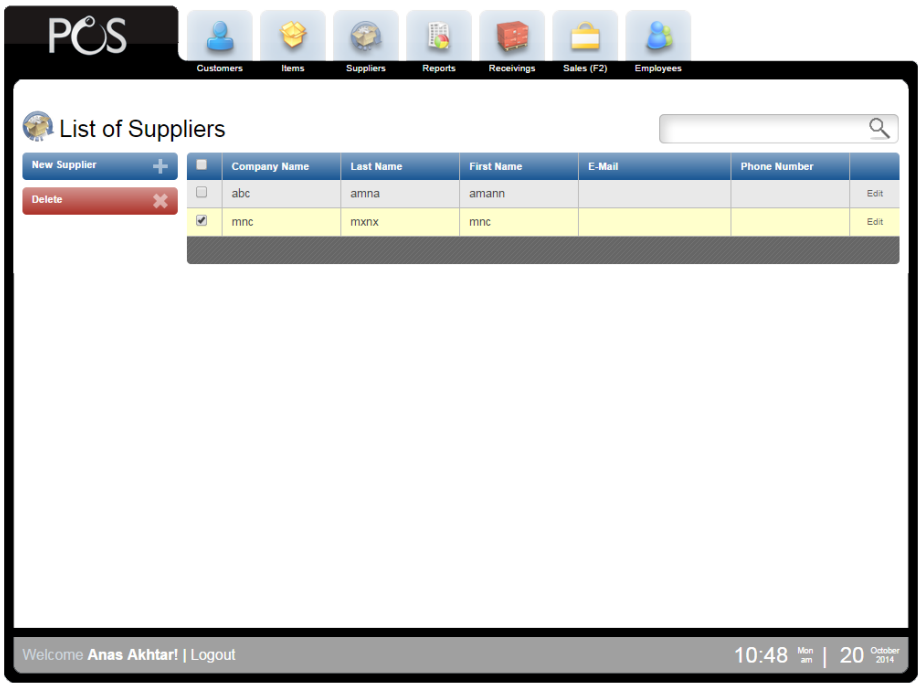
8.14 **New Supplier:**

This form is for adding new supplier.



