Inventory Management Solutions

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This Project report has been submitted in fulfillment of the requirements for the Degree of Bachelor of Science in Software Engineering.

APPROVAL

This project titled on "Inventory management solutions", Submitted by Md. Anisujjaman, ID:172-35-2203 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 Bachelor of Science in Software Engineering and approval as to its style and contents.

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DECLARATION

Hereby declare that I have taken this project under the supervision of **Ms. Tapushe Rabaya Toma**, Senior Lecturer, Department of Software Engineering, Daffodil International University. I also declare that this project doesn't have been submitted elsewhere for an award of any degree.

Anis

…………………………………………

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Acknowledgment

I am thankful to Allah that I have been completed my Project successfully and learn a lot about this study. I would like to acknowledge my indebtedness and render my warmest thanks to my supervisor, Tapushe Rabaya Toma, Senior lecturer for providing me careful guidance. I would also wish to express my gratitude to Professor Dr. Imran Mahmud, Head of the Software Engineering, for inspiring us in all means. I am also thankful to all the lecturers, Department of Software Engineering for their unconditional support and encouragement. I am really grateful to my parents for extended discussions and valuable suggestions which have contributed greatly to the improvement of the thesis and also grateful to my friends for their help during the whole venture.

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Introduction

1.1 Purpose of the system

Inventory management is the key to maintaining a profitable, organized and productive business. Inventory management, by definition, stocking, storage and use of inventory.

The main purpose of **Supershop Inventory Solutions** is to help Super shop businesses manage orders, stocks, account details, storage and inventory usage easily and efficiently. By effectively managing your inventory, you can always find out which items are in stock, how many are in stock, and where they are located.

Also, strong inventory management practices allow you to understand how you use your inventory and how its requirements change over time. What you need, which is not so important and which is just a waste of money you can zero. It is using inventory management to practice inventory control. However, inventory control means always having enough stock to meet demand, placing orders and carrying inventory at the lowest possible cost.

1.2 Scope of the system

- **Manage Inventory:** Inventory management helps to manage the stock of the shop. It provides proper details of the products what kind of raw material, what are the sizes we require and etc. to the purchasing department.
- **Less Storage:** When the inventory management provides proper information to management, they buy according to them which helps the company to store fewer products.
- **Improve Productivity:** Inventory management helps to improve the productivity of the machines and manpower. Employees are aware of stocks and the quantity that require to produce.
- **Increase Profits:** Inventory management helps to improve the profits of the company. it helps to provide proper information about stocks, that saves the unnecessary expenses on stocks.
- **View Report:** Employees Can easily view all kind of information about stock, pricing, date, vendor and etc.

1.3 Objectives and success criteria

The objectives of **Inventory Management Solutions** are expected to be effective and financial. Efficiently, stocked products should be available in sufficient quantities and financially, working capital should be kept as low as possible. Here are some of the main objectives of inventory management

- Adequate supply
- Control stock
- Reduce costs
- Avoid waste or damage
- Increase in overall production
- Optimize product sales

1.4 The Stakeholder

- Developer
- Store Manager
- Admin

1.5 Finding Gaps

In Current time, inventory is managed by staff in regular notebook. But there is also some gap for this software.

1.6 Definitions, acronyms, and abbreviations

Staff: Staff implies the staff of the shop who handles all the administrative works.

Vendor: This is the company that provides the supply with the required ingredients.

1.7 Format References

IEEE. *IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.* IEEE Computer Society, 1998.

System Study

2.1 Feasibility Study

In the feasibility of this software project, we will look for all possible relevant factors such as economic, technical and operational feasibility. Through this feasibility study we will be able to decide whether our team is capable enough to develop this project or not. We will analyze the possibilities by analyzing the tools and technologies we are going to use and the requirements our team members are finding to contribute to different parts of this project.

2.1.1 **Operational**

Functional feasibility is a measure of how well a proposed system solves problems and utilizes the opportunities identified during the definition of opportunities and how it satisfies the requirements identified at the stage of system development needs analysis.

