Business Plax: For a Small Business Management System

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A Project submitted in partial fulfillment of the requirement for the degree of Bachelor of Science in Software Engineering

Department of Software Engineering

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Approval

This **Project** titled "**Business Plax: For a Small Business Management Area**", submitted by **Afjal Hossain**, **161-35-1510** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc in Software Engineering and approved as to its style and contents.

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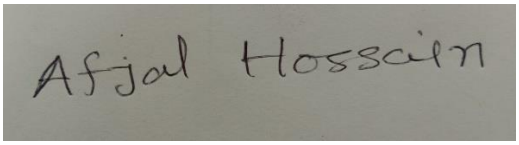
I would like to thank them who were helped in my project by their very important suggestions without their passionate participation and input; the project could not be successfully conducted. I take this opportunity to record my sincere thanks to all the faculty members of the Department of Software Engineering for their help and encouragement.

DECLARATION

We hereby declare that we have taken this project under the supervisor of **Md. Anwar Hossen**, Senior Lecturer, **Department of Software Engineering**, **Daffodil International University**. We also declare that neither this project nor any part of project has been submitted elsewhere for award of any degree.



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Executive Summary

The time when we started the development part it's in October. Like other projects, it is important to work hard, endurance, dedication, and concentration to complete the project. There are many reasons for the capitalization of the project development, such as the requirements of the stakeholder to be properly filled.

If you follow the requirements analysis properly, then it helps a lot in the development of the project. We first analyze our project requirements and then we do the next step design specification.

An application system database plays an important role. For this reason, we are focused on creating a database design. We have designed the drawing table to say table with the right relationship. Admin part can also be called part of the maintenance. Admin plays a big role in our system.

The user interface is easy to create if any user can easily understand. After that, I check everything again and go to the main functionality of the project.

Developing a project is not an easy task. But building the project is not the and actually. At the end of complete the project, you have to make sure that your project functionality works fine. For that, you have to come in the testing part, its part of quality assurance. The responsibility of quality assurance is to find the vulnerability of the system. If any bug can be found before the system release then there is a change to fix that bug. So testing the project we have assured the quality of the project.

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Chapter-1

Introduction

1.1 Project Overview

Managing projects in a small business setting can be even more challenging than doing so within a larger company. A big business might have a project manager who maintained their business by software where the small business project manager, it's completed by on their hand.

Since the growth of a small business depends in large part on efficiency, it's important to find project management software that can help their maximize output while keeping their workload balanced.

Whether you are a small business owner or heading multiple businesses, there would always be a number of activities going on every time. It could be a challenge to handle too many things at once and not let work become chaotic.

Day by day people are getting busy with their daily task and this work properly completed is very tough. On the other hand, every business required their daily or monthly purchases and sales reports.

For the reason, I am going to make an online web application making this process easy and simple. By using this system people will not face any hassle to managing their business. Also people will get the benefit of making their report of business transactions.

1.2 Project Objectives

The main objectives of this project named “Business Plax” is to make an automation system which might be helpful for many users from a different perspective by solving their few problems. So that’s why we are going to develop such a project.

1.2.1 Background

I know that the IT sector in our country is improving day by day, every sector is gradually improving in IT. The big business organizations of the country are conducting their business software in a very nice and varied way. Again, using these software has made it possible to operate a large business with comparatively few employees. However, because of the high cost of these software, small or medium traders are not able to take advantage of this business. As a result, they have to work a lot to manage their business. So considering that, I have brainstormed and thinking that how give some services based on this specific problem of their small business. And I select my Business Plax software with some facilities that make their business manage easier and profitable.

1.2.2 Benefits and Beneficiaries

Using this applications would be beneficial for some point of view. Now, I am mentioning those below:

- My system helps to small business owners for managing their business easily
- It helps to improved business productivity
- It would be help to reduces labor costs
- It's increase financial performance
- It's also improved inventory management
- It helps accurate pricing calculation
- This system increase customer revenue
- Reduced technology maintenance and support
- Automation

1.2.3 Goals

The main goal of this project is to develop a web based application. The proposed model contains some modules. The ultimate goal of this application is to help small businesses manage their business benefits very easily.

1.3 Stakeholder

The stakeholders of the system are:

- Admin
- User

Admin: Admin plays huge role in this system. He manages all modules of this application. Like tat he can setup product catalog module and manage purchase and sale module and he also view purchases and sales reports.

User: At present user is generally portion of this application. User can view application Home page and they are also know our service details and about ours. User can contact business owner.

1.4 Proposed System Model

Before going to develop a system it is very important to have a system model. I have already prepared a system model. This model will clarify our proposed system in brief.

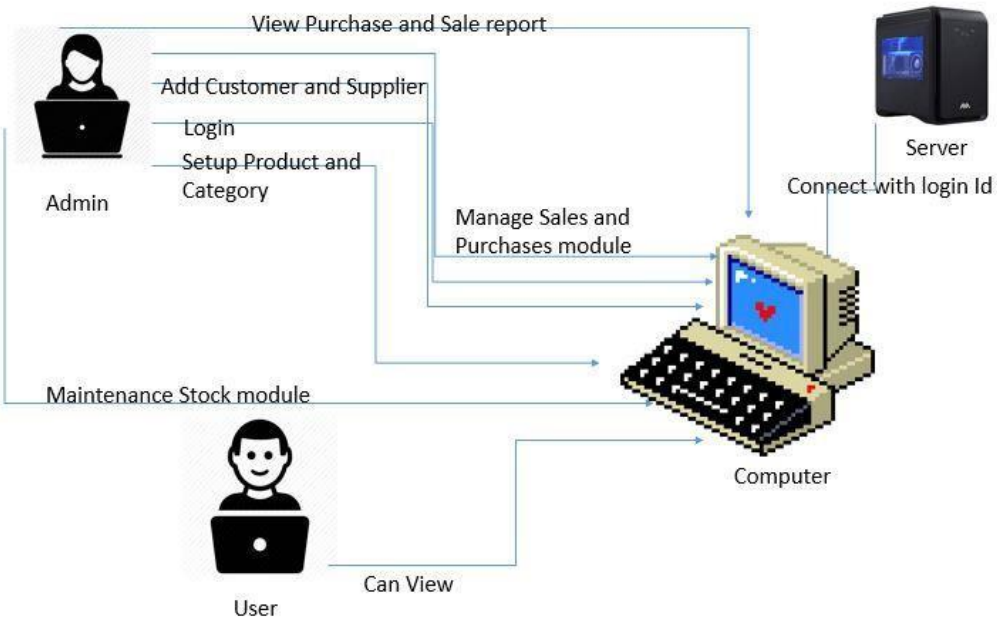


Figure 1.1: Proposed system model

1.5 Project Schedule

A proper project scheduling is helping to complete the project successfully and on time. Project scheduling makes a perfect work flow to step by step by timeframe. So project scheduling is must for a system.

1.5.1 Gantt Chart

Gantt chart is mainly visualize project outline. One of the most popular and useful ways of showing project activities displayed against time. On the left of the chart is a list of the activities and along the top is a suitable time scale. Each activity is represented by a bar, the position and length of the bar reflects the start date, duration and end date of the activity. For software developing, it is mostly used. Now I will show a Gantt chart for my project:

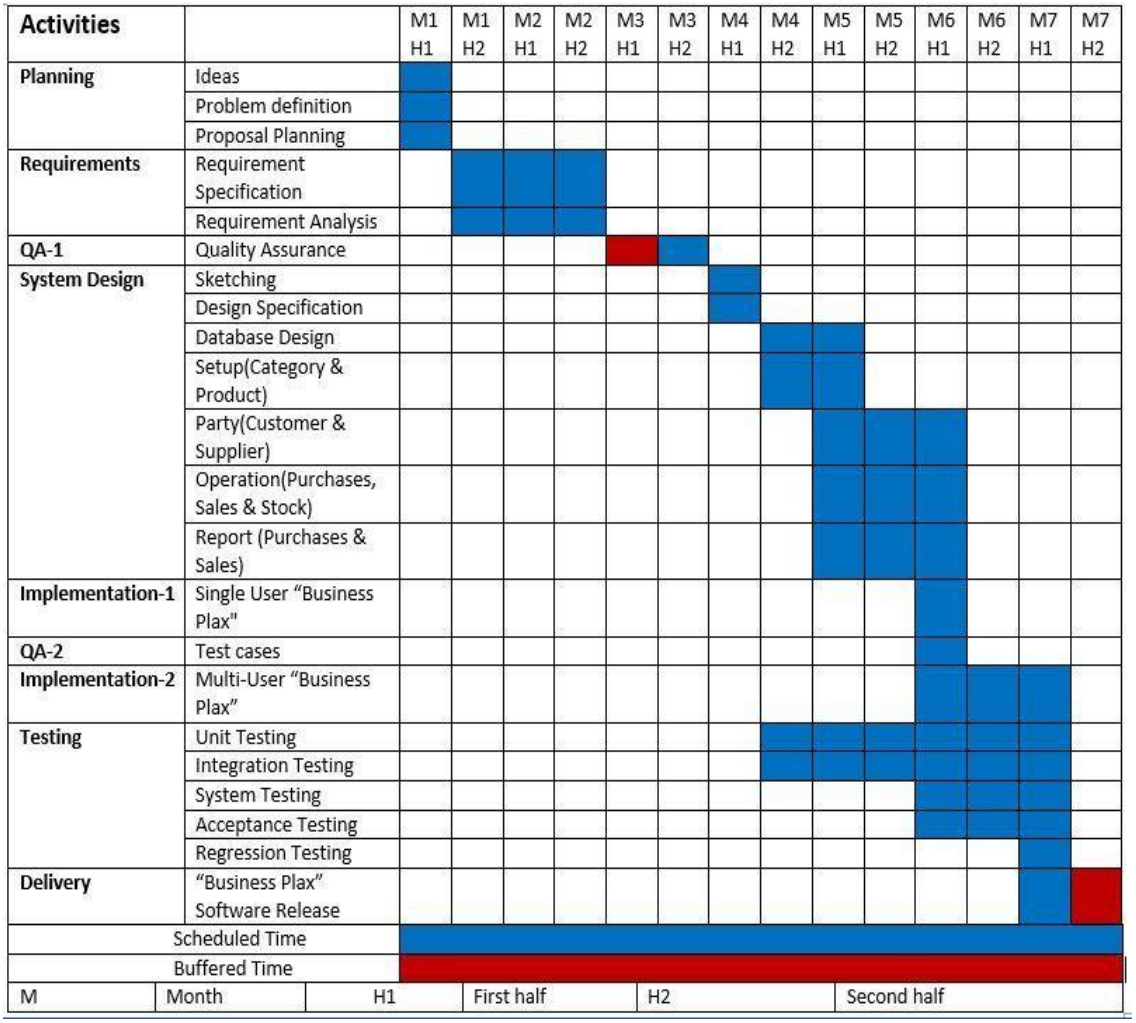


Figure 1.2: Gantt chart

1.5.2 Release Plan or Milestone

The release plan or milestones are given below:

Activities	Duration in Month	Total Month
Brainstorming, Problem identification	First-half(First month)	0.5
Requirement specification, Requirement analysis	First-half month & Second month	1.5
Quality assurance	Second-half Third month	. 5
Sketching, Design specification	First-half Fifth month	.5
Database design, Setup	Second-half (Fourth month) & First-half (Fifth month)	1

Party, Operation, Report	First-half (Fifth month) & First-half Sixth month	1.5
Test case	First-half Sixth month	0.5
Software Testing	Second-half Sixth month & First-half Seventh month	1
Software release	Second-half Seventh month	.5

Chapter-2

Software Requirements Specification (SRS)

2.1 Functional Requirements

Functional requirements refer to the function which is must be belong to the system. Functional requirements are mandatory to perform the software system. There is no system without functional requirements. Now, we are going to discuss functional requirements for our project.

Priority Chart:

A Prioritization Matrix is a useful technique to identify which problems are the most important to work on solving first. The Matrix helps you rank problems or issues generated through brainstorming. Using Priority Chart we can identify which function should get High Priority and which one should be Medium and which one is Low.

In Priority Matrix there is two part one is “Important” another one is “Urgent”. If any function is:

Important also Urgent = High Priority
Important but Not Urgent= Medium Priority
Not Important but Urgent= Low Priority Not
Important and Not Urgent = Ignore It

Important\Urgent	Yes	No
Yes	High Priority	Medium Priority
No	Low Priority	Ignore

Priority of my system features based on priority chart:

Freq. No:	Important	Urgent	Priority
FR01	**Yes**	**Yes**	**High**
FR02	**Yes**	**Yes**	**High**
FR03	**No**	**Yes**	**Medium**
FR04	**Yes**	**Yes**	**High**
FR05	**No**	**Yes**	**Medium**

2.1.1 Login for Admin

FR01	Login for Admin		
Description	Admin can login into system by system defined user name and password. He manage all modules in this application. Without login admin can't access any modules of this application.		
Stakeholders	Admin	**Priority**	High

2.1.2 Setup Category and Product

FR02	Setup Category and product		
Description	Admin can add category name with category unique code of product class. Admin also add product to product list according to product category. And he can view of those list category and product. Admin also have manage setup.		
Stakeholders	Admin	**Priority**	High

2.1.3 Party (Customer and Supplier)

FR03	Party (Customer and Supplier)		
Description	Admin can add their customer and supplier details into the system. Admin will be able to give loyalty point to its customers. Admin can manage customer and supplier details.		
Stakeholders	Admin	**Priority**	Medium

2.1.4 Operation (Purchases, Stock and Sales)

FR04	Operation (Purchases, Stack and Sales)		
Description	Admin can record purchases and sales information. When admin purchases any product then increase stock availability and when he go to sale any product he can see available product stock availability and when sale product then product stock automatically decrease.		
Stakeholders	Admin	**Priority**	High

2.1.5 Report (Purchases and Sales)

FR05	Report (Purchases and Sales)		
Description	When occurs purchase and sales event then system record of every event. Admin can see purchases and sales report.		
Stakeholders	Admin	**Priority**	Medium

2.2 Data Requirements

For achieve the model objectives data requirements prescribed scope and level of details required. What data is required for building the model can be known by gathering system data. Instead of gathering general system data it's better to gathering specific system data. An overall process flow can provide more detailed information. A process flow also helps to build a model building process.

Here, focus some main point. Such as:

- Classification of product category
- Manage Customer and Supplier
- Customer Loyalty point
- Product stock automation
- Product purchases and sales manage
- Report generate automation

2.3 Performance Requirements

Define performance specifications incorrectly can lead to disputes between client and supplier.

2.3.1 Speed and Latency Requirements

This is rare, in some case the response time will be dictated by legal requirements. Response time is important for user satisfaction. If any system loaded more than 10 seconds then user avoid them.

SLR1	**View result should be displayed less than 4 seconds**		
Description	When the Admin want to see any information then the view result must be show less than 4 second.		
Stakeholders	Admin	**Priority**	Medium

2.3.2 Precision or Accuracy Requirements

Always show the accurate result to admin and user. Wrong information arise misunderstanding.

PAR1	View Result must be accurate
Description	When the Admin want to see any Information then the view result must accurate.

Stakeholders	Admin and user	**Priority**	Medium

2.3.3 Capacity Requirements

The system should be capable of supporting a certain amount of customers and a certain amounts of interactions.

RT1	Supporting a certain amount of users and a certain amounts of interactions.		
Description	Suppose the system must support 1,000 users and 200 interactions per day.		
Stakeholders	Admin, users	**Priority**	Medium

2.4 Dependability Requirements

The dependability is measured based on four dimensions. Such as:

- Reliability
- Availability
- Durability
- Security
- Safety

Dependability is the ability to provide services that can defensibly be trusted within a time-period.

2.4.1 Reliability Requirements

Reliability is the probability of failure-free operation of a system over a specified time within a specified environment for a specified purpose.

RR1	System must be failure-free		
Description	The system must be failure-free operation system and technical error free over a specified time within this type of environment.		
Stakeholders	Admin, Visitor	**Priority**	High

2.4.2 Availability Requirements

An availability requirement is any requirement that is not a functional, data or process requirement concerned with define.

AR1	The ability of the system to deliver service when requested		
Description	The system must be available on 24 X 7. In this system , application have ability to deliver service when admin requested		
Stakeholders	Admin	**Priority**	High

2.4.3 Robustness or Fault-Tolerance Requirements

Ensure the system can cope with error during execution. Also ensure that the system continue properly even of the failure of some of its components.

RFTR1	Ensure that system can handle admin access or any external tolerance.		
Description	The system can cope with error during execution. Also ensure that the system continue properly even of the failure of some of its components		
Stakeholders	Admin	**Priority**	High

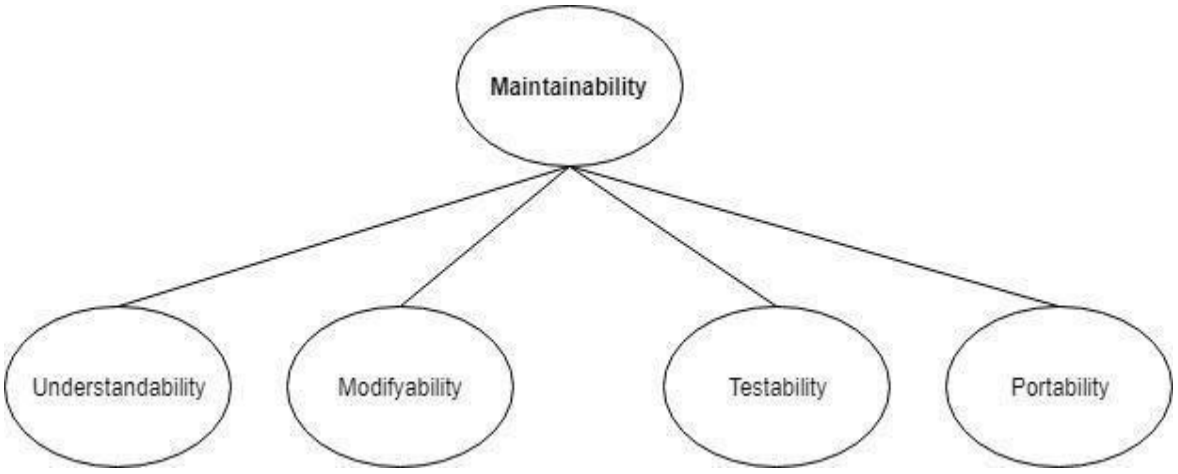
2.4.4 Safety-Critical Requirements

Always ensure safety of user informations of this system.

SCR1	Always ensure admin authorizations		
Description	The system have to secure. When admin enter his password into the system then have to password encrypted. When admin sign in to application then match his password with previous password. Without matching password admin cannot access to application.		
Stakeholders	Admin	**Priority**	High

2.5 Maintainability and Supportability Requirements

Maintenance is the activity of modifying a software product after initial delivery.