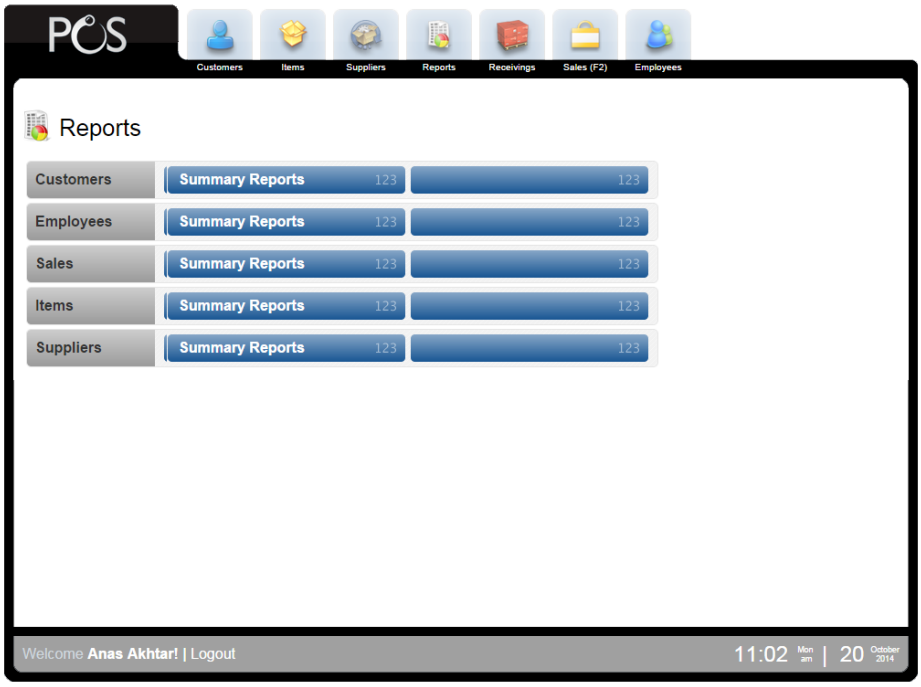
8.15 **Deleting Supplier:**

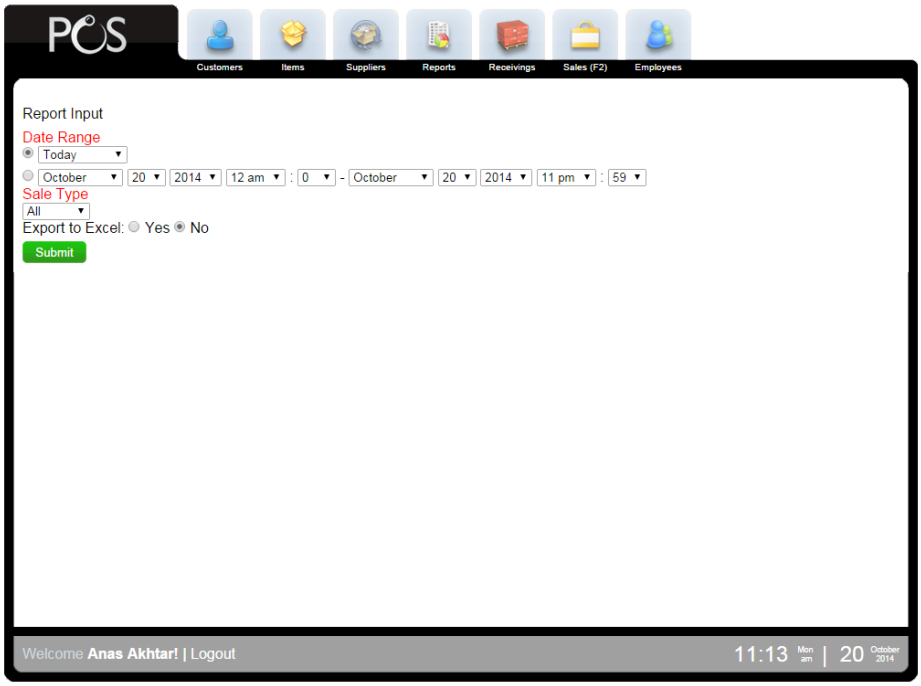
On marking of any record delete button is enabled, on click of delete button will