2.1.2 **Technical**

In this project, we will use several modern technologies. So, we need to analyze based on some parameters like what technologies we hope to use, how much manpower we need to work with those technologies and how we are going to reduce the risk if we do not have manpower.

2.1.3 **Economic**

Economic potential means how much we need to spend to develop this project as well as how much we need to spend on production. We will further analyze this part in the cost-analysis section of this chapter.

2.2 Project Schedule

We will estimate the whole project time required by using PERT time analysis methods. In this method,

to = minimum time required for that activity

tp = maximum time required for that activity

tm = neither optimistic nor pessimistic time required

te = PERT’s average time

Activity	Preceding Activity	Preceding Activity			te = (to+4tm+tp)/6
		to	tm	tp	
Requirement collection (A)	None	2	3	6	3.33
Feasibility study (B)	A	2	4	8	4.33
Drawing diagrams (C)	A, B	3	6	9	6
UI/UX design (D)	A, C	5	8	12	8.16
Architecture design (E)	A, C, D	7	10	14	10.17
Programming (F)	A, E	10	15	25	15.83
Testing (G)	F	3	5	8	5.17

2.3 Cost Estimation(in USD)

Item	Units/Hrs.	Cost/Unit/Hrs.	% Of total
1.Team work	**200**	**15000**	**70**
Manager		**5000**	
Members		**3000**	
Contractors		**7000**	
2.Hardware	**20**	**4000**	**20**
Device		**3500**	
Server		**500**	
3.Software		**1000**	
Licensed Development		**250**	
4.Testing	**60**	**250**	**.40**
5.Training & Support	**40**	**350**	**.75**
Training cost		**150**	
Travel cost		**100**	
Team members		**100**	
6.Others	**20**	**200**	**.35**
7.Reserves	**50**	**2000**	**9**
Total	**390**	**21800**	

2.4 Project Requirements

- Super Shop Inventory Solutions should be as easy, practical and safe as possible
- The technical infrastructure should be reliable
- Ensure that any systematic fraud is impossible

2.5 Software Process Model

For this software development I use agile methodology. The Agile software development methodology is one of the simplest and effective processes to turn a vision for a business need into software solutions. Agile is a term used to describe software development approaches that employ continual planning, learning, improvement, team collaboration, evolutionary development, and early delivery.

Proposed system

3.1 Overview

Inventory Management Solutions can be a process for taking care of and locating items or materials. In common usage, the term can also refer to just the software program components. Modern inventory manages systems often provide automatic identification involving inventory objects. Inventory objects could include any kind of physical asset: goods, consumables, fixed assets, circulating tools, books, or money equipment, vendor details. **Inventory Management Solutions** control system can track any kind of physical objects including equipment, books, foods or any quantifiable items.

3.2 Functional requirements

FR-01	Login/Logout
Description	User will be able to login and logout to the system with valid user credentials.
Stakeholders	Staff
Priority	High

FR-02	Vendor
Description	User will be able to Register vendor details, view Details, delete vendor
Stakeholders	Staff/Manager
Priority	High

FR-03	Product add
Description	User will be able to add product on database
Stakeholders	Staff
Priority	High

FR-04	View Stock
Description	User can view product stock
Stakeholders	Staff
Priority	High

FR-05	Shipped info
Description	User can see details about shipment, date.
Stakeholders	Staff
Priority	High

FR-06	MRP (Buy/Sell Price)
Description	User will be able to know buying cost and selling price
Stakeholders	Staff
Priority	High

FR-07	Account Details
Description	User will be able to manage account details like payment, due, receive and etc.
Stakeholders	Staff
Priority	High

FR-08	Report
Description	User will be able to view product report, most sell product, print invoice.
Stakeholders	Staff
Priority	High

FR-09	Sales Detail
Description	User will be able to login and logout to the system with valid user credentials.
Stakeholders	Staff
Priority	High

3.3 Nonfunctional requirements

3.3.1 Usability

- The system must be easy to use by staff such that they do not need to read an extensive number of manuals.
- The system must be quickly accessible.
- The system must be intuitive and simple in the way it displays all relevant data and relationships.
- The menus of the system must be easily navigable by the users with buttons that are easy to understand

3.3.2 Reliability

- The System must give accurate inventory status to the user continuously. Any inaccuracies are taken care by the regular confirming of the actual levels with the levels displayed in the system.
- The system must provide a password enabled login to the user to avoid any foreign entity changing the data in the system.
- The system should provide the user updates on completion of requested processes and if the requested processes fail, it should provide the user the reason for the failure.
- The system should not update the data in any database for any failed processes.