2.5.1 Maintenance Requirements

Its main purpose is to modify and update software application after delivery to correct faults and to improve performance. Ensure the all type of maintenance requirements

- Corrective Maintenance
- Adaptive Maintenance
- Perfective Maintenance
- Preventive Maintenance

2.5.2 Supportability Requirements

Software Supportability is the capability of supporting a software system over its whole product life. It covers the following key aspects associated to the system

- Operation (install, loading or unloading, configuration, error recovery and execution)
- Logistics Management (once a new baseline has been produced)
- Modification (fixing bugs, or adding/changing functionality due to changinguser needs)

2.5.3 Adaptability Requirements

A changing climate schema a critical challenge to how improve my system and adapt my software to user environment. Our technical expertise, combined with an in-depth understanding of the built environment, enables us to help a wide range of clients address the impacts of climate change.

2.5.4 Scalability or Extensibility Requirements

Make sure that the system can adapt easily with new functionalities, interfaces, devices and new input types.

2.6 Security Requirements

System security is most important requirements. For lack of security the data would be stealing, manipulating data and causing denial of service.

Some security related categories:

- Permission to access data
- Verification
- Securing information
- Security policies

2.6.1 Access Requirements

Reduce unauthorized access there have some barrier. There remain some authentication and authorization techniques.

- Strong Access Control Measures
- Maintain an Information Security Policy
- Regularly Monitor and Test Networks
- Build and Maintain a Secure Network

2.6.2 Integrity Requirements

Ensure that data and communications are not intentionally corrupted via unauthorized creation, deletion, modification.

The hash value is being used on this system for sensitive data.

2.6.3 Privacy Requirements

Privacy requirements are mostly needed for a system. In this system admin area is highly secure (Anyone can't access without user name password as an admin). Nobody can't make admin password automatically and also can't find password in this system and others temporary users can see only the area this system.

2.7 Usability and Human- Interaction Requirements

The system can be failed for Usability. User Experience is one of the most important factors to any system. The system must be easy to use, easy to understand and easy to learn.

2.7.1 Ease of use Requirements

Our system is very easy to use and easy to understandable. There is no long process to complete a task. User can complete their action with a few steps.

2.7.2 Understandability and Politeness Requirements

Making this system based on a targeted area and all of those targeted area people have known about our system because this system is make their life easier. User can

understand this system by own.

2.7.3 Accessibility Requirements

The requirements for how easy it should be for people and our system is very much easy to use and understand.

2.7.4 User Documentation Requirements

Gather the user expects and must do it in system properly is mandatory because this requirement given by user directly. And after the complete the system user can give new requirements then it's also be added in system.

2.7.5 Training Requirements

If it's need to training the user for use the system properly then it's must to training them properly.
In our project we don't need this type of training for user but a simple guide for them.

2.7.6 Look and Feel Requirements

If your systems look garbage then user can fell boring and not going to next step. Look and feel requirements are how the system will look like and how the user interface or graphical user interface of our system will display to the user.

2.7.7 Appearance Requirements

Admin have to know which field is require and which is not require because make it easy understandable. Such as, if there any optional field then the word "optional" appeared into the field.

AR1	In optional field the word "optional" must appear into the field		
Description	If there is no optional word appeared into the field that Means this field is mandatory for input.		
Stakeholders	Admin	**Priority**	High

2.7.8 Style Requirements

Keeping all contents within a format is easy to understandable for user. A good style can attract to user keep them into the system long time.

SR1	All content must be appear within a format

Description	Input field and other view result show an specific format		
Stakeholders	Admin	**Priority**	Medium

2.8 Operational and Environmental Requirements

Operational requirements are those statements that identify the essential capabilities, associated, and performance measures.

The operational environment stands for political, social, legislative, economic, cultural and natural environmental factors that significantly affect the implementation of any cooperation.

2.8.1 Release Requirements

There are no specific release requirements in our system.

2.8.2 Legal Requirements

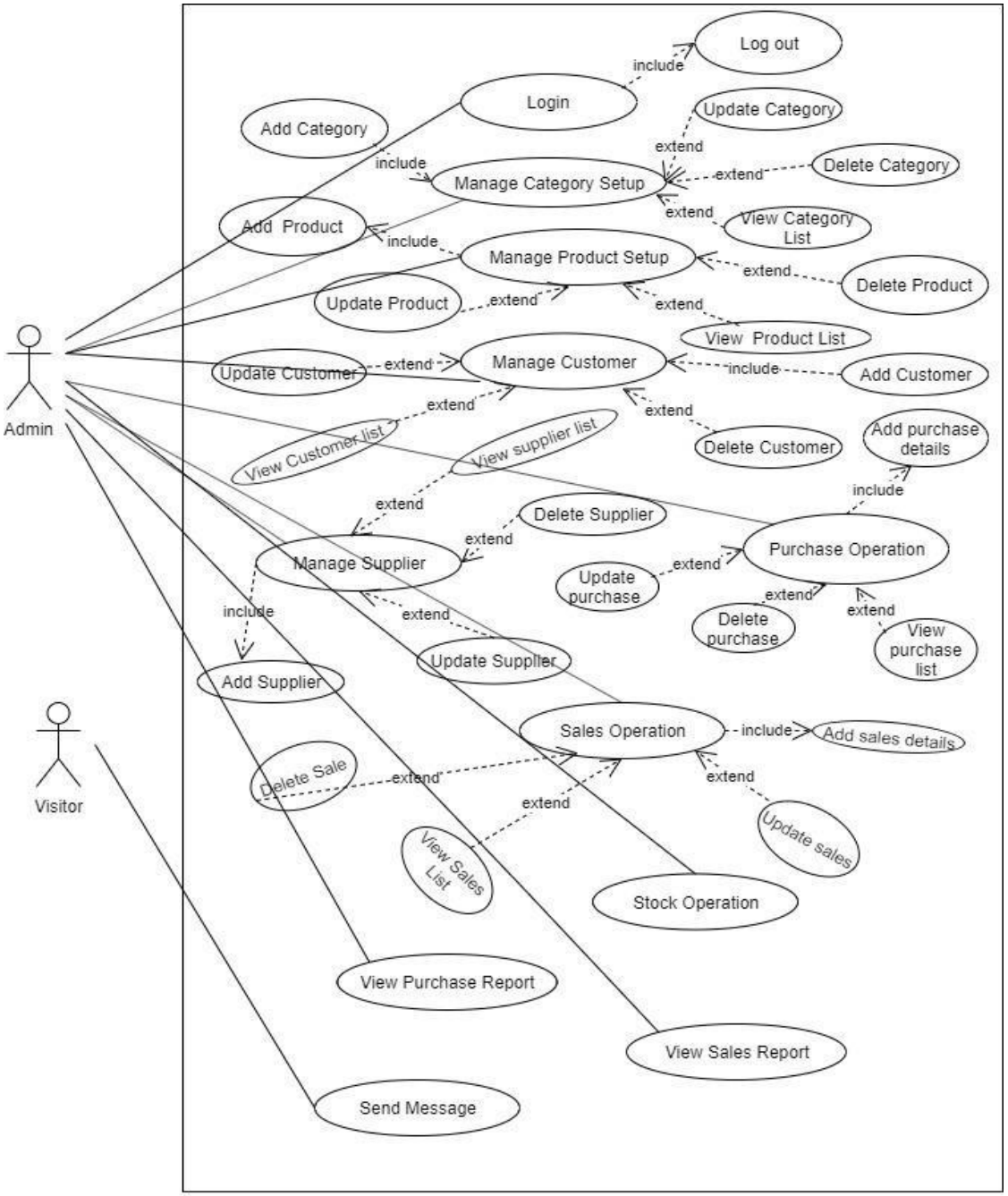
Legal Requirements means, as to any Person, any requirement under a Permit and any Governmental Rule. But our system there is no connection with Government.

Chapter-3

Requirement Analysis

3.1 Use Case Diagram

I have use case diagram. There are two actors' like that primary actor admin and secondary actor visitor. Each actor plays different role. This diagram will clearly brief in this system.



Use Case Diagram

Figure 3.1: Use case diagram for "Business Plax"

Use Case Description

3.1.1 Login for Admin

Use Case	Login	
Scope	Admin enter the application after the login successfully	
Preconditions	Admin must exist in database before login	
Success End Condition	Admin can access the system	
Failed End Condition	The user name and password is not valid of admin	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When admin click on the "login" option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the login page
	2	Admin enter his Email and Password
	3	Admin click on the login button
	4	Admin access the system
Alternative Flows	**Step**	**Branching Action**
	1	System display can't visualize
	2	User name and password does not match
	3	Don't occur any event when click login button
	4	Admin can't access the System
	4a	Lost internet connection when click login button
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.2 Category Setup

Use Case	Category Setup	
Scope	Successfully setup Category	
Preconditions	Admin must be login in the system	
Success End Condition	Admin Add ,Edit, Delete, View and search category in the system	
Failed End Condition	Can't Add, Edit, Delete, View and search category in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click Add category option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the category screen
	2	Admin can add category save it
	3	View list of category
	4	Admin can edit each of category
	5	Can search specific category
	6	Admin can delete Each of category
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	2	Admin can't data entry
	2a	Can't save it
	2a.1	Mandatory field empty
	2a.2	Input miss match
	3	Can't view category list

	4	Admin can't edit category
	5	Search does not work
	6	Admin can't delete previous category
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.3 Product Setup

Use Case	Product Setup	
Scope	Successfully Product Setup	
Preconditions	Admin must be login in the system	
Success End Condition	Admin Add ,Edit, Delete, View and search Product in the system	
Failed End Condition	Can't Add, Edit, Delete, View and search product in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click product option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the product screen
	2	Admin can add product under category and save it
	3	View list of product
	4	Admin can edit each of product
	5	Can search specific product
	6	Admin can delete Each of product
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	2	Admin can't data entry
	2a	Can't save it
	2a.1	Mandatory field empty
	2a.2	Input miss match
	3	Can't view product list
	4	Admin can't edit product
	5	Search does not work
	6	Admin can't delete previous product
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.4 Manage Customer

Use Case	Manage Customer	
Scope	Successfully Add Customer	
Preconditions	Admin must be login in the system	
Success End Condition	Admin Add ,Edit, Delete, View and search customer details in the system	
Failed End Condition	Can't Add, Edit, Delete, View and search customer details in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click customer option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the customer screen
	2	Admin can add customer under a

		product category and save it
	3	View list of customer
	4	Admin can edit each of customer
	5	Can search specific customer
	6	Admin can delete Each of customer
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	2	Admin can't data entry
	2a	Can't save it
	2a.1	Mandatory field empty
	2a.2	Input miss match
	3	Can't view customer list
	4	Admin can't edit customer information
	5	Search does not work
	6	Admin can't delete previous customer
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.5 Manage Supplier

Use Case	Manage Supplier	
Scope	Successfully Add Supplier	
Preconditions	Admin must be login in the system	
Success End Condition	Admin Add ,Edit, Delete, View and search supplier details in the system	
Failed End Condition	Can't Add, Edit, Delete, View and search supplier details in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click "Supplier" option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the supplier screen
	2	Admin can add supplier under a product category and save it
	3	View list of supplier
	4	Admin can edit each of supplier
	5	Can search specific supplier
	6	Admin can delete Each of supplier
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	2	Admin can't data entry
	2a	Can't save it
	2a.1	Mandatory field empty
	2a.2	Input miss match
	3	Can't view supplier list
	4	Admin can't edit supplier information
	5	Search does not work
	6	Admin can't delete previous supplier
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.6 Purchase Operation

Use Case	Purchase Operation

Scope	Successfully manage purchase details	
Preconditions	Admin must be login in the system	
Success End Condition	Admin Add ,Edit, Delete, View and search purchase details in the system	
Failed End Condition	Can't Add, Edit, Delete, View and search purchase details in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click "Purchase" option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the purchase screen
	2	Admin can add purchase details within invoice number under a supplier and save it
	3	View list of purchase details
	4	Admin can edit each of purchases operation
	5	Can search specific purchase operation
	6	Admin can delete Each of purchase operation
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	2	Admin can't data entry
	2a	Can't save it
	2a.1	Mandatory field empty
	2a.2	Input miss match
	3	Can't view purchase operation list
	4	Admin can't edit purchase operation
	5	Search does not work
	6	Admin can't delete previous purchase operation
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.7 Stock Operation

Use Case	Stock Operation	
Scope	Successfully view stock of product	
Preconditions	Admin must be login in the system	
Success End Condition	Admin View and search stock details in the system	
Failed End Condition	Can't View and search stock details in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click "Stock" option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the stock screen
	2	View list of stock details
	3	Can search specific stock operation
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	1b	Admin can't data entry
	2	Can't view purchase operation list
	3	Search does not work
	3a	Mandatory field empty
	3b	Input miss match

Quality Requirements	Step	Requirements
	1	N/A

3.1.8 Sale Operation

Use Case	Sale Operation	
Scope	Successfully manage Sale details	
Preconditions	Admin must be login in the system	
Success End Condition	Admin Add ,Edit, Delete, View and search sale details in the system	
Failed End Condition	Can't Add, Edit, Delete, View and search sale details in the system	
Primary Actors: Secondary Actors:	Admin	
Trigger	When click "Sale" option	
Description / Main Success Scenario	Step	Action
	1	System display the sale screen
	2	Admin can add sale details within Customer and product then save it
	3	View list of sale details
	4	Admin can edit each of sale operation
	5	Can search specific sale operation
	6	Admin can delete Each of sale operation
Alternative Flows	Step	Branching Action
	1	System does not visualized
	1a	Internet Connection lost
	2	Admin can't data entry
	2a	Can't save it
	2a.1	Mandatory field empty
	2a.2	Input miss match
	3	Can't view sale operation list
	4	Admin can't edit sale operation
	5	Search does not work
	6	Admin can't delete previous sale operation
Quality Requirements	Step	Requirements
	1	N/A

3.1.9 View Purchase Report

Use Case	View Purchase Report	
Scope	Successfully view purchase report	
Preconditions	Admin must be login in the system	
Success End Condition	Admin can view purchase report in the system	
Failed End Condition	Can't view purchase report in the system	
Primary Actors: Secondary Actors:	Admin	
Trigger	When click "Purchase Report" option	
Description / Main Success Scenario	Step	Action
	1	System display the purchase report screen
	2	View list of purchase report
	3	Can search specific purchase report
Alternative Flows	Step	Branching Action

	1	System does not visualized
	1a	Internet Connection lost
	1b	Admin can't data entry for searching
	2	Can't view purchase report
	3	Search does not properly work
	3a	Mandatory field empty
	3b	Input miss match
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.10 Sale Report

Use Case	View Sale Report	
Scope	Successfully view sale report	
Preconditions	Admin must be login in the system	
Success End Condition	Admin can view sale report in the system	
Failed End Condition	Can't view sale report in the system	
Primary Actors: **Secondary Actors:**	Admin	
Trigger	When click "Sale Report" option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display the sale report screen
	2	View list of sale report
	3	Can search specific sale report
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	1b	Admin can't data entry for searching
	2	Can't view sale report
	3	Search does not properly work
	3a	Mandatory field empty
	3b	Input miss match
Quality Requirements	**Step**	**Requirements**
	1	N/A

3.1.11 Send Message

Use Case	Send Message	
Scope	Successfully message send	
Preconditions		
Success End Condition	Visitor can send message into the system	
Failed End Condition	Can't send message in the system	
Primary Actors: **Secondary Actors:**	Visitor	
Trigger	When click "Submit" option	
Description / Main Success Scenario	**Step**	**Action**
	1	System display web home screen
	2	View web home page
	3	Can send message
Alternative Flows	**Step**	**Branching Action**
	1	System does not visualized
	1a	Internet Connection lost
	1b	Admin can't data entry for message
	2	Can't send message

Quality Requirements	Step	Requirements
	1	N/A

3.2 Activity Diagram

I have prepared some activity diagram according to my use case. These activity diagrams are properly referring the flow of the individual conditions of my project.

3.2.1 Activity Diagram for Login

Admin login into the application through user name & Password that are system define.

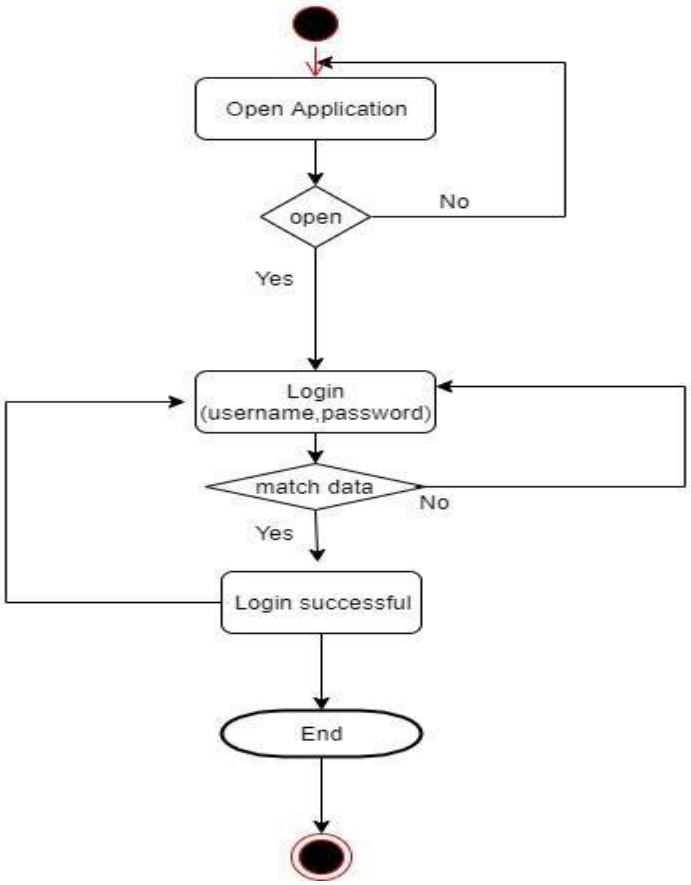


Figure 3.2.1: Login activity diagram

3.2.2 Activity diagram for Category Setup

After login in the application admin can add, update, delete, search of category.