delete that marked items record.



8.16 **Reports:**

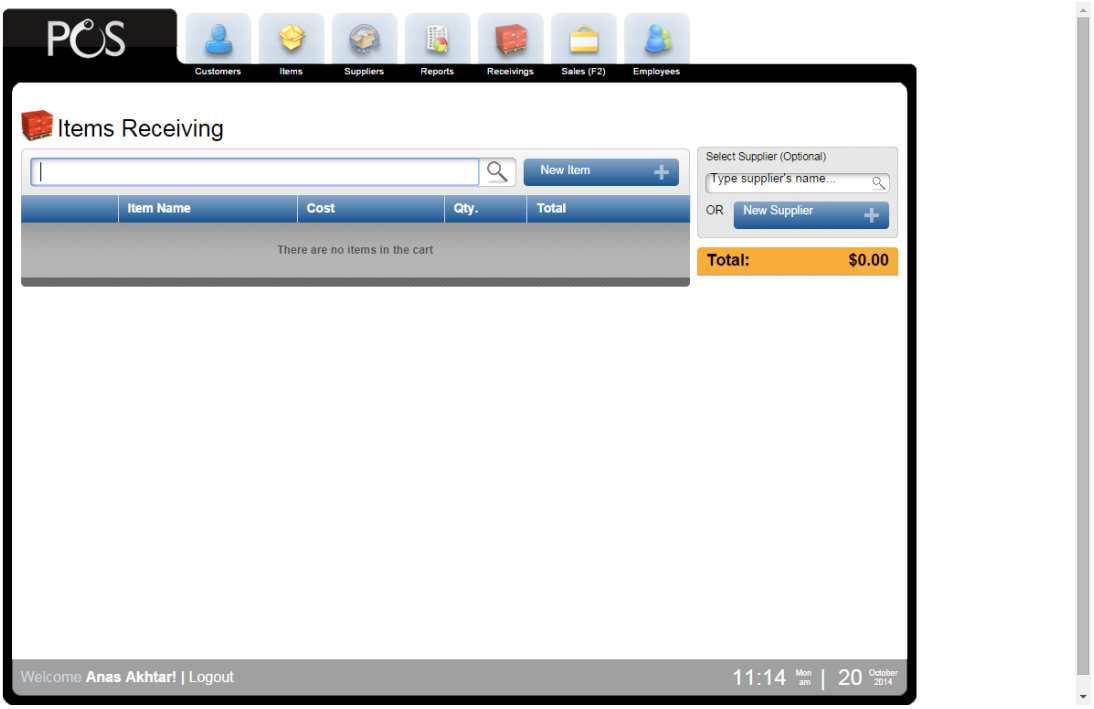
Summary reports can be generated easily through within clicks, for day, days, month, or year.