3.3.3 Performance

- The system must not lag, because the workers using it don’t have down-time to wait for it to complete an action.
- The system must complete updating the databases successfully every time the user requests such a process.
- All the functions of the system must be available to the user every time the system is turned on.
- The calculations performed by the system must comply according to the norms set by the user and should not vary unless explicitly changed by the user.

3.3.4 Supportability

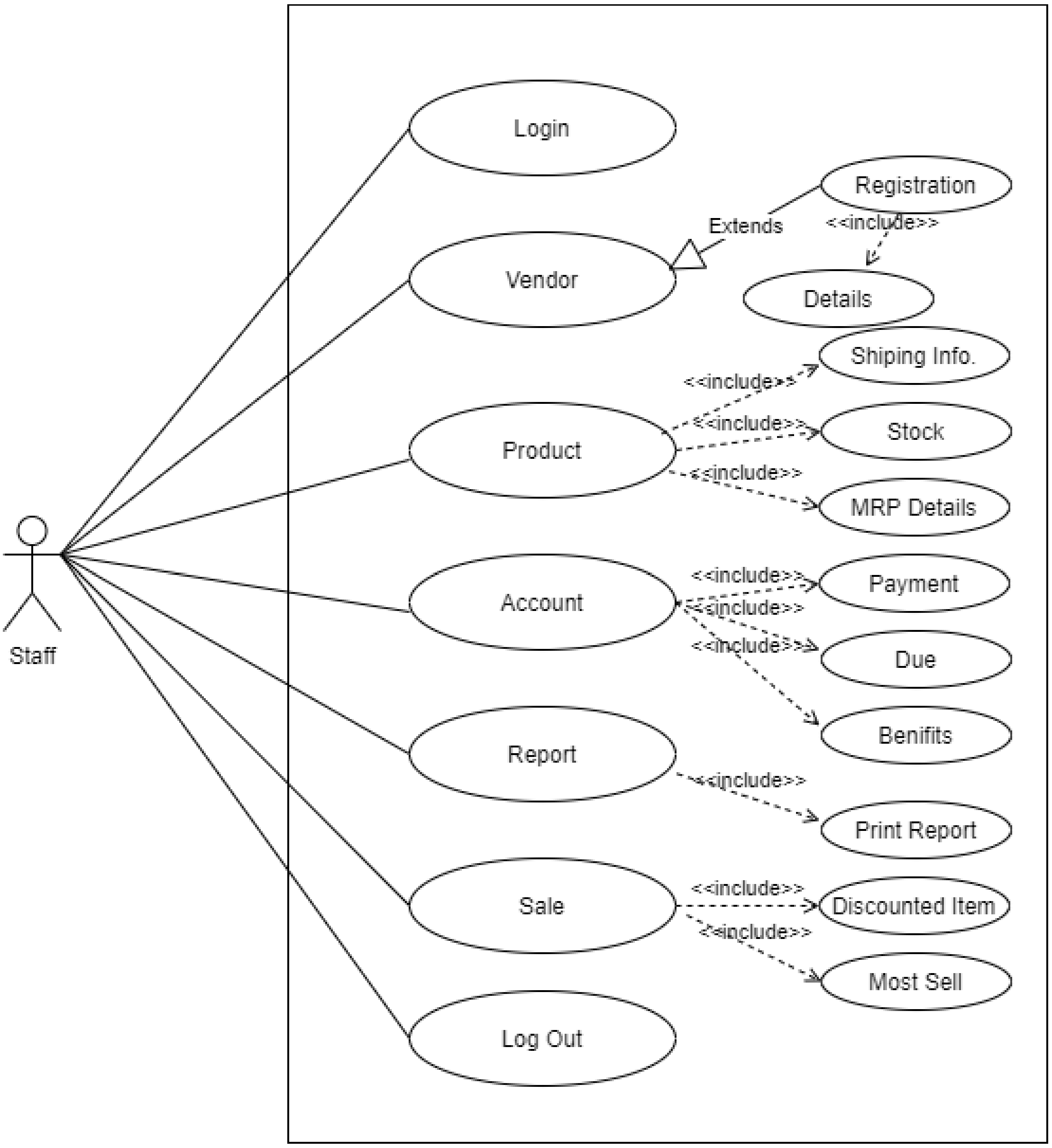
- The software is designed such that it works even on systems having the minimum configuration.
- The system is adaptable even if additional plugins or modules are added at a later point.
- The data can be exported to the manager so as to make the system more portable.