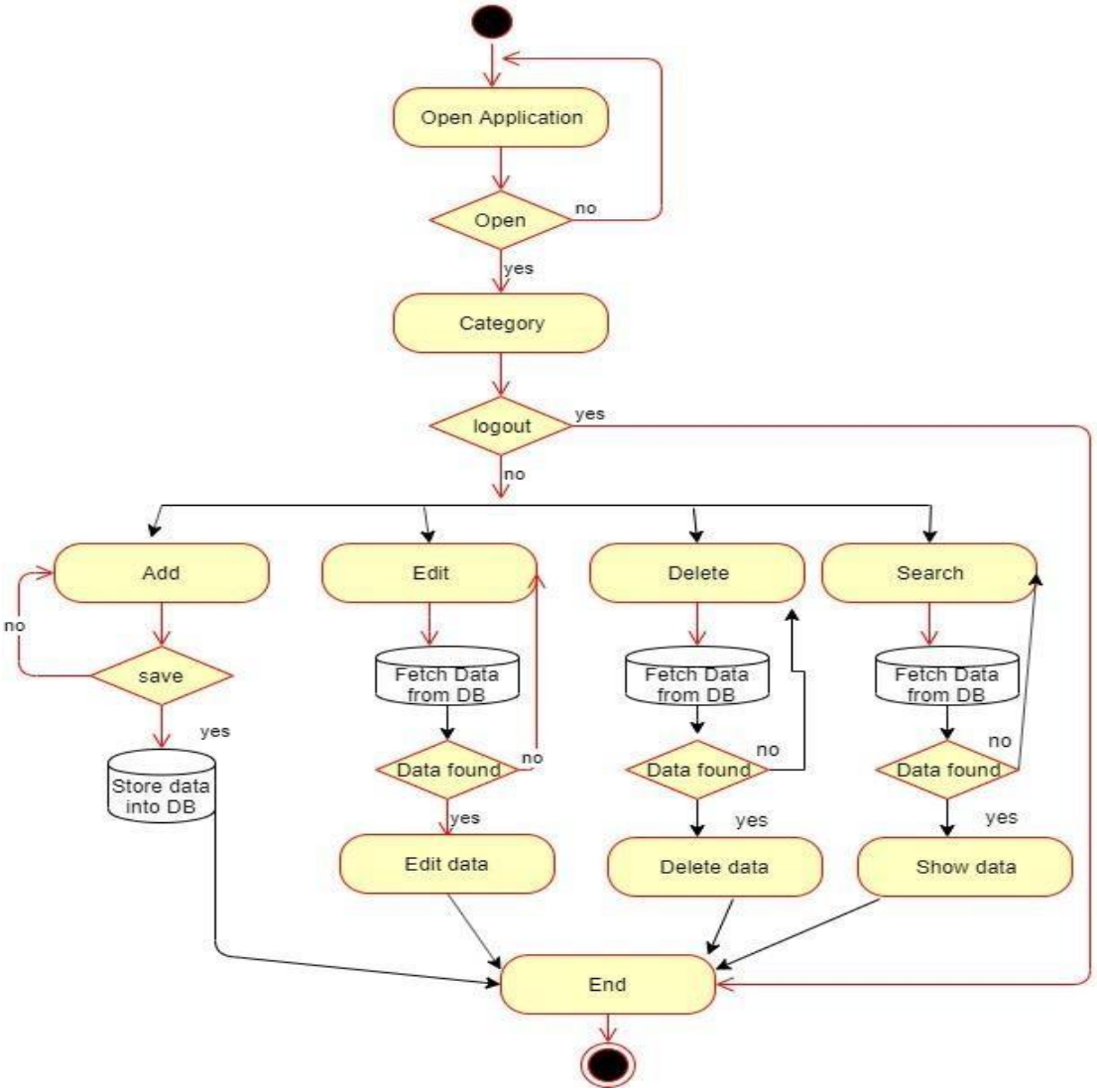


Figure 3.2.2: Activity diagram for Category Setup

3.2.3 Activity diagram for Product Setup

After login in the application admin can add, update, delete, search of Product.

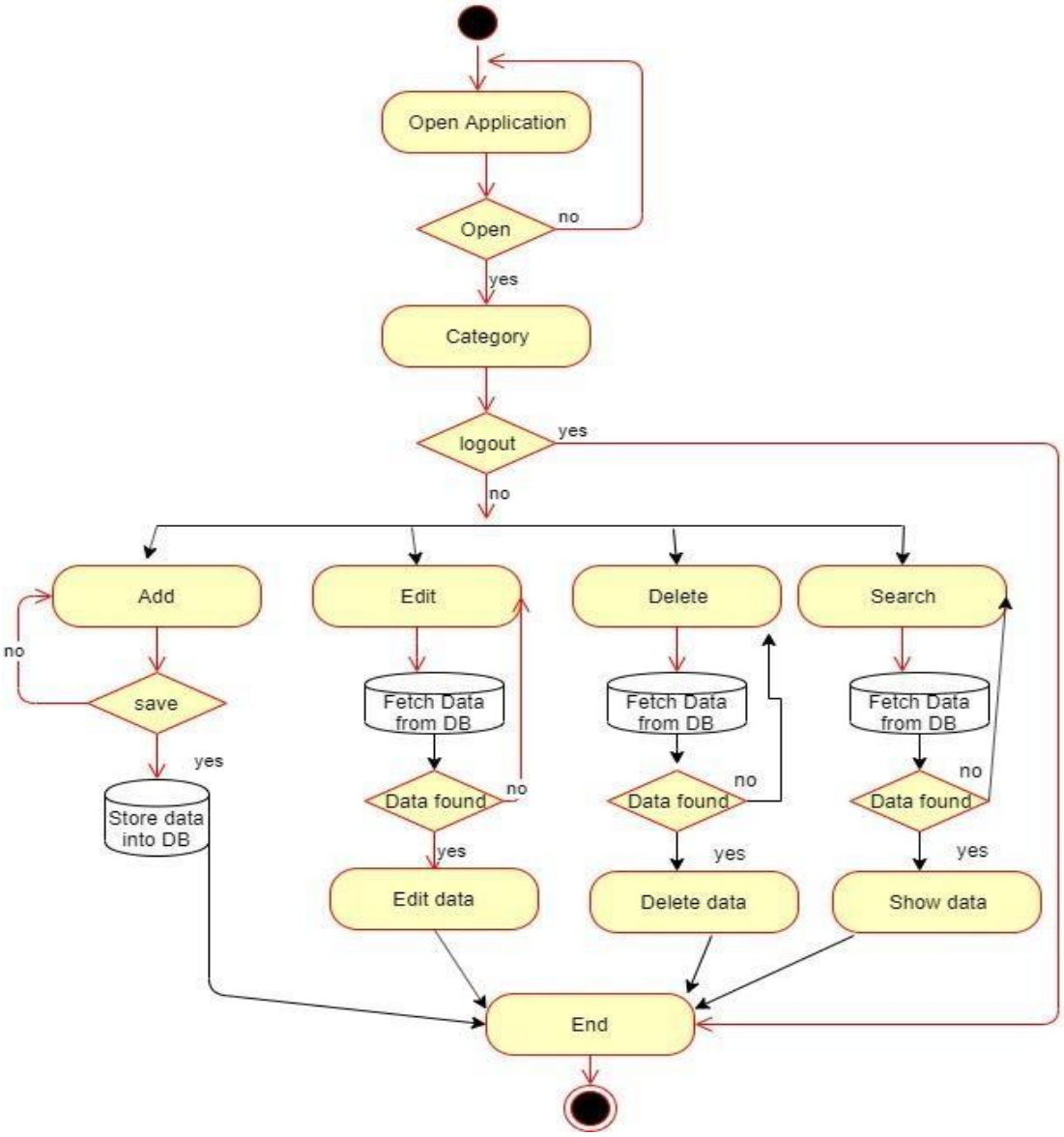


Figure 3.2.3: Activity diagram for Product Setup

3.2.4: Activity diagram for manage Customer

In Customer module, admin can add new customer and he also can update, delete, search previous customer after entered the system.

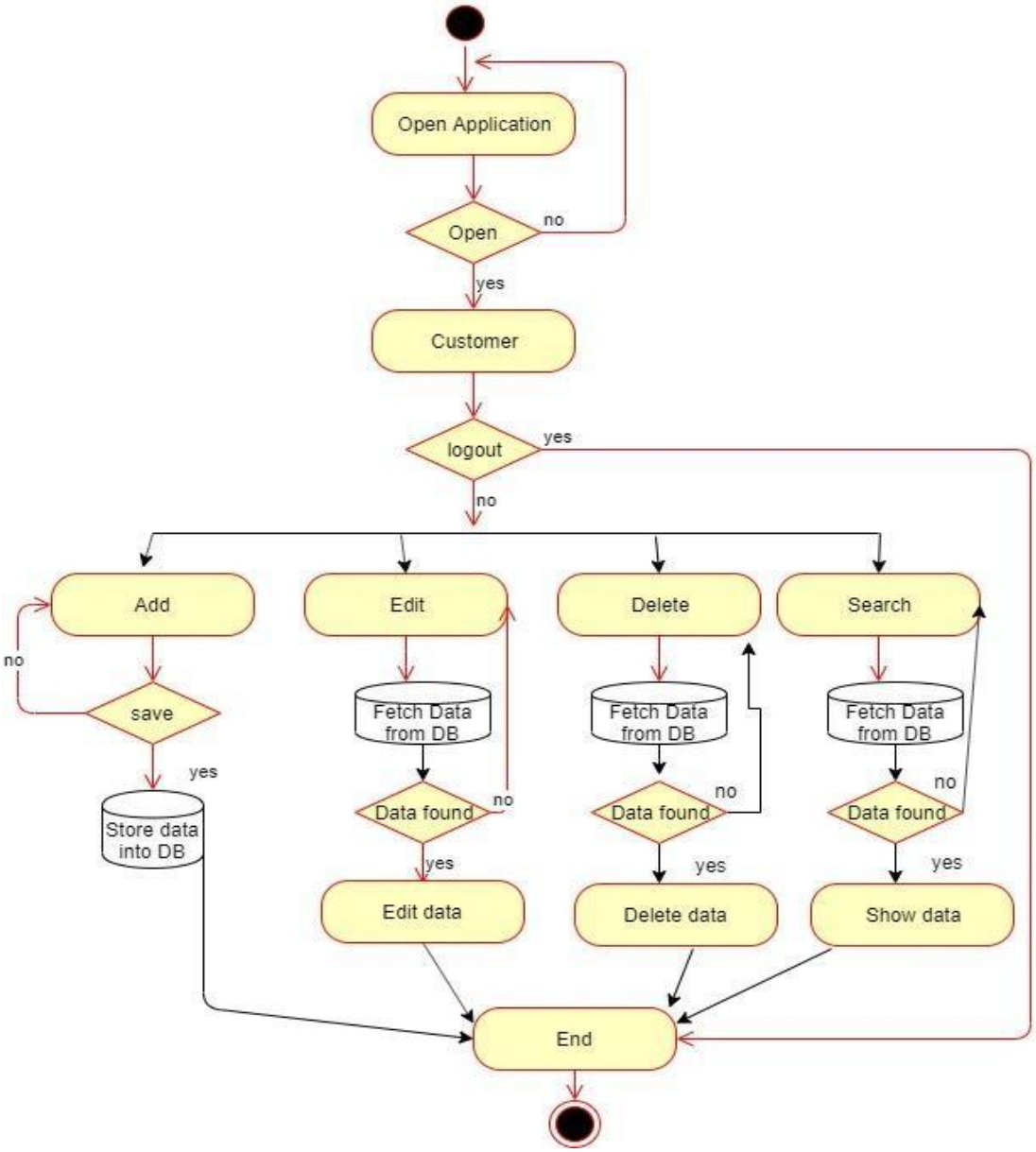


Figure 3.2.4: Activity diagram for manage Customer

3.2.5 Activity diagram for manage Supplier

In Supplier module, admin can add new customer and he also can update, delete, search previous customer after entered the system.

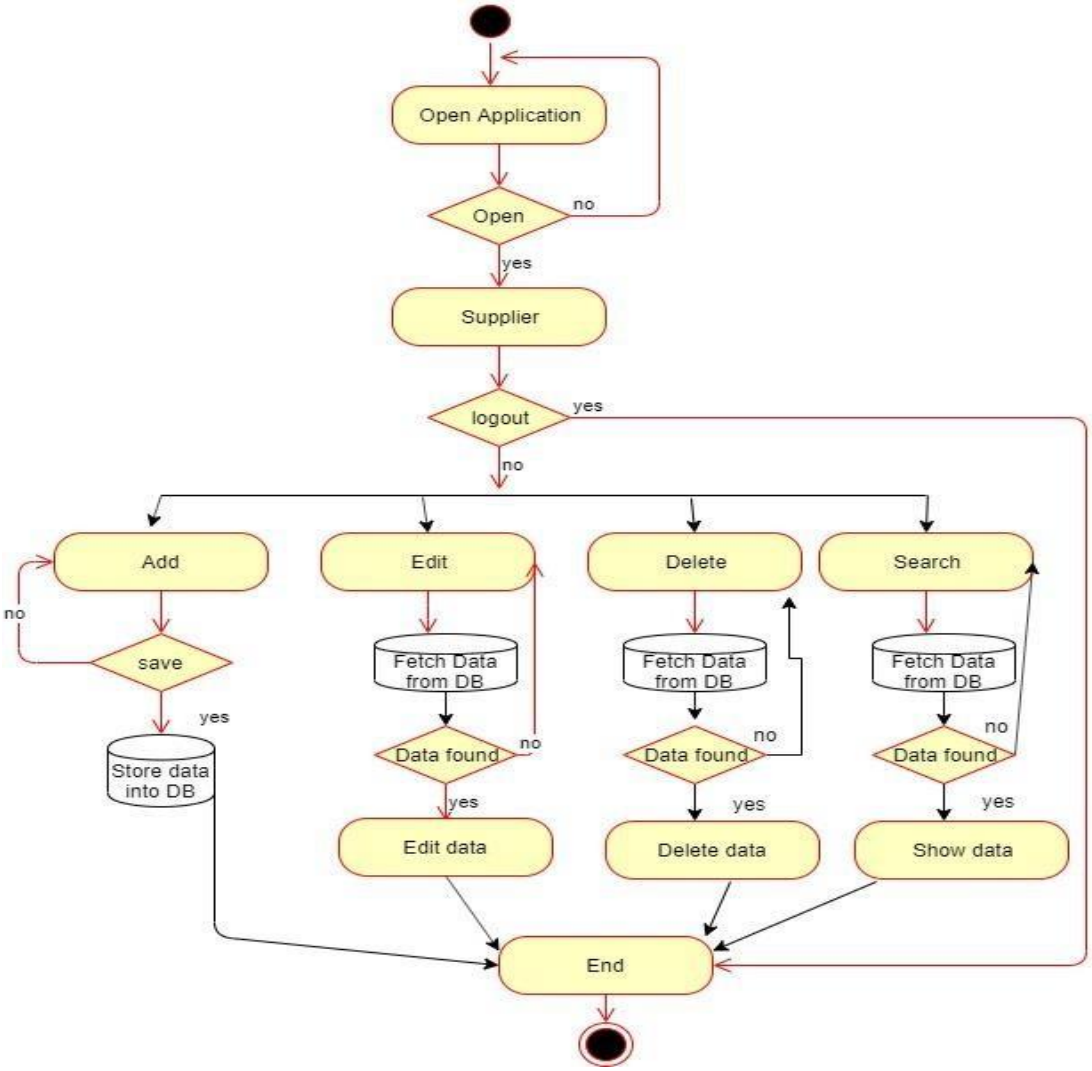


Figure 3.2.5: Activity diagram for manage supplier

3.2.6 Activity Diagram for Purchase Operation

In purchase module, Admin can manage purchase details after login.

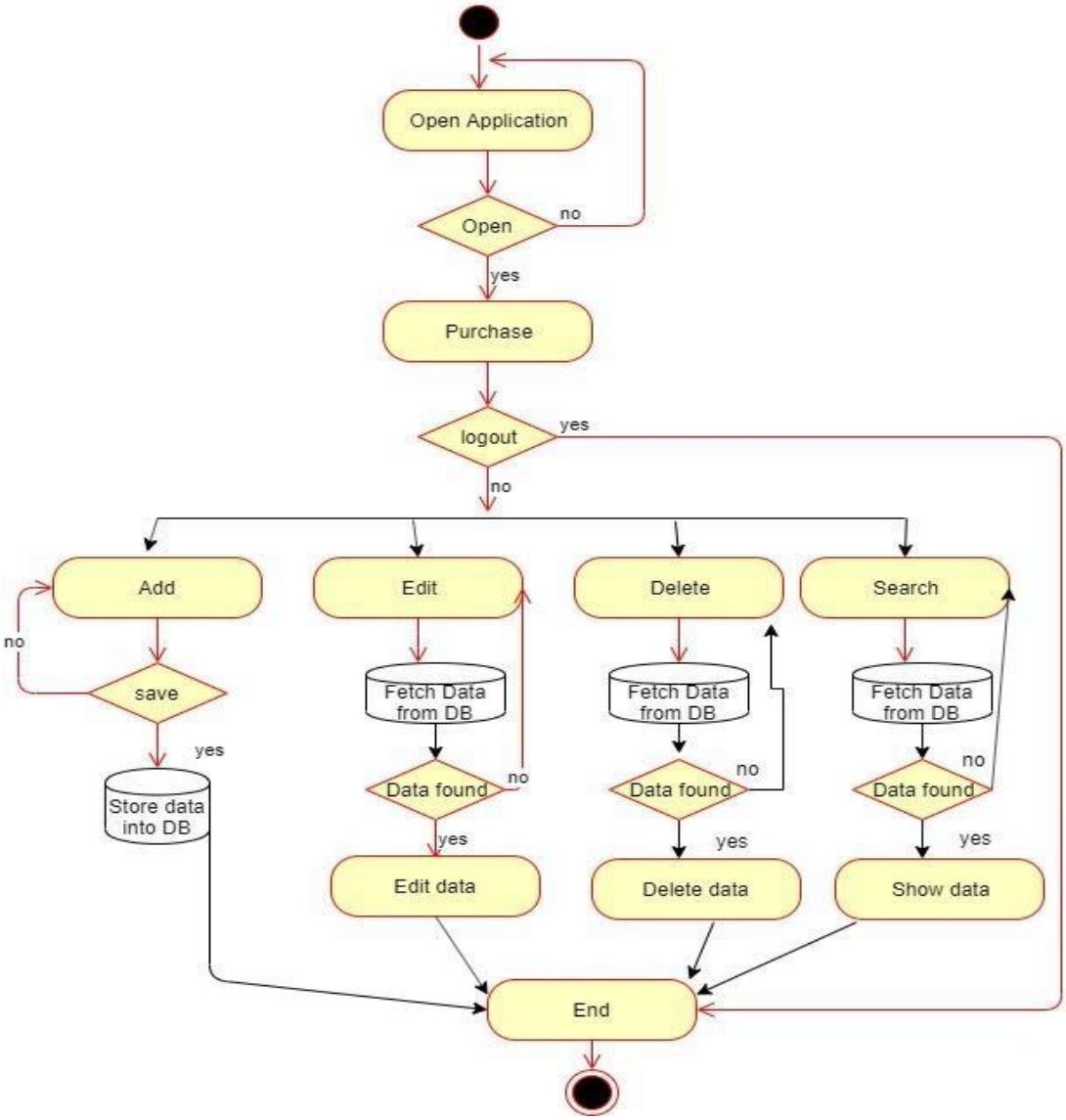


Figure 3.2.6: Activity diagram for manage purchase

3.2.7 Activity Diagram for Stock Operation

In Stock module, Admin can search and see stock availability details after login.