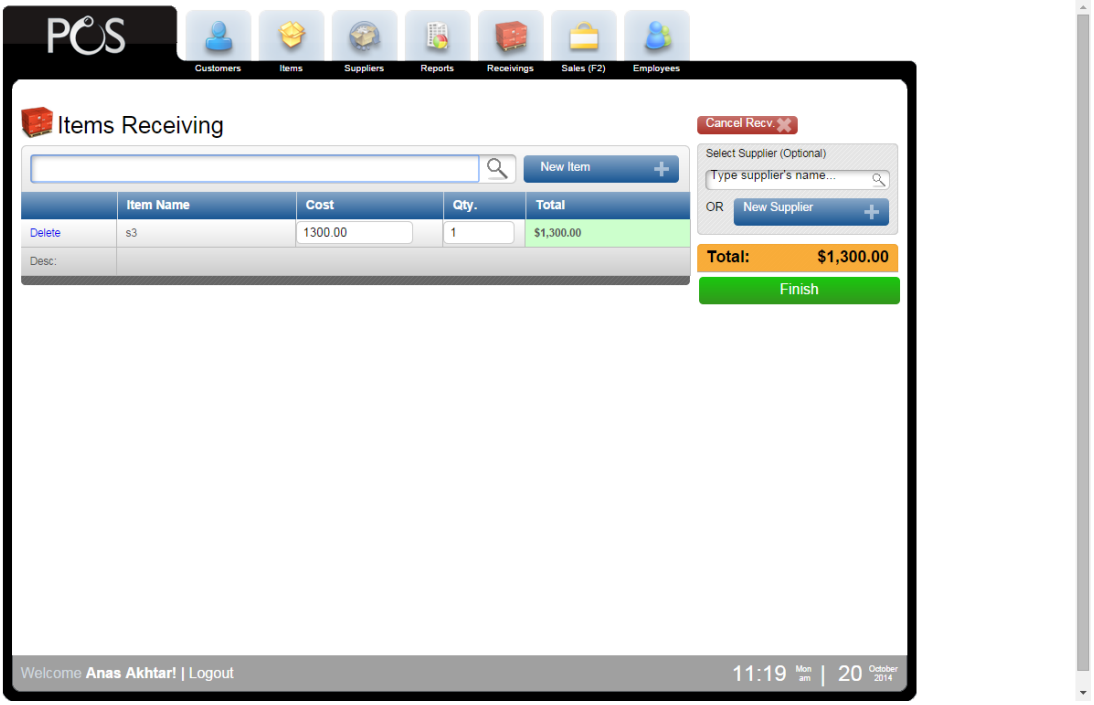


8.17 **Receiving:**

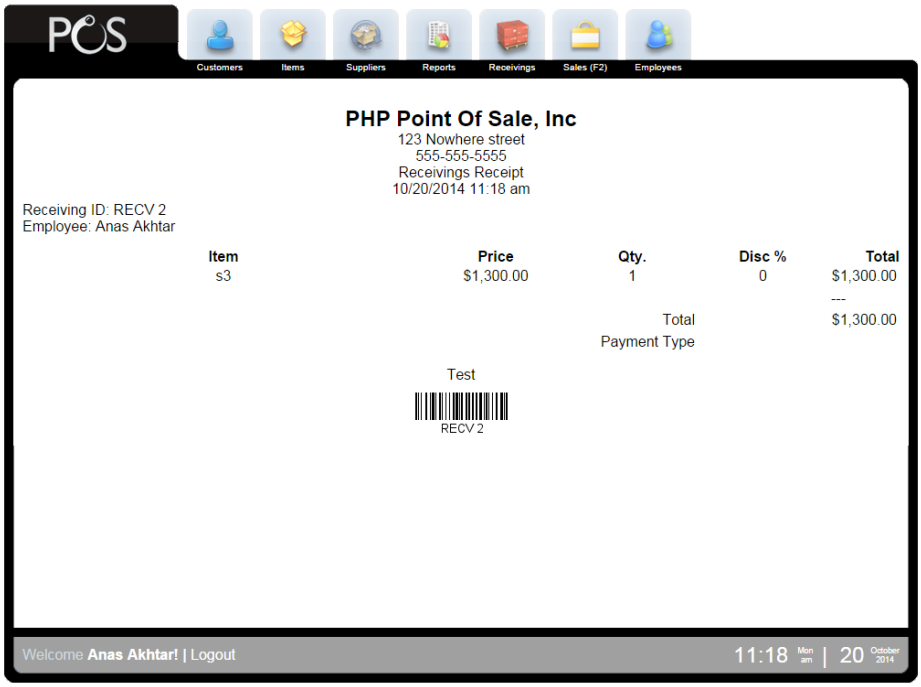
Receiving page



After adding item in the cart/purchase order

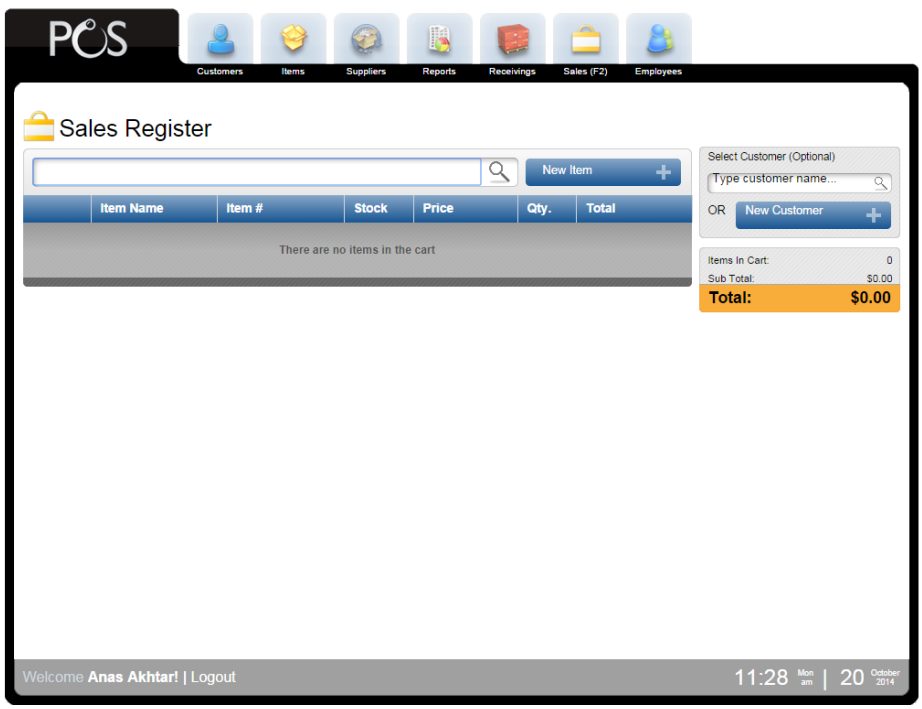


8.18 **Receiving Receipt:**

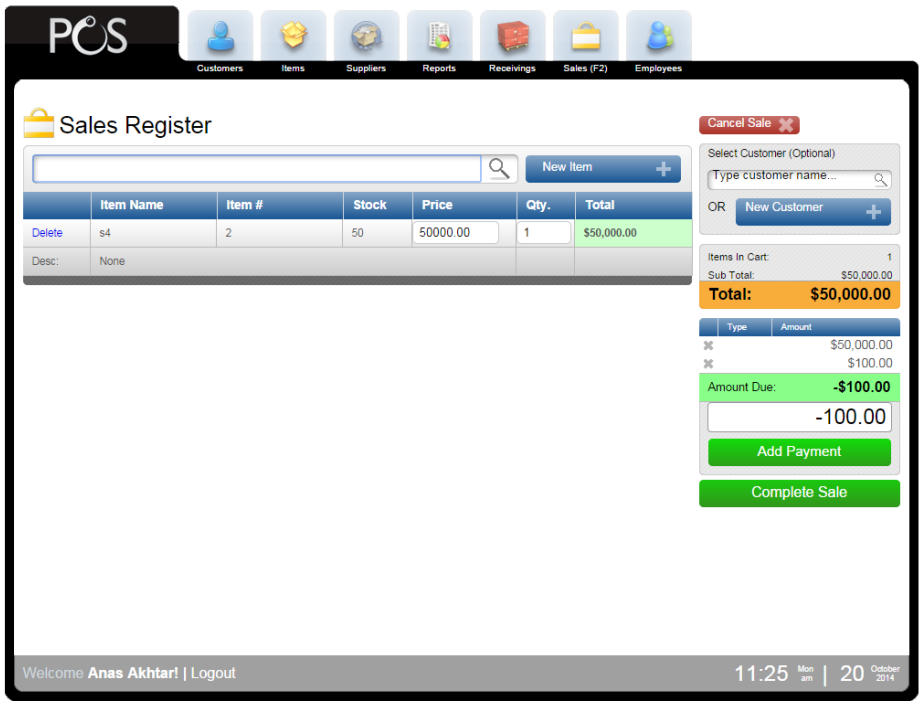


8.19 **Sales:**