3.3.5 Packaging

- The system must be able to run on the Windows operating systems beginning with Windows XP, and must be able to run on future releases such as the upcoming Windows 11
- The software must incorporate a license key authentication process.
- The packaging must come with a manual that details the use of the system, and also the instructions on how to use the program. This manual may be included either in a booklet that comes with the software, or on the disc that the software itself is on.

System Analysis

4.1 Use Case Diagram


Login
Vendor
Extends
Registration
<<include>>
Details
Shiping Info.
<<include>>
<<include>>
Stock
Product
<<include>>
MRP Details
Staff
Account
<<include>>
Payment
<<include>>
<<include>>
Due
Benifits
Report
<<include>>
Print Report
Sale
<<include>>
Discounted Item
<<include>>
Most Sell
Log Out

Use Case

4.2 Use Case Description

01. Login

Use Case Name	Login
Actor	Staff
Description	User will log into system by using their username and password
Precondition	User must be on login page
Trigger	By clicking log in button
Flow of Events	• User will be on log in page • User will enter their credentials • User will click login button
Post Condition	User will be logged in

02. Vendor Registration

Use Case Name	Vendor Registration
Actor	Staff
Description	User will register vendor
Precondition	User must login
Trigger	By clicking registration button
Flow of Events	• User will go to vendor registration page • User will be on register vendor form • User will enter their credentials • User will click register
Post Condition	Vendor info saved in database

03. Vendor Information

Use Case Name	Vendor Information
Actor	Staff
Description	User will view vendor details
Precondition	• User must login • User must register vendor details before
Trigger	By clicking view vendor details button
Flow of Events	• User will go to view vendor • User will click details
Post Condition	Vendor info saved in database before

04. Add shipping info

Use Case Name	Product shipping info
Actor	Staff
Description	User will add shipping details
Precondition	• User must login
Trigger	By clicking add shipping button
Flow of Events	• User will go to product • User will click add shipping
Post Condition	Must be on product page

05. Add product details

Use Case Name	Add product details
Actor	Staff
Description	User will add Product details
Precondition	• User must be login • User must be in product page
Trigger	By clicking add product button
Flow of Events	• User will go to product • User will click add shipping
Post Condition	Must be on product page

06. Account

Use Case Name	Account
Actor	Staff
Description	User will add Account details
Precondition	• User must be login • User must be in Account page
Trigger	By clicking Account button
Flow of Events	• User will go to product • User will click add shipping
Post Condition	Must be on product page