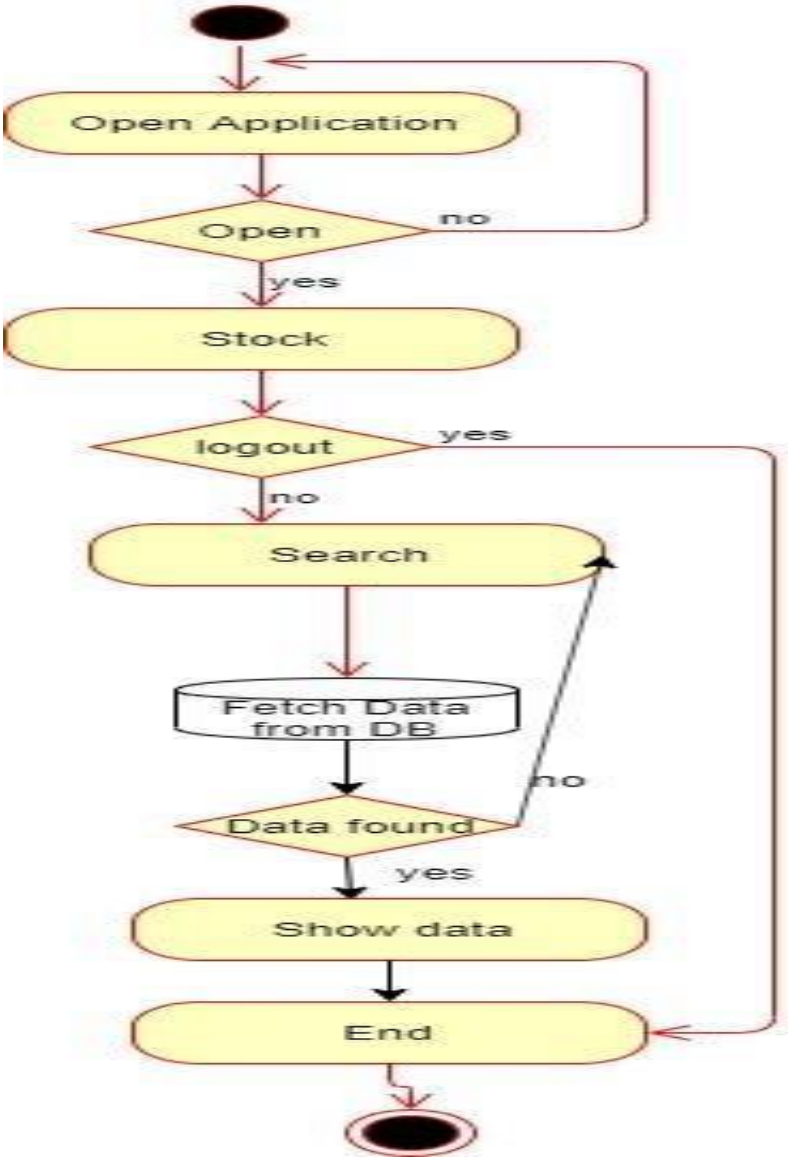


Figure 3.2.7: Activity diagram for stock operation

3.2.8 Activity Diagram for Sale Operation

In Sale module, Admin can manage sale details after login in application.

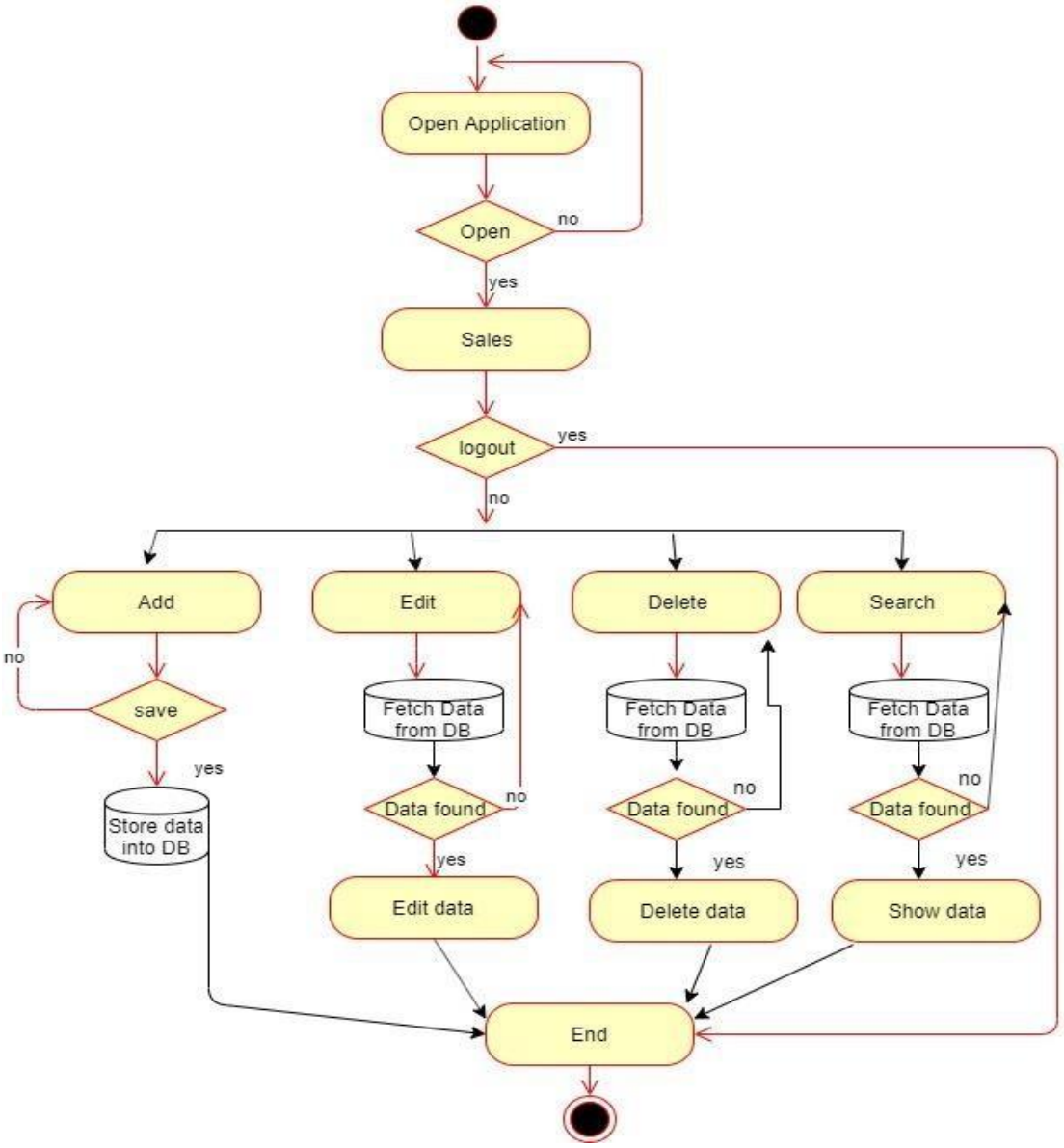


Figure 3.2.8: Activity diagram for sale operation

3.2.9 Activity Diagram for Purchases Report

In Purchase Report module, Admin can search and see purchases report after login.

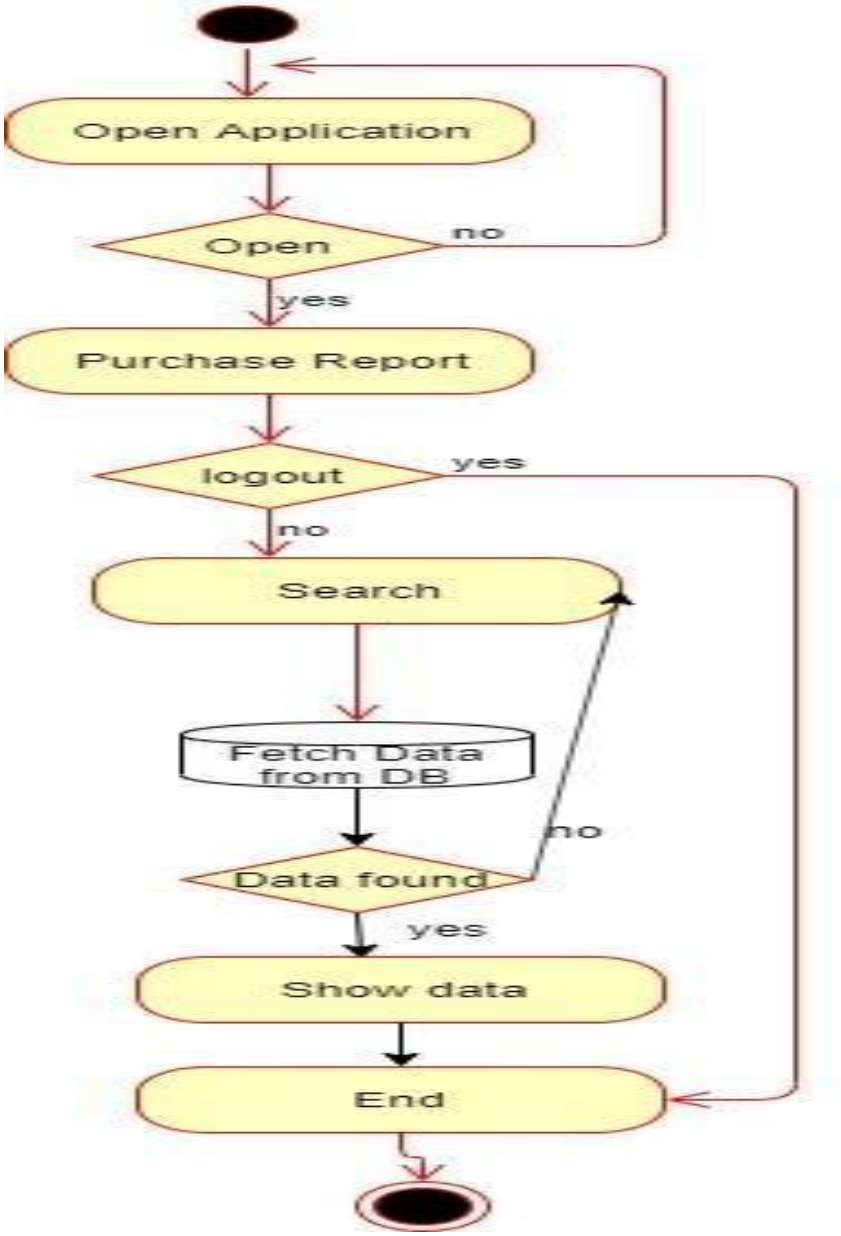


Figure 3.2.9: Activity diagram for purchases report

3.2.10 Activity Diagram for Sale Report

In Sale Report module, Admin can search and see sales report after login.

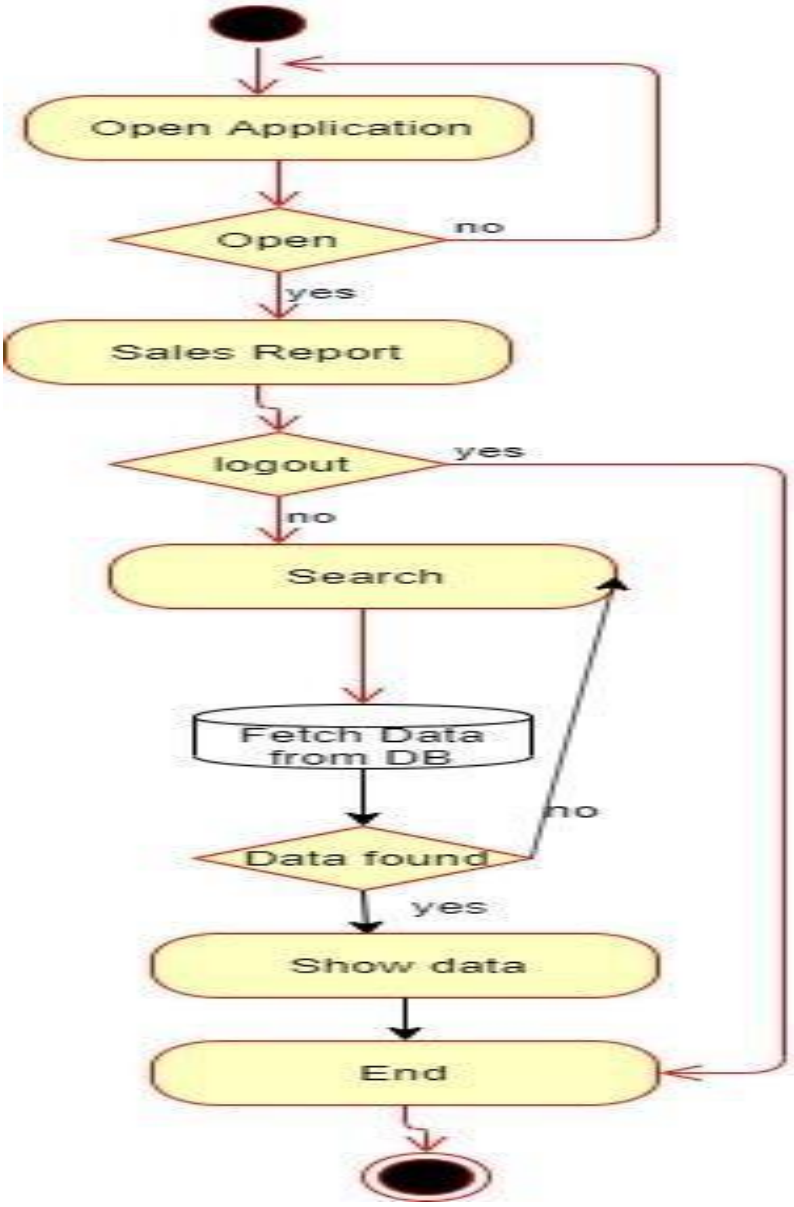


Figure 3.2.10: Activity diagram for sales report

3.2.11 Activity Diagram for Send Message

In this Application web page, visitor can send message without login.

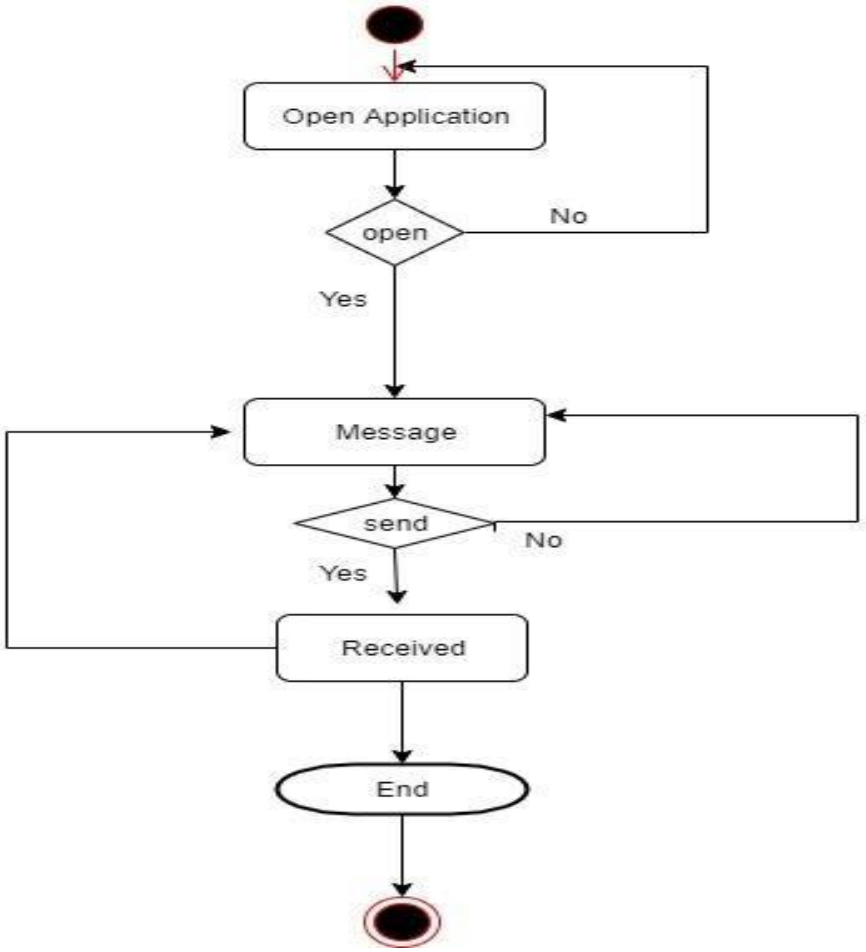


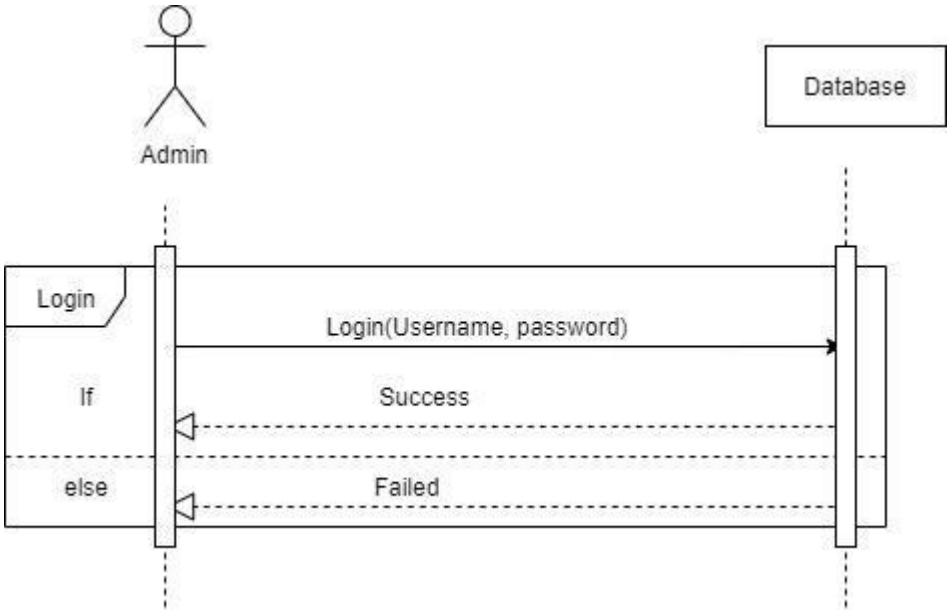
Figure 3.2.11: Activity diagram for Send Message

3.3 Sequence Diagram

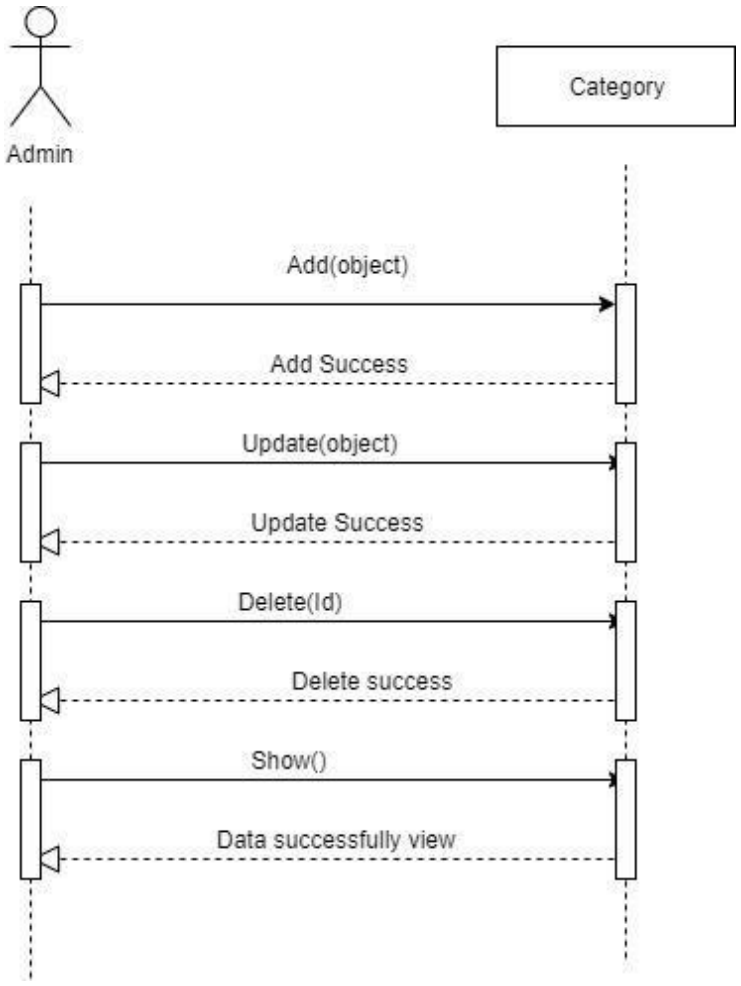
Mainly sequence diagrams understand us how the data will be followed in any application. Now I am going to show some my project sequence diagrams.