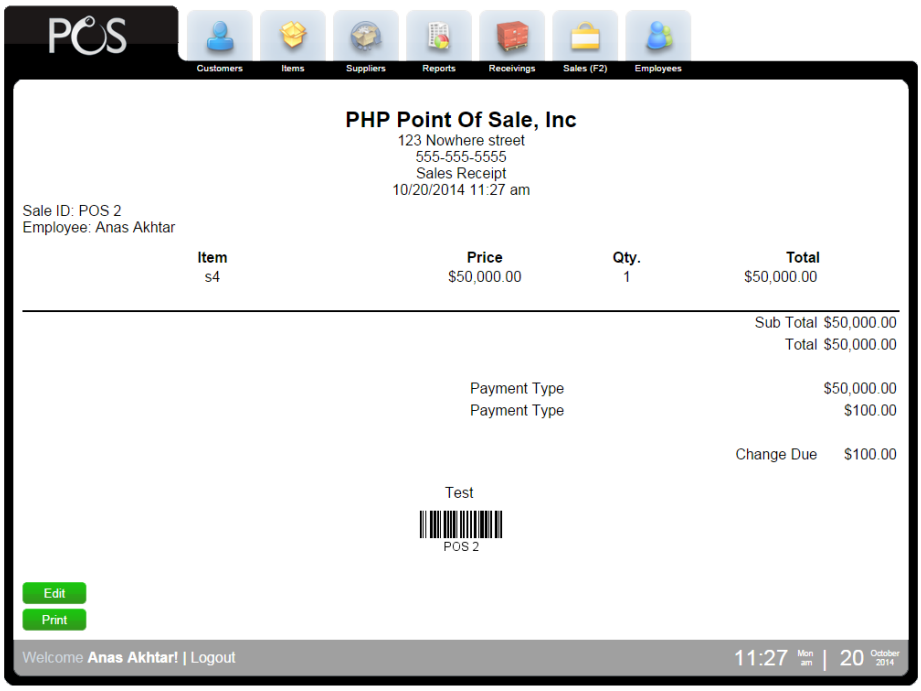
Sales page



After entering sales record/order

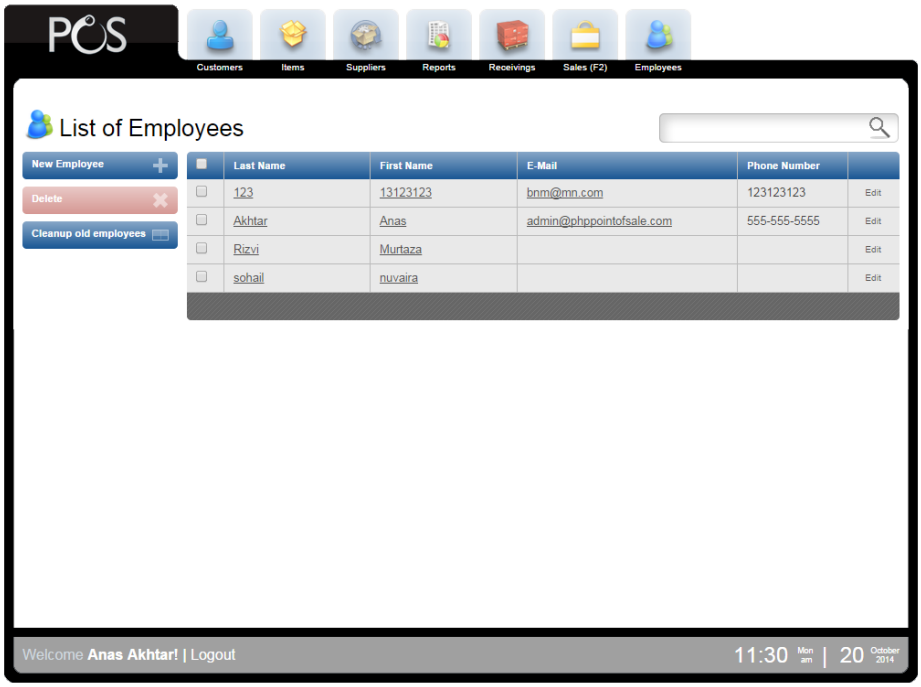


8.20 **Sales Receipt:**



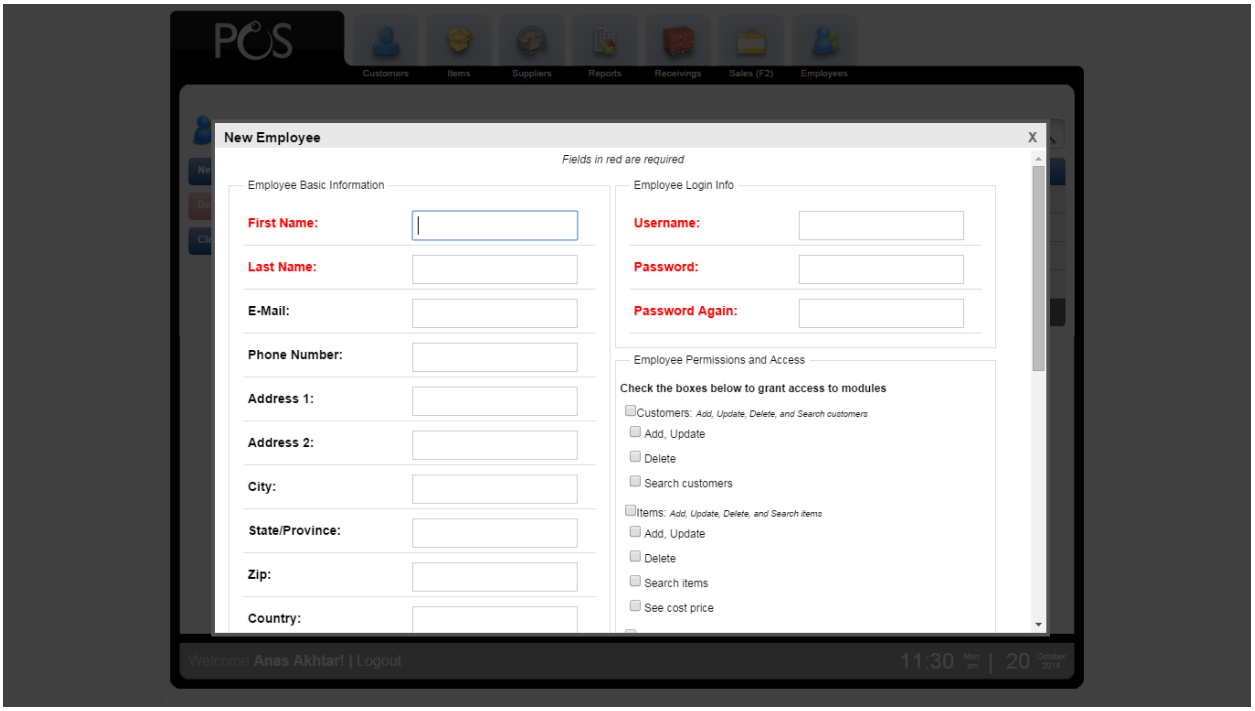
8.21 **Employees:**

This page is displayed on click of employees module. This shows the total employees record present in the