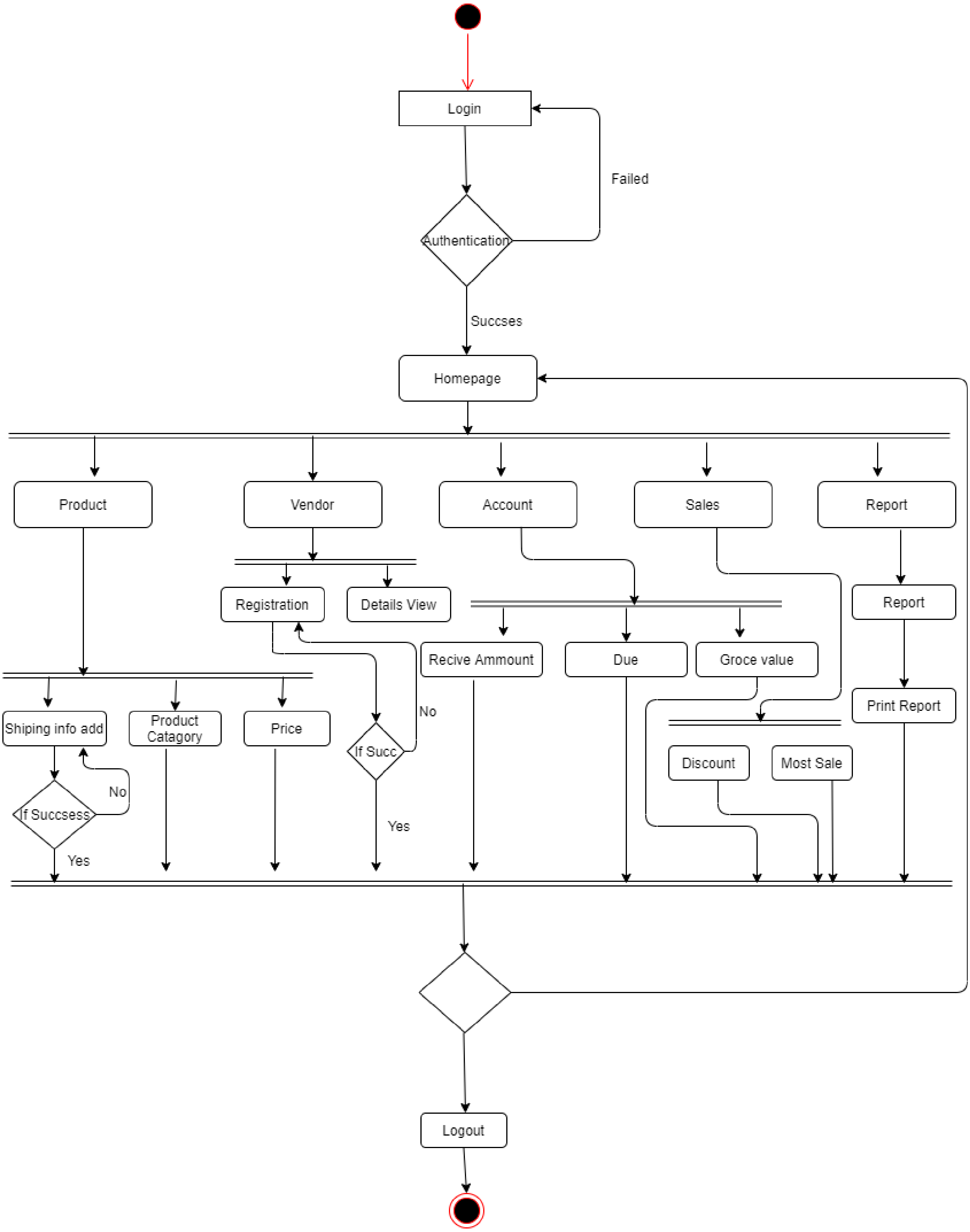
06. Report

Use Case Name	Report
Actor	Staff
Description	User will View report
Precondition	• User must be login
Trigger	By clicking View report
Flow of Events	• User will go to view report • User will click add shipping
Post Condition	Must be on product page