3.3.1 Sequence diagram for Login

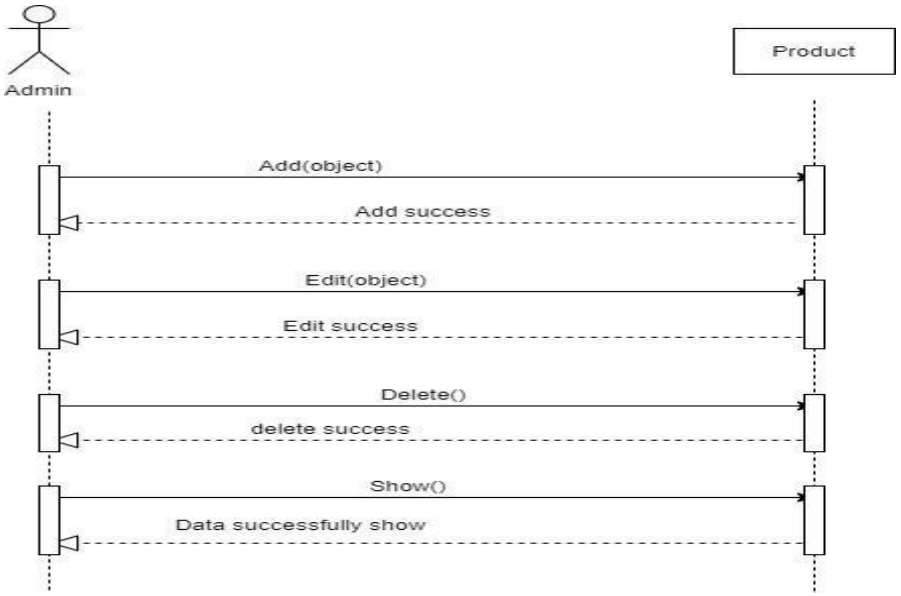
Admin login the system if username and password match to database.



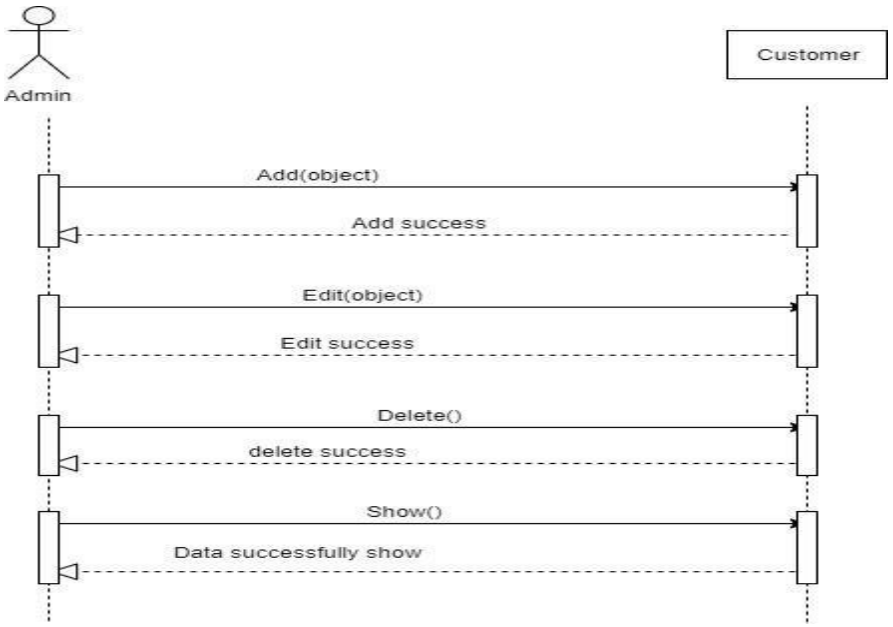
3.3.2 Sequence diagram for Admin Setup Category



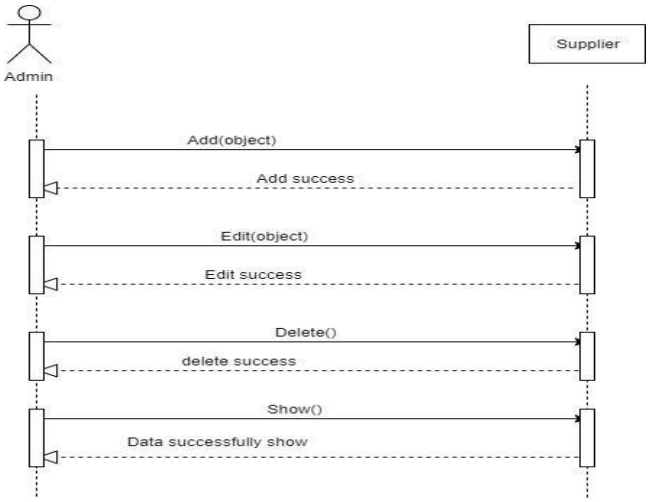
3.3.3 Sequence diagram for Product Setup



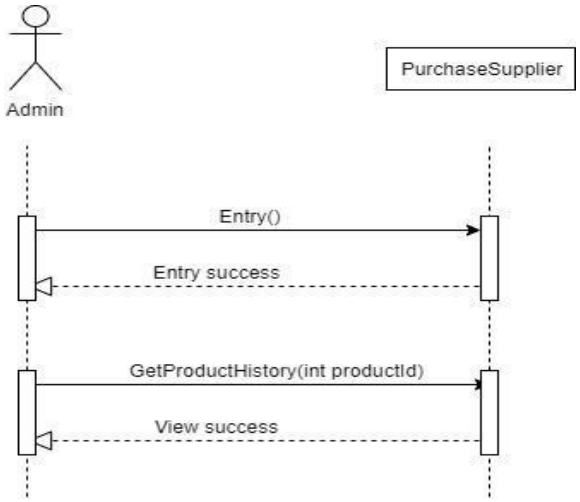
3.3.4 Sequence diagram for Manage Customer



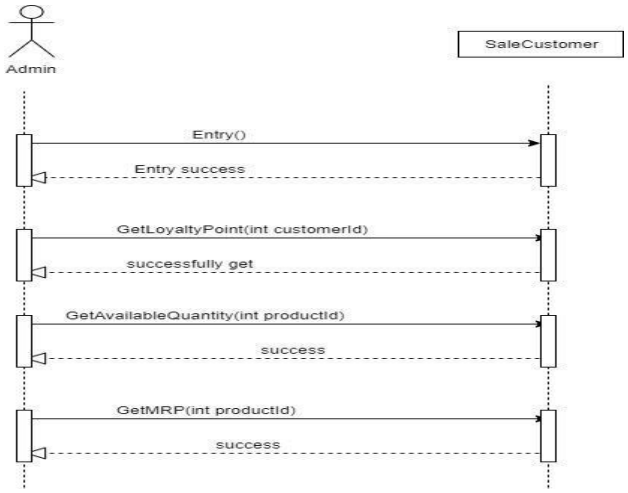
3.3.5 Sequence diagram for Manage Supplier



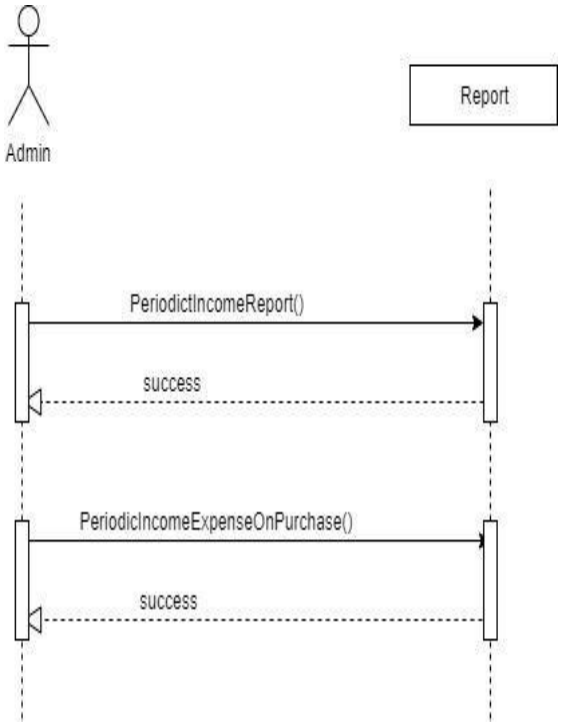
3.3.5 Sequence diagram for Purchase Operation



3.3.5 Sequence diagram for Sales Operation



3.3.7 Sequence diagram for Report (purchase & Sale)



Chapter-4

System Design Specification

4.1 Development tools and Technology

To develop any software some tools are needed to be used. And there are too many tools for develop software. For software developer there are so many tools and technique to make the development phase easily. In my project the below tools I am going to use.

4.1.1 User Interface Technology

An attractive user interface can help to intercept the user into system. The main objective of UI in a system is how much easy to use and how simple it is. UI connected the user and system. UI refer to the structure of content, Action Button, Images etc.

4.1.1.1 CSS

There are many technologies to displaying the HTML elements. Html elements can appear in many ways. Is good practice to use external CSS. Internal and Inline CSS not for a project and it also not a good practice.

4.1.1.2 Bootstrap

In my project I used Bootstrap for front-end design. Bootstrap is a free and open-source frond-end web framework. This framework is developed by CSS and JavaScript. It's browser friendly framework. For using bootstrap I also able to use some JavaScript facilities.

4.1.1.3 JQuery

JQuery is a JavaScript library. It is a fast and concise JavaScript library that simplifies html document traversing, event handling, animating. In my project I use a very few jQuery function.

4.1.1.4 Programming Language

Programming language is the only way to make any system. Any system can be developed with any language. But I am going to use C# programming language for back-end side in my project.

4.1.2 Implemented Tools and Platform

So like the tools and technologies also some platform is needed to develop software. In my project I use visual Studio tool and Asp Dot Net MVC platform and also use SQL Server for Database.

4.1.2.1 Visual Studio

Visual Studio also known as Microsoft Visual Studio and VS, is an integrated development environment for Microsoft Windows. It's a tool for writing computer programs and web services. It's include a code editor, debugger, GUI design tool and database schema designer and supports most major revision control systems.

4.1.2.2 Asp Dot Net MVC

Asp.Net MVC is a framework that adds support for the MVC design pattern to Asp.Net. It's a open- source software from Microsoft that provides Model View Controller architecture. The main issue for using asp.net in my project is better performance of asp.net mvc. Like that

- Response time issue
- Problem of Unit Testing
- HTML customization
- Reusability of the code- behind class

Above of those facilities I use asp.net mvc.

4.1.2.3 Database Server

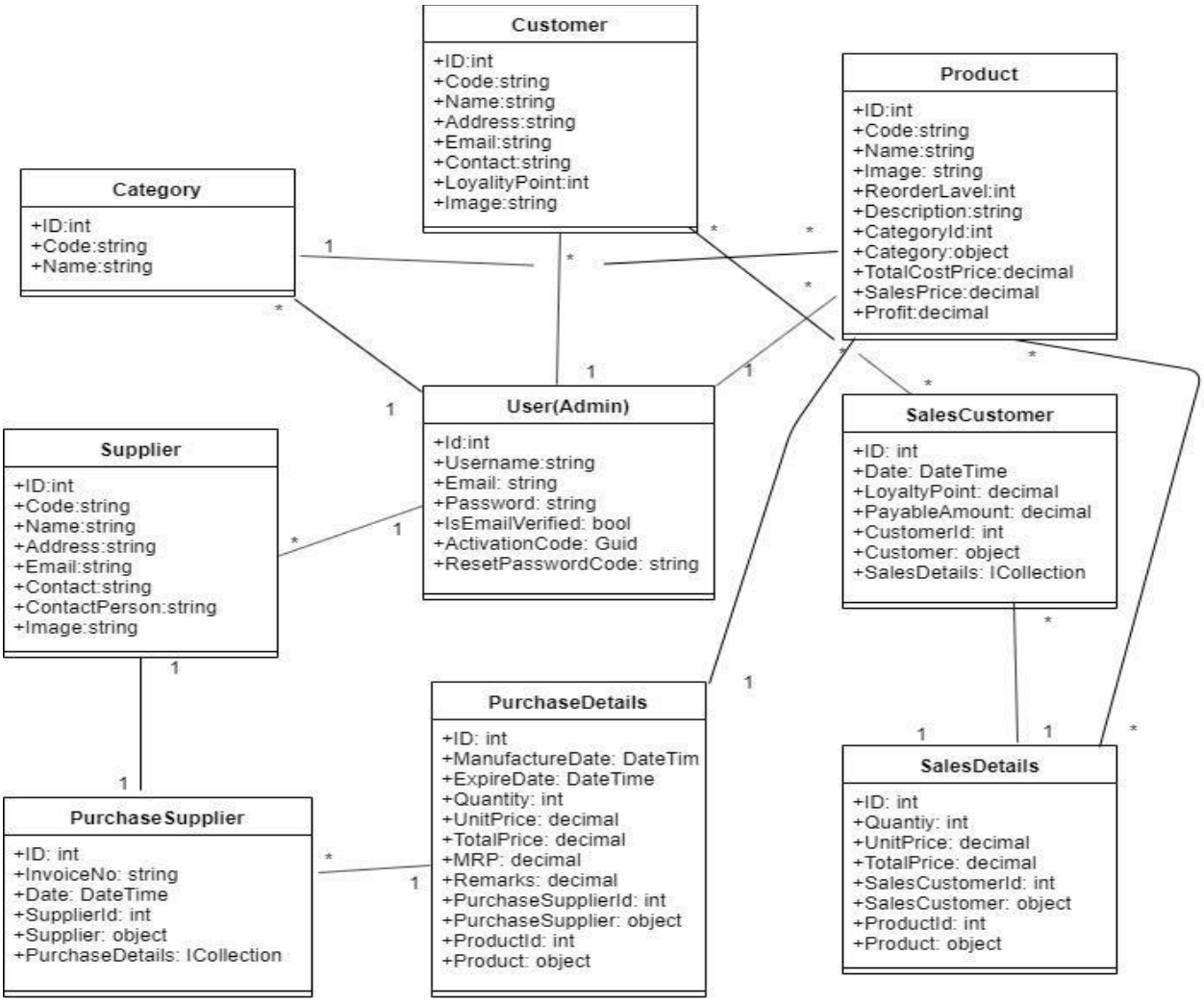
Database server is the term used to refer to the back-end system of a database application using client/server architecture. Perform tasks as data analysis, storage, data manipulation. Archiving and others non-user specific tasks.

I have followed Relational Database Management System. I use SQL Server. SQL is an open source Relational Database Management System.

4.1.2.4 Entity Framework

Entity Framework is Object Relational Mapper (ORM). This ORM provides developer to automate mechanism of storing and accessing data from database. I use this framework in my project.