system. On right top corner have the searching option for searching an employee, if you need to find the any employee by its name for quick access, apart from viewing and searching from all records, in case of hundreds of records. Left panel shows three buttons, 1. New Employee: for adding new employee in database, 2. Delete: this button is enabled when one or many record are marked for deleting, 3. Cleanup old Employees: for deleting all employee records together.



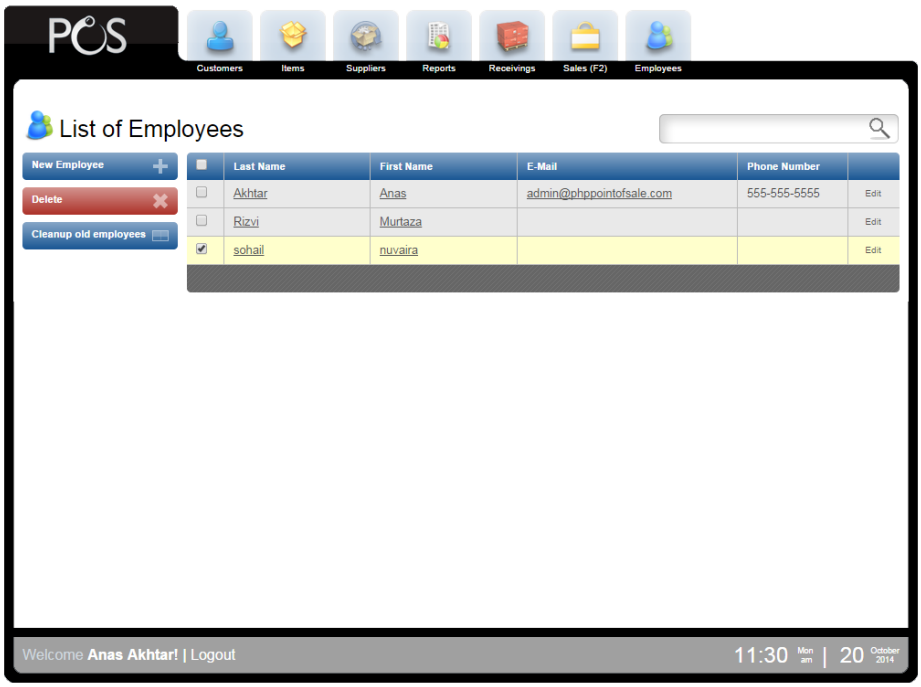
8.22 **New Employee:**

This is new employee form, comprises of employee details and rights of accessing system.