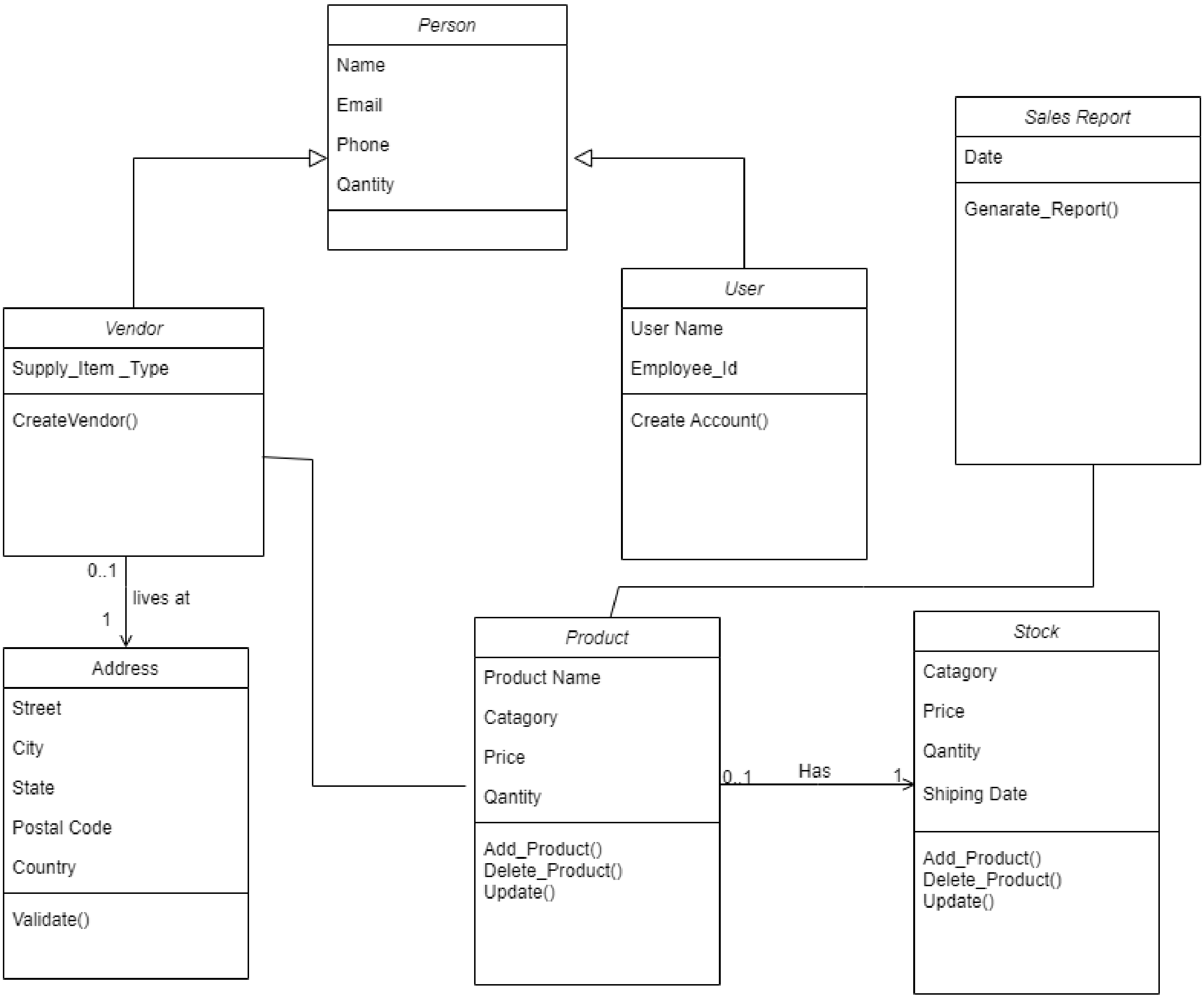
06. Most sale

Use Case Name	Most sale
Actor	Staff
Description	User will View Most sale
Precondition	• User must be login
Trigger	By clicking Most sale page
Flow of Events	• User will go to view report • User will click add shipping
Post Condition	Must be on home page