4.2 Class Diagram



Class Diagram

4.3 Database Design Diagram

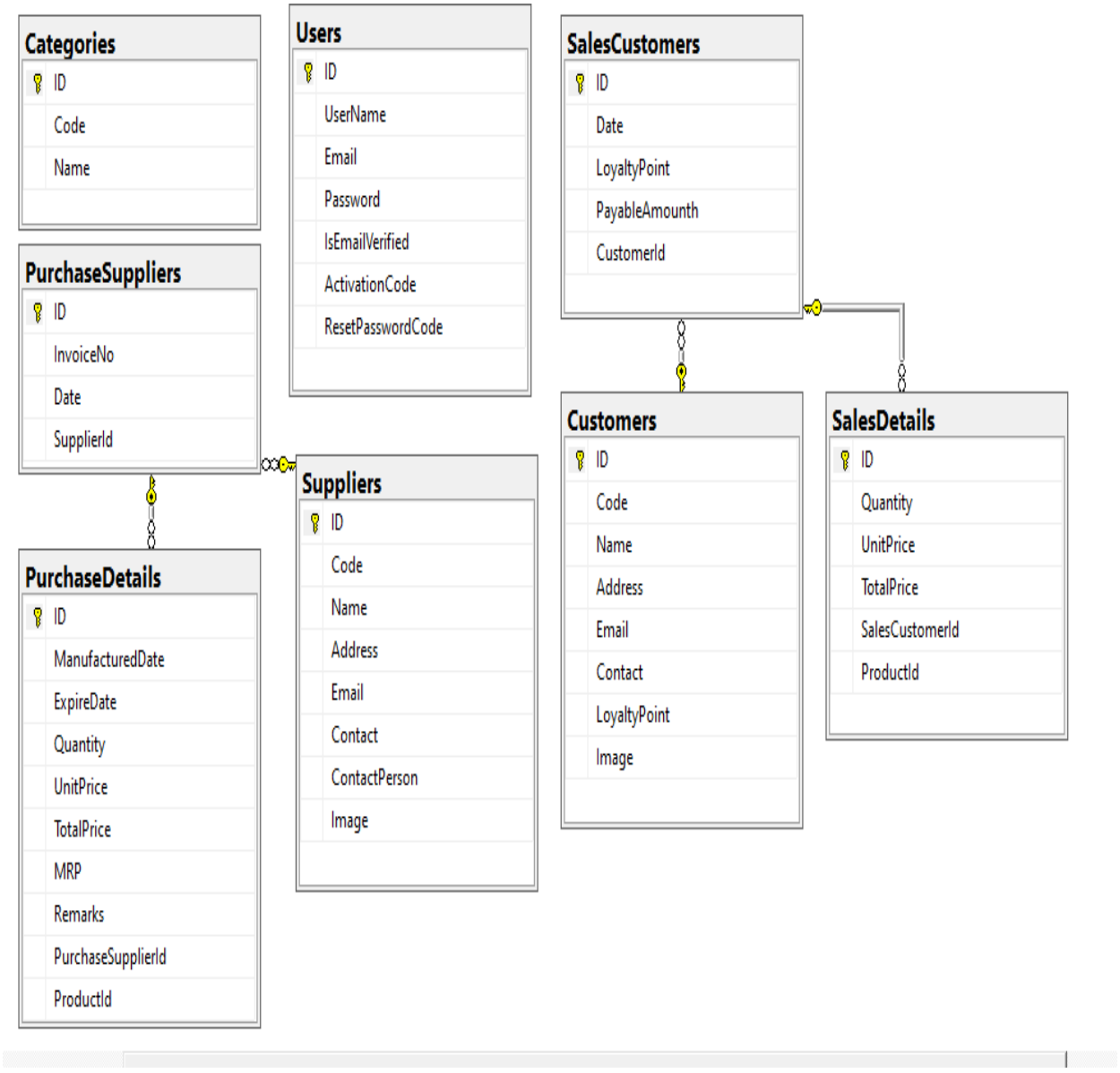


Figure 4.3: Database Design Diagram

Chapter-5

System Test

5.1 Testing Features

Feature Testing is refer to making changes in software system to add new features or to make modifications existing features. A test set is need to writing for test the feature and function of the system. All feature and function are not same. Different function have different objectives. Feature test makes an application more useful, intuitive, reliable, secured, scalable and effective.

5.1.1 Feature to be tested

User (Admin) Part

Features	Priority	Description
Login	3	Admin must be authenticated by system
Logout	3	Session must be destroyed after logout
Category Setup	3	Admin can manage category of all product
Product Setup	3	Admin can manage all product under product define category.
Customer party	3	Admin can add customer as a party. He can also manage customer details.
Supplier party	3	Admin can add supplier as a party. He can also manage customer details.
Purchase operation	3	Admin can manage Purchasing details within supplier name.
Stock operation	2	Admin can see product stock availability according to re-order label or expire.
Sales operation	3	Admin can manage selling details according to customer.
Purchase Reporting	2	Admin can see all purchasing report
Sales Reporting	2	Admin can see all selling report

Here, Low priority =1, Medium priority = 2, High priority = 3

5.2 Testing Strategy

Test strategy is a plan for defining the testing approach. It's a guideline followed to achieve the test objective and execution of test types. Test strategy work with test objective, test environment, test approach, automation tools and strategy, and risk analysis. It's created based on development design documents. It defined main goals and helps to achieve the goals.

5.2.1 Test Approach

Test approach means implementation of test strategy. It defined all test plans and test design. Test approach is created by the individual tester according to the module or application means his own views or approaches for that module.

There are two test approach:

- **Preventative approach:** In preventative approach, tests are designed before the software development.
- **Reactive Approach:** In reactive approach, tests are designed after software development.

5.2.1.1 Black Box Testing

Black box testing is also known as behavioral testing. Black box testing is a testing is a testing method that performed without touch of the internal function. Black box testing is manly based on software requirements and specifications. Black box testing can be both of functional or non-functional. In Black box testing I just focus on inputs and output of the software system.

5.2.1.2 Equivalent Class Partitioning

Equivalent class partitioning is also a black box technique. In equivalent class partitioning inputs of the software are divided into group. This technique is to eliminate the set of input data reduce the number of redundant test cases by eliminating those that generate the same output. Equivalent class partitioning used large pool of test cases individually. But I apply this technique where in the input field.

5.2.1.3 Boundary Value Analysis

Boundary value analysis based on testing the boundary value of valid and invalid partitions. It's also a black box technique. So this is like Start-End, Lower-Upper, and Maximum-Minimum values. Every partition has its maximum and minimum values and these maximum and minimum values are the boundary values of a partition.

5.2.1.4 White Box Testing

White box testing strategy worked with the internal logic and structure of the code. White box testing is also called as glass, structural or open box. The code structure is known and understood by the tester in white box testing. This type of testing, the code is visible to the tester, and tester must have to know the function.

Classified of White Box Testing into some levels:

- Unit Testing
- Integration Testing
- System Testing

5.2.2 Pass/Fail Criteria

Tester will set the pass and fail criteria. They prepare the pass fail criteria based on item if an item worked then it pass and if an item doesn't work then it's failed. This is not the place to define the detailed pass criteria for each feature, but to describe the process and overall standards for evaluating the test results.

5.3 Testing Schedule

Test Phase	Time
Testing plan create	1 week
Test specification	2 week
Unit Testing	During development time
Component Test	1 week
Integration Test	1 week
Validating use cases	1 week
Testing User Interface	1 week
Load Testing	1 week
Performance Testing	1 week
Release to Production	1 week

5.4 Trace Ability Matrix

Project Manager			Business Analyst Lead		
QA Lead			Target Implementation Date		
BR#	Category/ Functionality/ Activity	Requirement Description	Use Case Reference	Test Case Reference	Comments
BR-1	Functional	Login	3.1.1	5.6.1	
BR-2	Functional	Category Setup	3.1.2	5.6.2	
BR-3	Functional	Product Setup	3.1.3	5.6.3	
BR-4	Functional	Manage Customer	3.1.4	5.6.4	
BR-5	Functional	Manage Supplier	3.1.5	5.6.5	
BR-6	Functional	Purchase operation	3.1.6	5.6.6	
BR-7	Functional	Stock Operation	3.1.7	5.6.7	

BR-8	Functional	Sale Operation	3.1.8	5.6.8	
BR-9	Functional	View Purchase Report	3.1.9	5.6.9	
BR-10	Functional	Sales Report	3.1.10	5.6.10	
BR-11	Non-Functional	Send Message	3.1.11	5.6.11	

5.5 Testing Environment

Testing environment means prepare the environment that support to execution the test with software, hardware and network configures. Test bed or test environment is configured as per the need of the under test.

For build the environment of testing, some key area need to setup:

- Test data
- Database server
- Client's operating system
- Front end running environment
- Brower
- System and Application
- Network

People are involved with test environment setup:

- System Admins
- Developers
- Testers
-

5.6 Test Cases

Test case means set some rules and regulations or conditions by which it can be determined whether a system can be able to meet the works or requirements under test cases correctly. Test cases process can help to find problems in the requirements or design of an application. In test case there have some elements.

Such as:

- Test Case ID
- Test Case Scenario
- Test Case Description
- Prerequisite
- Test Data

- Expected Result
- Actual Result
- Etc
-

5.6.1 Login

Test Case #1	**Test Case Name:** Login
System: Business Plax services system	**Subsystem:**
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**
Short description: An authenticated Admin can access to the application. And before that my application will check the authentication and authorization.	
Pre-conditions: • Admin is always redirected to the login page if the admin have not authenticated by my application. • Assume that, the username is "**afjal12496@gmail.com**" and password is "**161351510**"	

Step	Username	Password	Response	Pass/Fail	Comment
1	afjal@gmail.com	161-35-1510	Invalid	Fail	Not accepted
2	Afjal12496@gmail.com		Password can't be blank	Fail	Not accepted
3		161351510	Username can't be blank	Fail	Not accepted
4	Afjal12496@gmail.com	161351510	Successfully login into the application	Pass	Accepted

Post Conditions: Admin will successfully login into the application

5.6.2 Category

Test Case #2			**Test Case Name:** Category		
System: Business Plax services system			**Subsystem:** Setup		
Designed by: Afjal Hossain			**Designed Date:** 3-Dec-19		
Executed by:			**Executed date:**		
Short description: Admin entered code and name of category and submit the data then save it as a unique product category into the database.					
Pre-conditions: • Admin must be authenticated. • Input field can't be blank.					
Step	**Action**		**Response**	**Pass/Fail**	**Comment**
1	All required field are not filled		Filled up required fields	Fail	Not save
2	Filled up all required fields		Data successfully save	Pass	Save
Post Conditions: Data successfully save.					

5.6.3 Product

Test Case #3			**Test Case Name:** Product		
System: Business Plax services system			**Subsystem:** Setup		
Designed by: Afjal Hossain			**Designed Date:** 3-Dec-19		
Executed by:			**Executed date:**		
Short description: Admin entered all product information and submit the data then save it under specific product category into the database.					
Pre-conditions: • Admin must be authenticated. • Input field can't be blank.					
Step	**Action**		**Response**	**Pass/Fail**	**Comment**
1	All required field are not filled		Filled up required fields	Fail	Not save
2	Filled up all required fields		Data successfully save	Pass	Save
Post Conditions: Data successfully save.					

5.6.4 Customer

Test Case #4	**Test Case Name:** Customer
System: Business Plax services system	**Subsystem:** Party

Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**
Short description: If admin fill up all required fields of customer and submit the data then add customer into the application.	
Pre-conditions: • Admin must be authenticated. • Input field can't be blank.	

Step	Action		Response	Pass/Fail	Comment
1	All required field are not filled		Filled up required fields	Fail	Not added
2	Filled up all required fields		Data successfully added	Pass	Added
Post Conditions: Successfully add customer into the application.					

5.6.5 Supplier

Test Case #5	**Test Case Name:** Supplier
System: Business Plax services system	**Subsystem:** Party
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**
Short description: If admin fill up all required fields of Supplier and submit the data then add supplier into the application.	
Pre-conditions: • Admin must be authenticated. • Input field can't be blank.	

Step	Action		Response	Pass/Fail	Comment
1	All required field are not filled		Filled up required fields	Fail	Not Added
2	Filled up all required fields		Data successfully added	Pass	Added
Post Conditions: Successfully add supplier into the application.					

5.6.6 Purchase

Test Case #6	**Test Case Name:** Purchase
System: Business Plax services system	**Subsystem:** Operation
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**
Short description: If admin fill up all required fields of Purchase under Supplier and submit the data then save it into the database.	

Pre-conditions:

- Admin must be authenticated.
- Input field can't be blank.
- Invoice No must remain
- Product must be remain
- Supplier must be remain

Step	Action		Response	Pass/Fail	Comment
1	All required field are not filled		Filled up required fields	Fail	Not save
2	Filled up all required fields		Data successfully save	Pass	Save

Post Conditions: Purchases information successfully save in the application.

5.6.7 Stock

Test Case #7	**Test Case Name:** Stock
System: Business Plax services system	**Subsystem:** Operation
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**

Short description: When supplier will purchase product and admin add it into the system then system provide stock data of purchasing product from the database.

Pre-conditions:

- Admin must be authenticated.
- Input field can't be blank.
- Must have purchasing date
- Product must be remain
- Category must be remain
- Product label must be Re-order or Expire

Step	Action		Response	Pass/Fail	Comment
1	All required field are not filled		Filled up required fields	Fail	Not display
2	Filled up all required fields		Data successfully display	Pass	Display

Post Conditions: Display the stock details.

5.6.8 Sales

Test Case #8	**Test Case Name:** Sales
System: Business Plax services system	**Subsystem:** Operation
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19

Executed by:	**Executed date:**
Short description: When occurs sales of product to customer and admin insert the sales information to system then it save to the database.	
Pre-conditions: • Admin must be authenticated. • Input field can't be blank. • Product must be available • Customer must be remain	

Step	Action		Response	Pass/Fail	Comment
1	All required field are not filled		Filled up required fields	Fail	Not save
2	Filled up all required fields		Data successfully save	Pass	Save
Post Conditions: Sales details successfully save into the database.					

5.6.9 Purchase Report

Test Case #9	**Test Case Name:** Purchase Report
System: Business Plax services system	**Subsystem:** Report
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**
Short description: When admin search purchase information within start date and end date then system display all details of purchase from database.	
Pre-conditions: • Admin must be authenticated. • Input field can't be blank. • Must added purchase details in the system	

Step	Action		Response	Pass/Fail	Comment
1	All required field are not filled		Filled up required fields	Fail	Not display
2	Filled up all required fields		Data successfully display	Pass	Display
Post Conditions: Purchase report details successfully display.					

5.6.10 Sales Report

Test Case #10	**Test Case Name:** Sales Report
System: Business Plax services system	**Subsystem:** Report
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19

Executed by:	**Executed date:**
Short description: When admin search sales information within start date and end date then system display all details of sale from database.	
Pre-conditions: • Admin must be authenticated. • Input field can't be blank. • Must added sales details in the system	

Step	**Action**		**Response**	**Pass/Fail**	**Comment**
1	All required field are not filled		Filled up required fields	Fail	Not display
2	Filled up all required fields		Data successfully display	Pass	Display
Post Conditions: Sales report details successfully display.					

5.6.11 Send message

Test Case #11	**Test Case Name:** Send Message
System: Business Plax services system	**Subsystem:**
Designed by: Afjal Hossain	**Designed Date:** 3-Dec-19
Executed by:	**Executed date:**
Short description: Visitor level user can send message to admin without login in the application.	
Pre-conditions: • Not Required	

Step	**Action**		**Response**	**Pass/Fail**	**Comment**
1	All required field are not filled		Filled up required fields	Fail	Not send
2	Filled up all required fields		Message successfully send	Pass	Send
Post Conditions: Message successfully send to Admin.					

Chapter-6

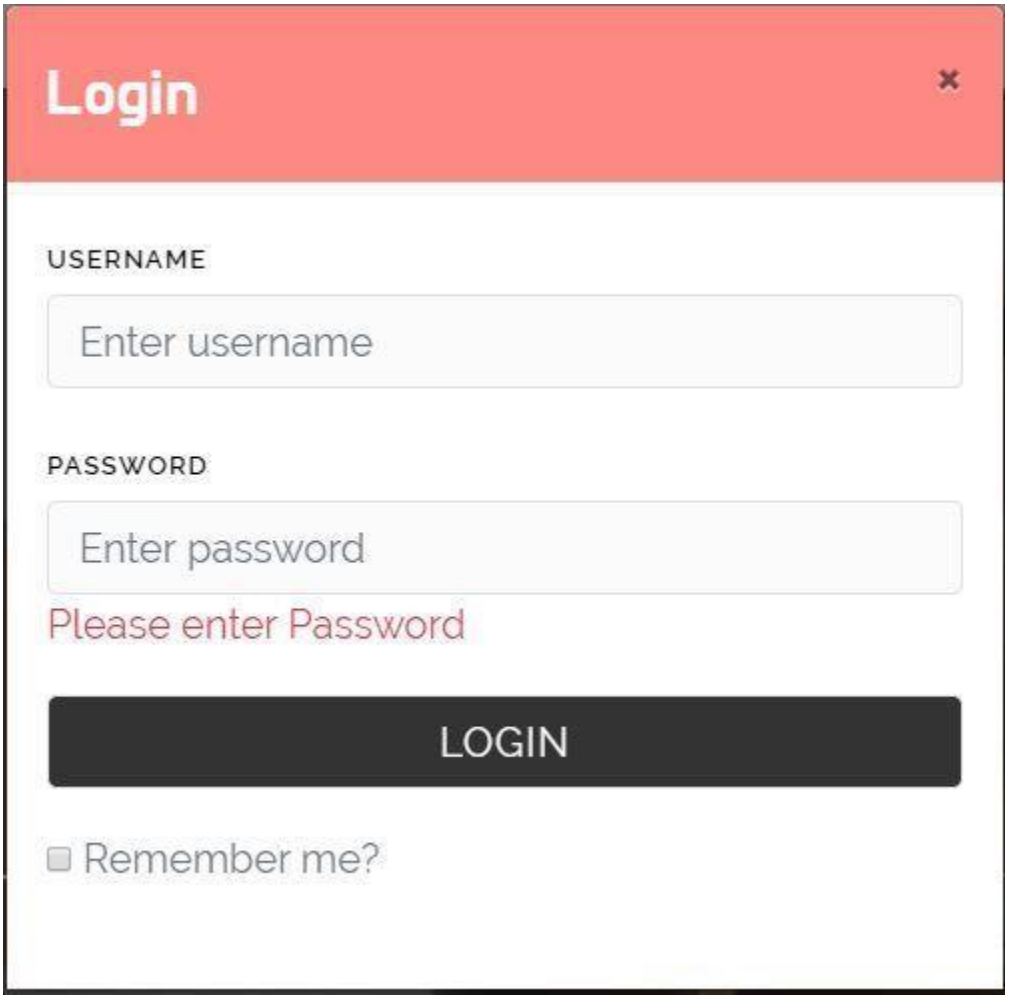
User Manual

6.1 Application Home Page

At first, all user view this application page.

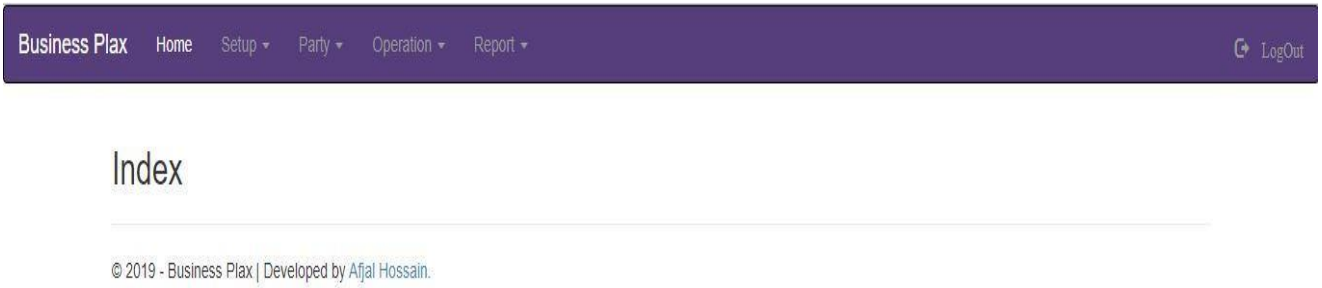
6.2 Admin Login Page

First of all, the admin will need to login to my application to use this application. Admin login the system using the username and password that provided by system. Now I will provide the screenshot of login page below.