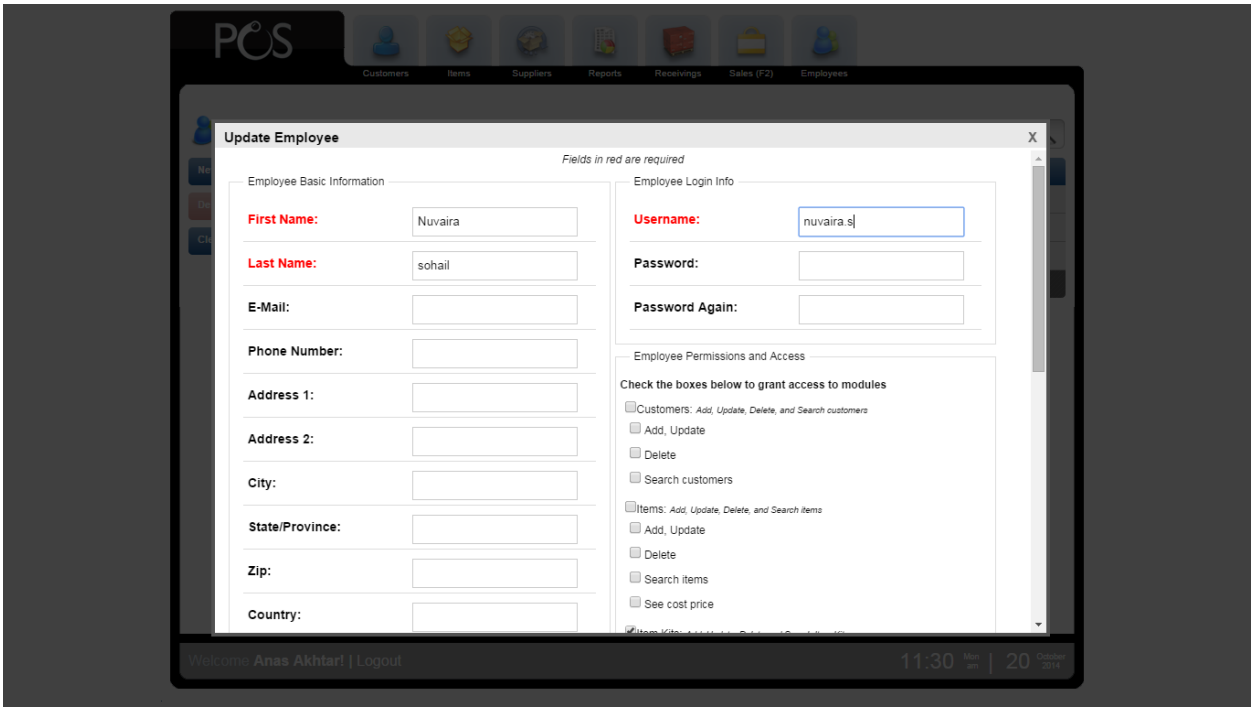


8.23 **Delete Employee:**

On marking of any record delete button is enabled, on click of delete button will delete that marked items record.



8.24 **Edit/Update Employee:**



Chapter 9. Testing

The following test cases were carried out to ensure the proper functionality of the software

Test Case 1

Procedure:

1. Enter incorrect username, password, and role at the login screen of the application.

2. Click submit to login to the application.

Expected Result:

The user should be taken to the login screen again displaying an error message that the given credentials are incorrect.

Actual Result:

The application denies logging in and the proper error message is shown.

Test Case 2

Procedure:

1. Leave the username, password, and role fields at the login screen empty.

2. Click submit to login to the application.

Expected Result:

The user should be taken to the login screen again displaying an error message that the given credentials are incorrect.

Actual Result:

The application denies logging in and the proper error message is shown.

Test Case 3

Procedure:

1. Enter correct username, password, and role at the login screen of the application.

2. Click submit to login to the application.

Expected Result:

The user should be taken to their dashboard depending on the credentials that they provided at the login screen.

Actual Result:

The user is successfully logged into the application and is taken to his dashboard based on the information provided at the login screen.