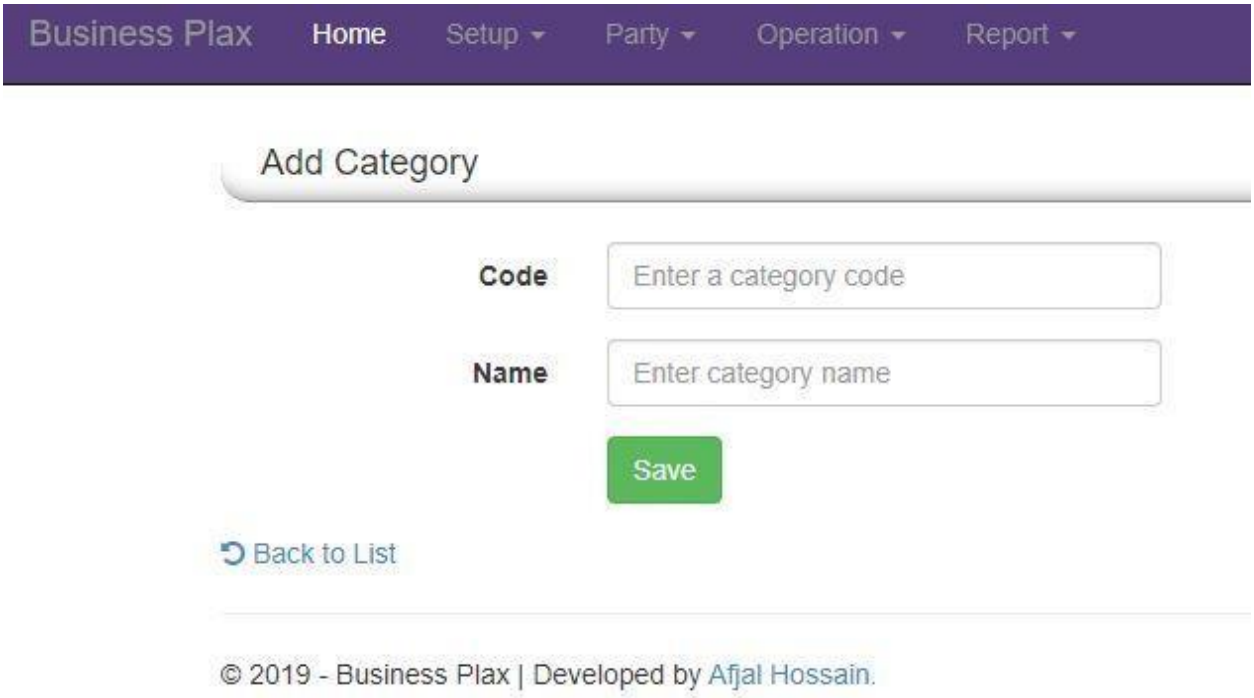
6.3 Admin Home Page

After successfully logging in, the admin enter the system and is able to see the main page. Now I will provide the screenshot of admin home page.



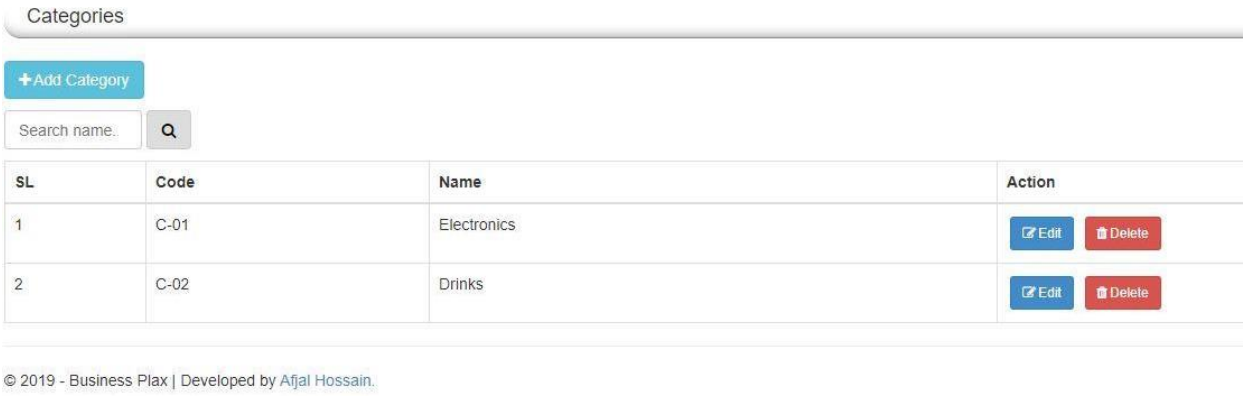
6.4 Add Category Page

Admin Can Add Product root category. Here admin put the unique category code and name then save.



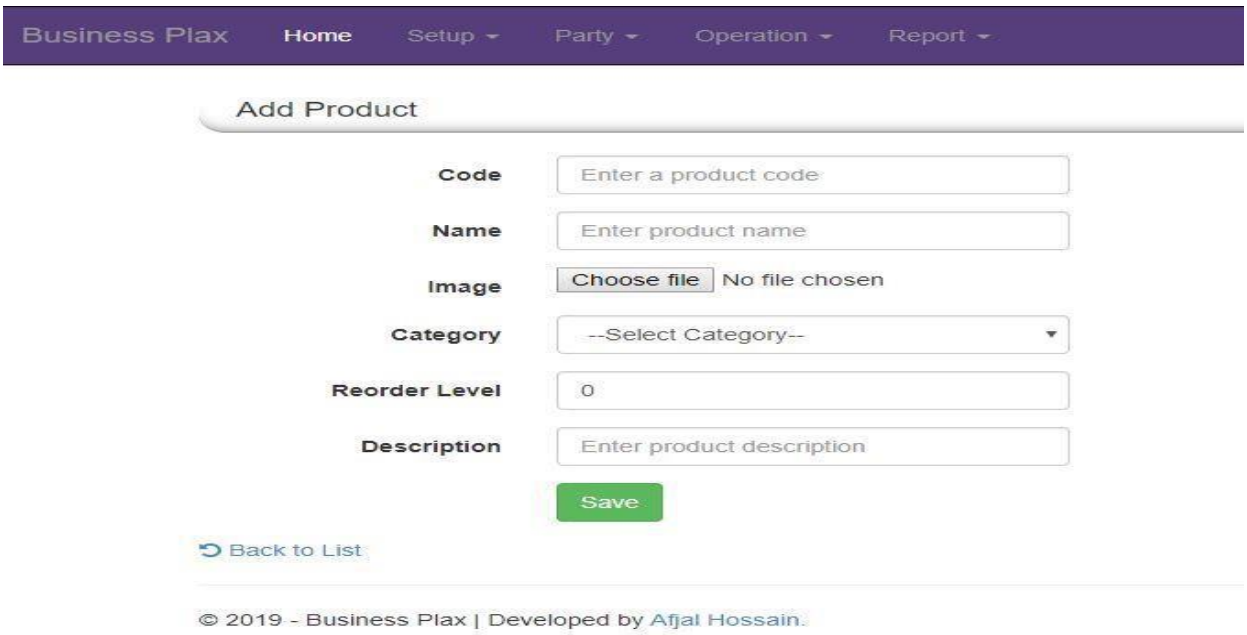
6.4.1 Category View Page

Admin Can see Category list after add category



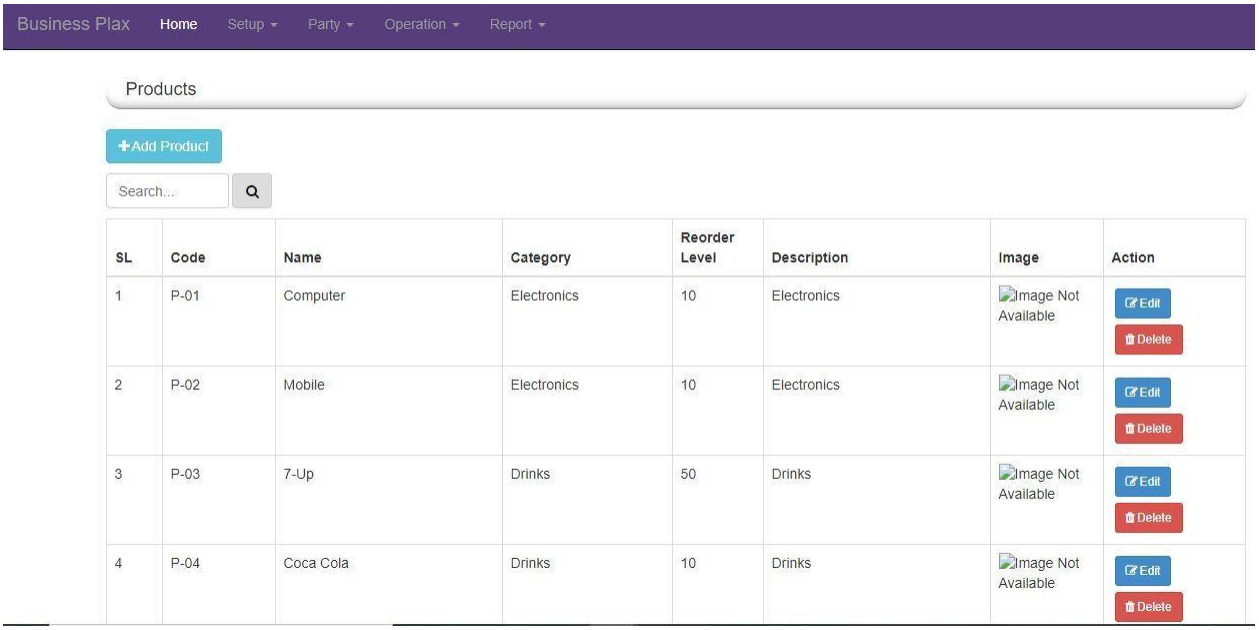
6.5 Add Product Page

Admin can add product under root product category.



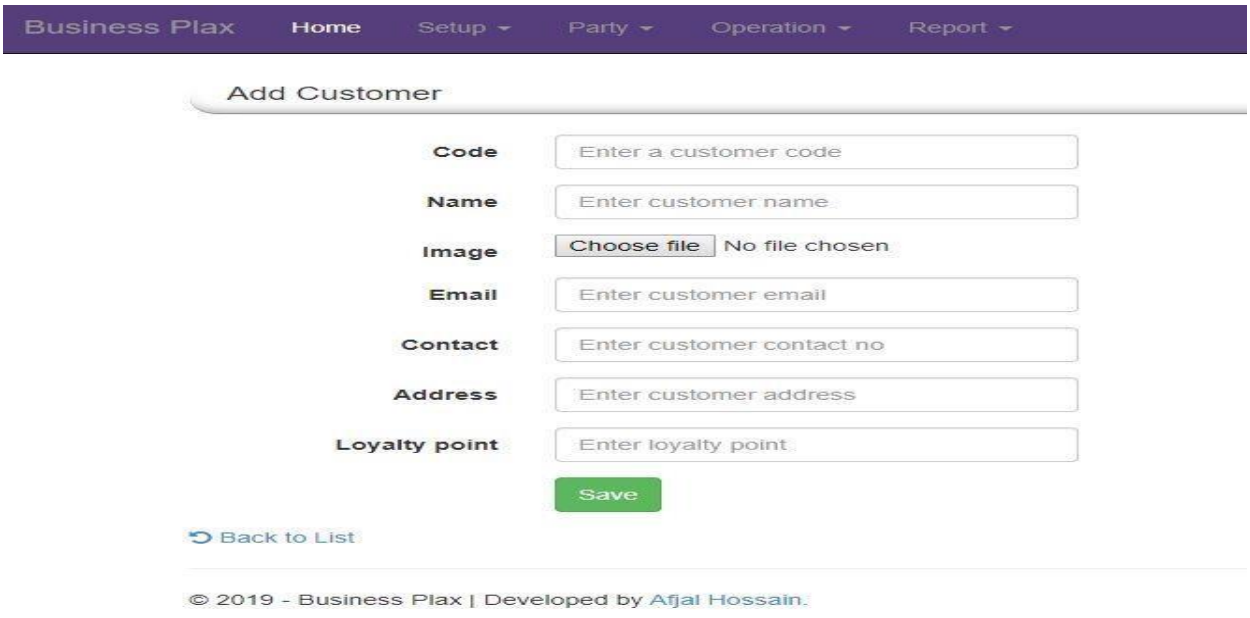
6.5.1 Product view Page

Admin can see product list after successfully entry product details.

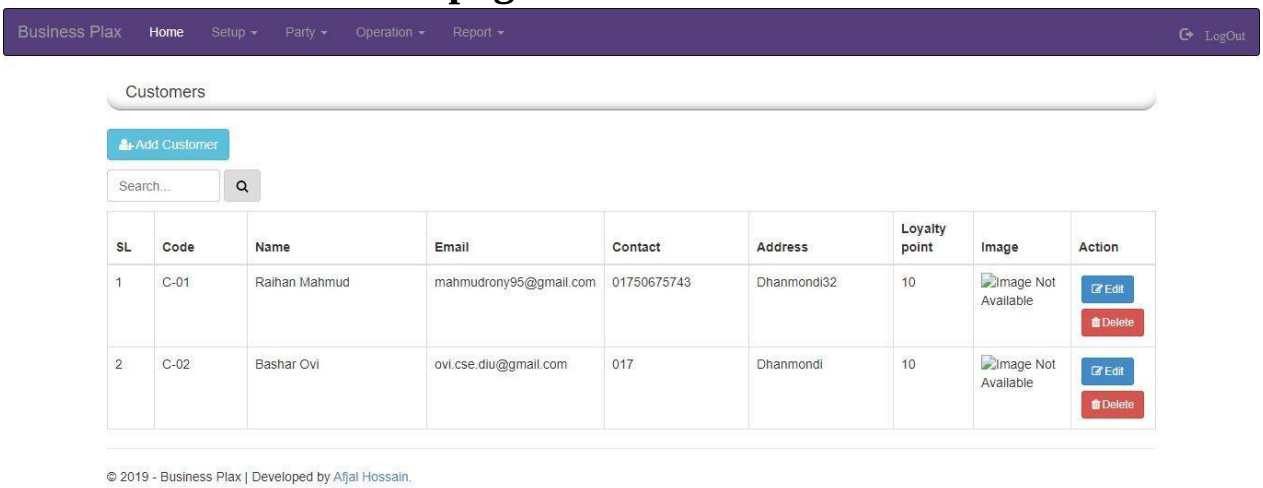


6.6 Add Customer Page

Admin can add their customer details in the system.

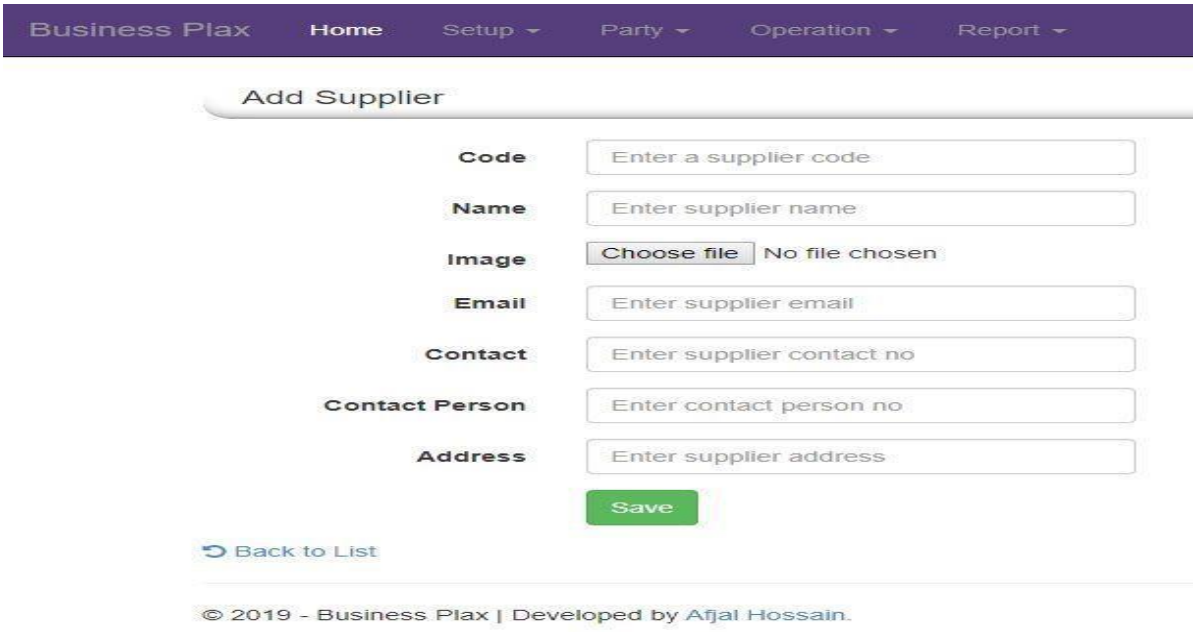


6.6.1 Customer view list page



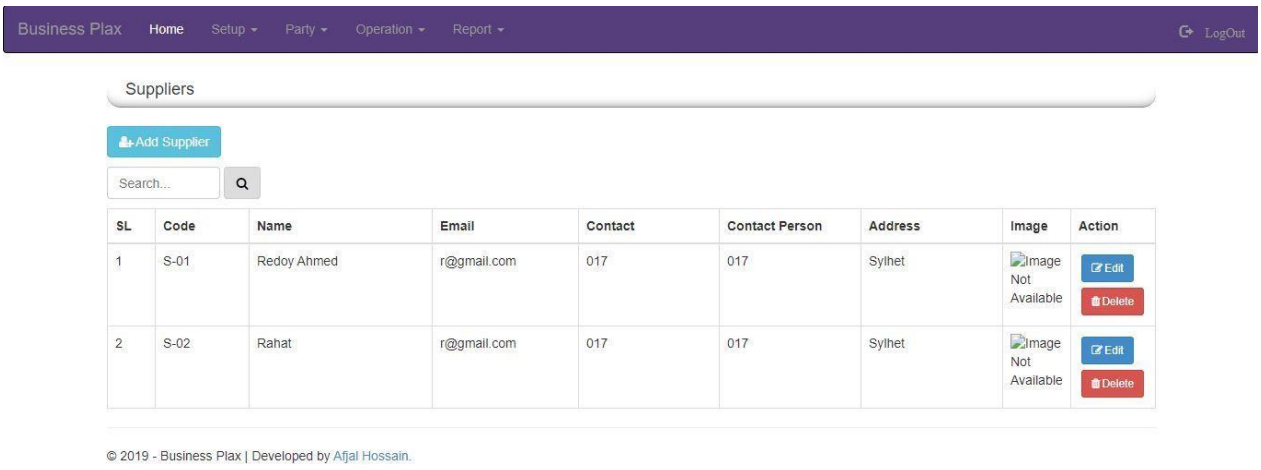
6.7 Add Supplier Page

Admin can add their all supplier in the system.



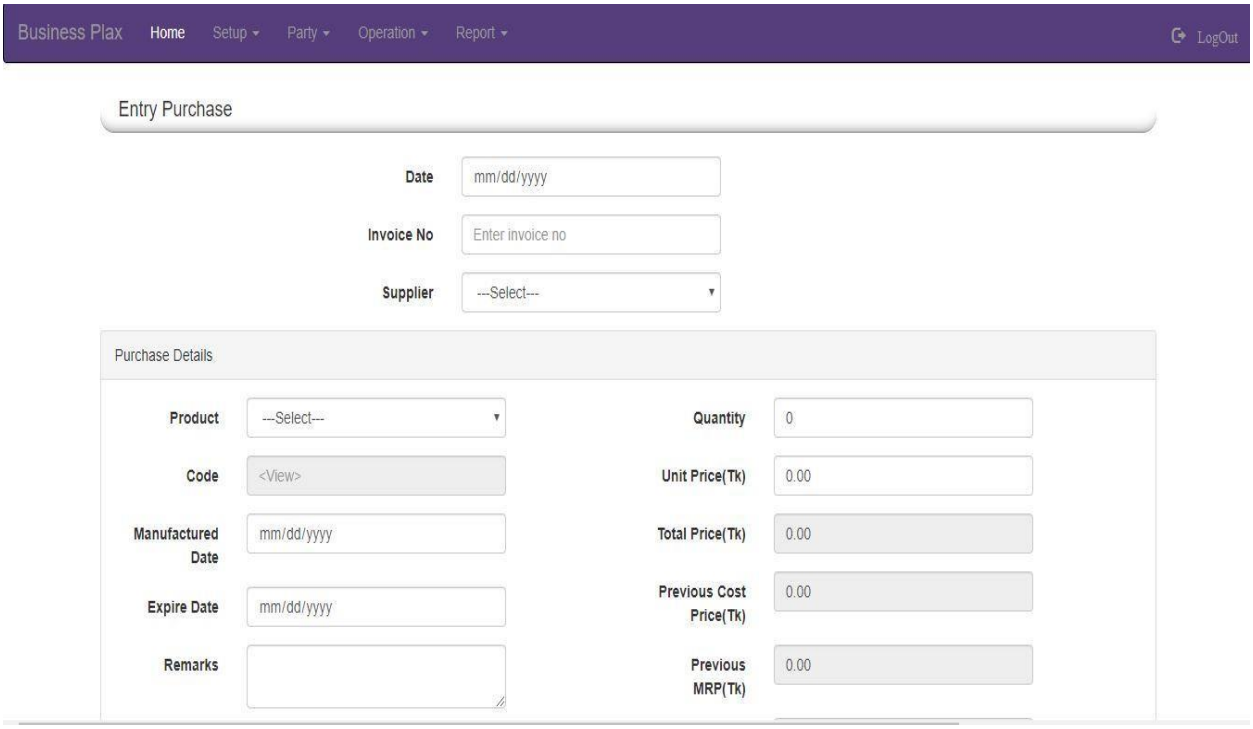
6.7.1 Supplier view list page

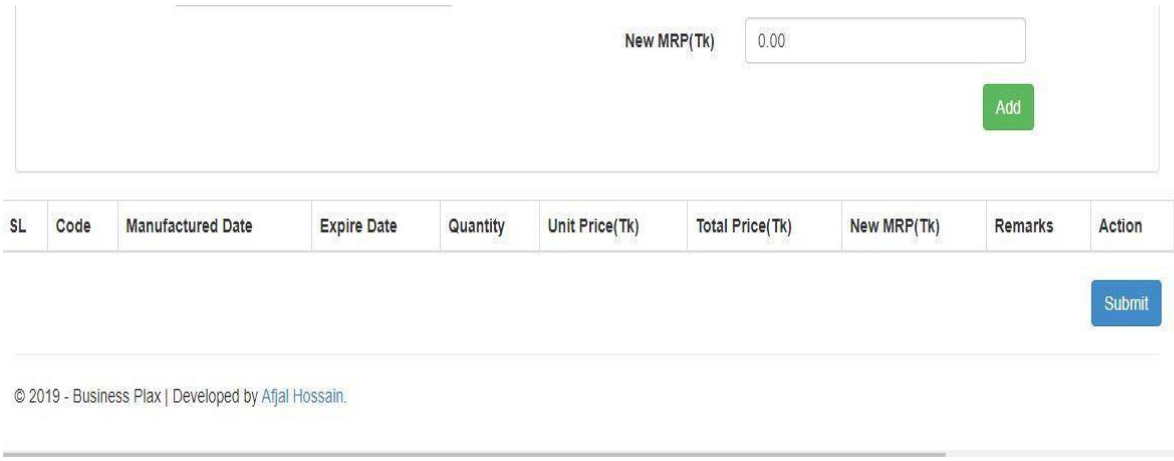
Admin can see their all supplier list after entered supplier details into the system.



6.8 Purchasing Page

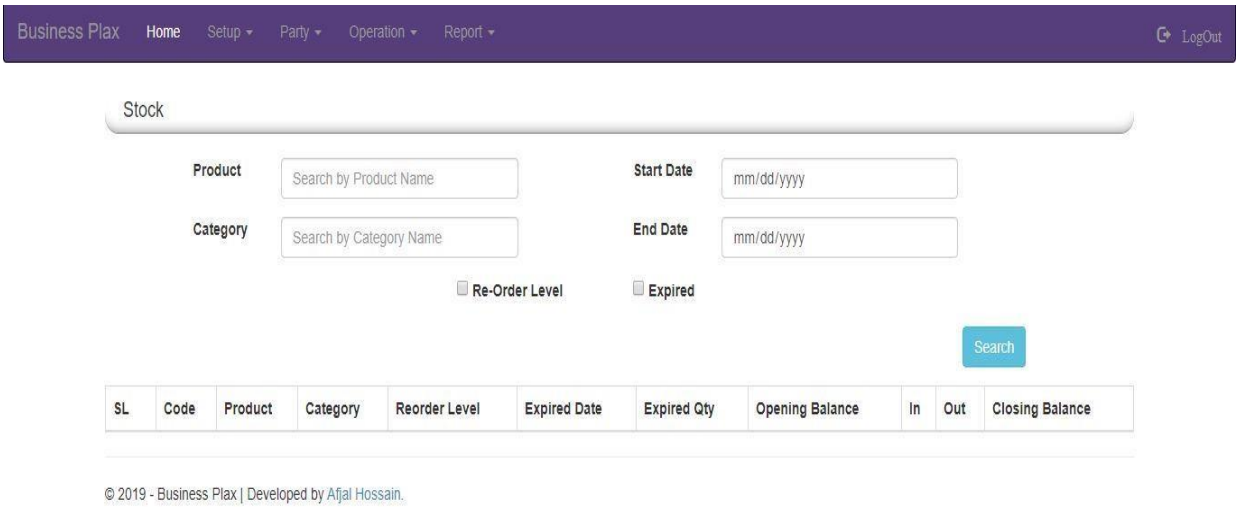
Admin can entry purchasing details into the system under supplier who purchases the product.





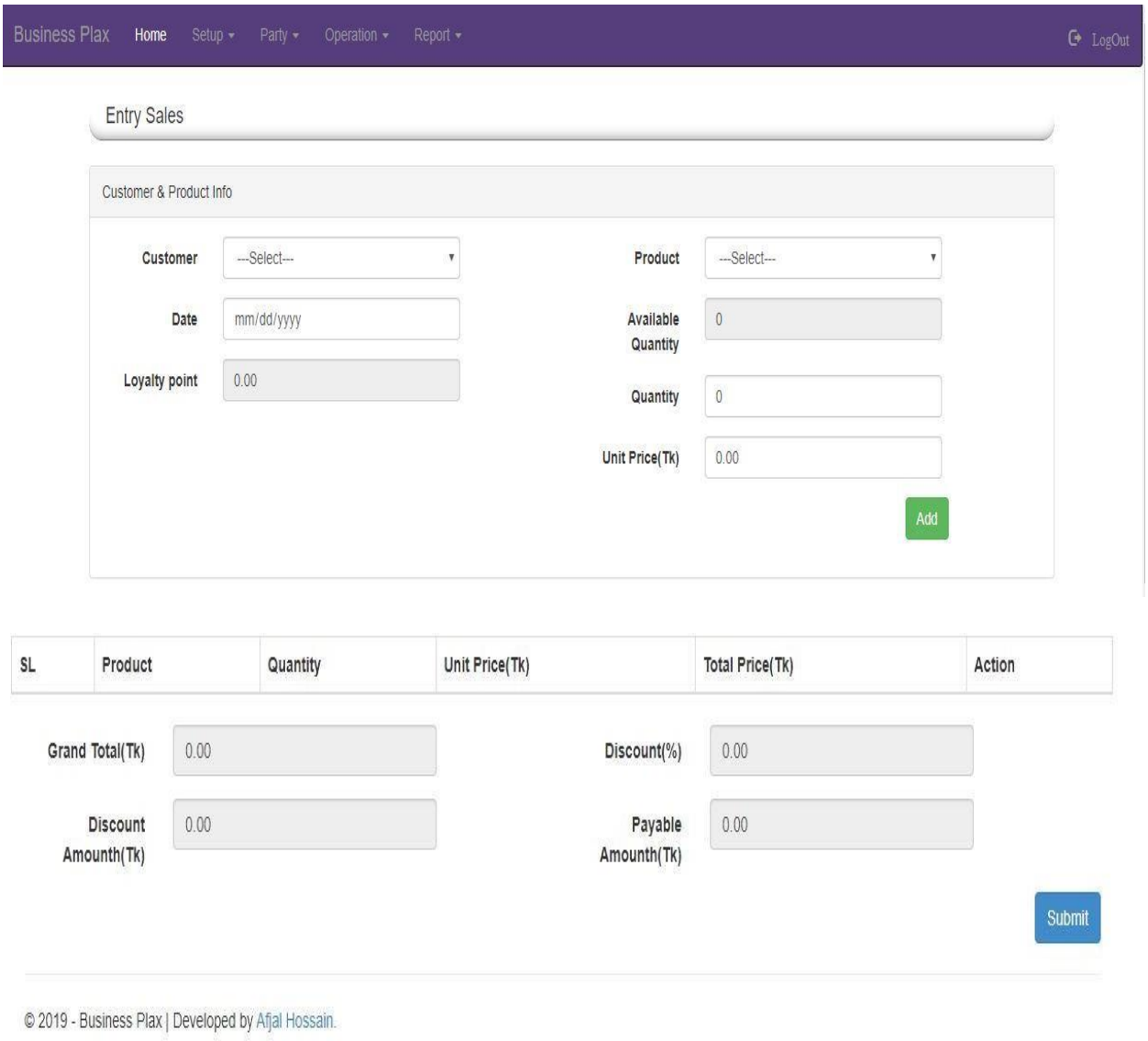
6.9 Stock view Page

Admin can see their product stock availability.



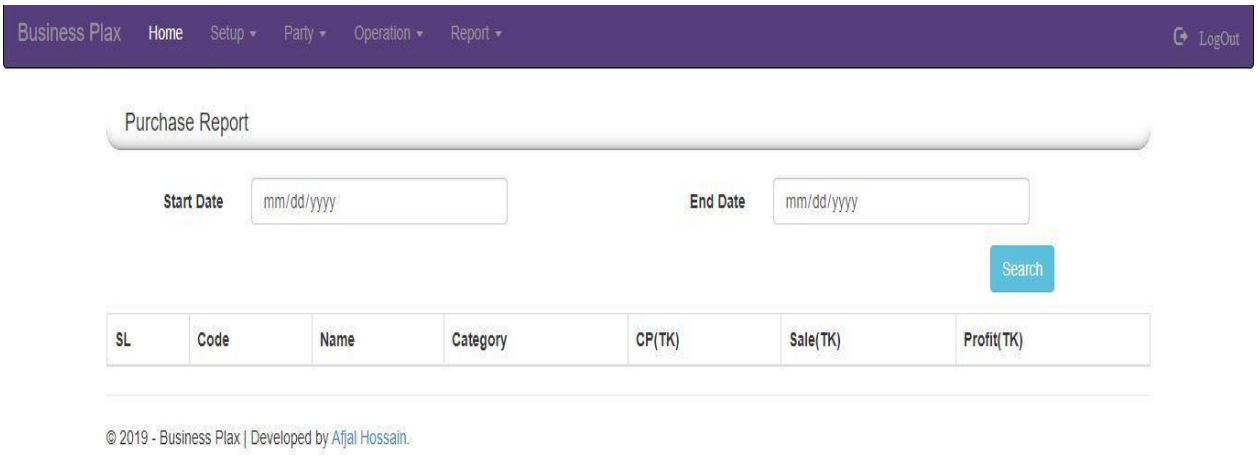
6.10 Sales Entry Page

Admin can add sell detail into the system according to customer.



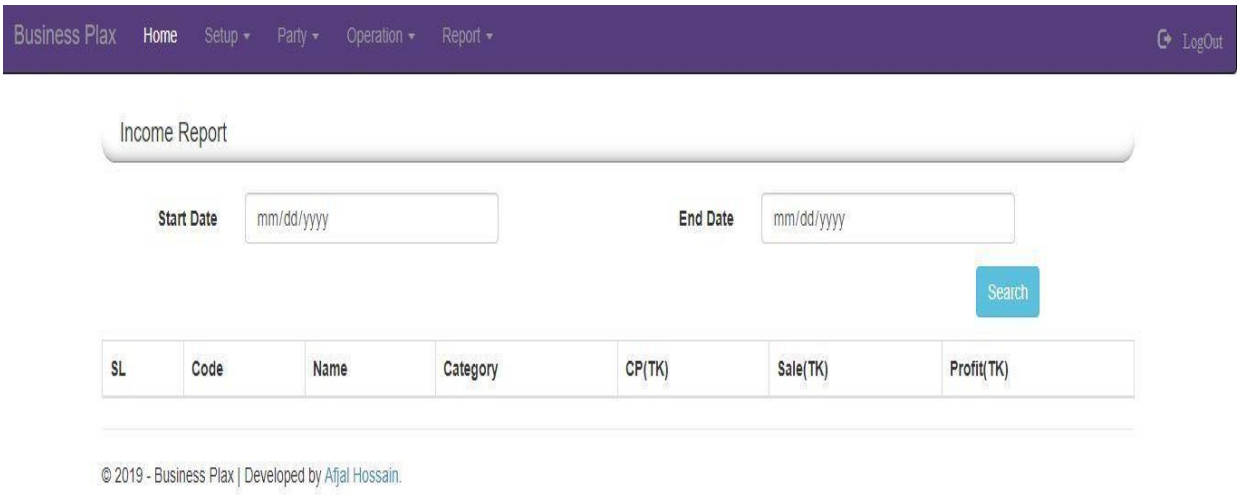
6.11 Purchases Report view page

Admin can see all purchasing report list entered start and end date into the system.



6.12 Sales or Income Report page

Admin can see all sales or income report here…. entered start and end date into the system.



Chapter-7

Conclusion

7.1 GitHub Link

- https://github.com/Afjal13/BusinessPlax

7.2 Project Summary

I have started the development part on October. As like as any others project, you have to put yours very hard working, patience, dedication, and concentration to complete the project. There are many factors comes to when a project going to the development phase, such as fulfilling the stakeholder requirements properly etc.

A proper requirements analysis then it helps the development phase a lot. I analysis the requirements of my project firstly then I am going to the next step design specification.

Database is an important factor of any application system. That's why in the next step I am focusing to create the database design. I have designed the database diagram having tables with the proper relationship. The admin part also can be called maintainers part plays a big role in my system. Then my next step is the user interface. Making the user interface is simple as if a user can understand it easily. After that, I am checking the all thing again and move to the core functionality of the project.

It's not easy task to complete project but if it to be completed the project is not actually. At the end of complete the project, you have to make sure that your project functionality works fine. For that, you have to come in the testing part, its part of quality assurance.

The responsibility of quality assurance is to find the vulnerability of the system. If any bug can be found before the system release then there is a change to fix that bug. So testing the project I have assured the quality of the project

7.3 Limitations

For developing this project, I have faced some limitations. Now I will describe those in brief.

- **Payment method:** In this application, there are not having any payment method directly. So the user can't make any payment transaction through my system. User pays the payment manually.
- **Only Web Version:** My system in only web-based but there are many other platforms are popular such as mobile version, iOS version etc.

- **Registration process:** There are no registration process in my application at yet. Here username and password manually set in the database.

7.4 Obstacles and Achievements

When a project is developing then I have face many obstacles and those obstacle create challenges and I have to overcome this challenges. Without challenges I can't learn anything, challenge comes with opportunity and here my change to grave this opportunity.

By doing this I have learned how collect the requirements and how to analysis them. Brainstorming is must for doing any project I have to do it for sure. The system analysis and database design that I learn properly by doing this project. My supervisor helps us in every step of this project.

Also there are some obstacles and achievement in my project and that is below:

- **Requirements getting from stakeholders:** There are two types of stakeholders in this system and everyone have different functionality. It would be better, If I could gather requirements from them directly.
- **Scope Change:** When I check the requirements then some features has been added and a few of feature get cutting. When it was needed I did brainstorming for that.

7.5 Future Scope

I learned a lot while finishing this project. To build and improve this project, I have met some young entrepreneurs and enthusiasts. I thank all of them very much.

Besides, I am grateful to them because I have been able to complete my project by adopting their important opinions and discussions. It will help me in the future to work with similar projects.

7.6 References

I have gained some knowledge from some platforms. Obviously I will mention those references. For making my project successful those resources help me a lot.

Note I will mention the names below.

- https://www.w3schools.com/cs/default.asp
- https://www.w3schools.com/js/default.asp
- https://www.w3schools.com/bootstrap/bootstrap_grid_basic.asp
- https://www.w3schools.com/js/js_json_intro.asp
- https://www.w3schools.com/js/js_ajax_intro.asp
- https://getbootstrap.com/docs/4.3/getting-started/introduction/
- https://getbootstrap.com/docs/4.3/getting-started/javascript/
- https://getbootstrap.com/docs/4.3/getting-started/introduction/#css
- https://www.tutorialsteacher.com/mvc/asp.net-mvc-tutorials
- https://docs.microsoft.com/en-us/aspnet/mvc/overview/getting-started/getting-started-with-ef-using-mvc/creating-an-entity-framework-data-model-for-an-asp-net-mvc-application
- https://www.entityframeworktutorial.net/code-first/what-is-code-first.aspx
- https://www.javatpoint.com/asp-net-mvc-entity-framework