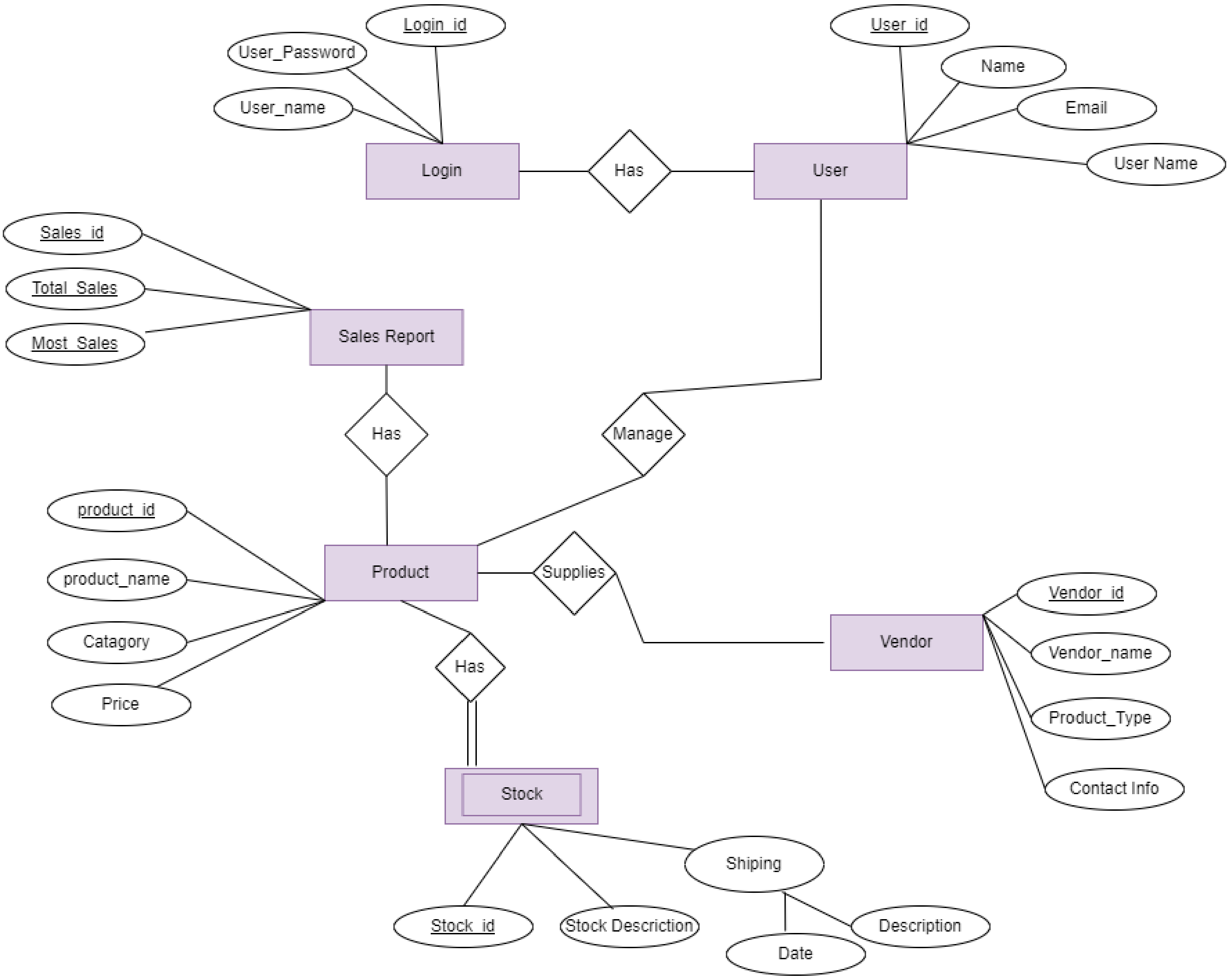
4.3 Activity Diagram


Login
Failed
Authentication
Succses
Homepage
Product
Vendor
Account
Sales
Report
Registration
Details View
Report
Recive Ammount
Due
Groce value
Print Report
Shiping info add
Product Catagory
Price
No
If Succ
Discount
Most Sale
If Succsess
No
Yes
Yes
Logout

4.4 Class Diagram


Person
Name
Email
Phone
Qantity
Sales Report
Date
Genarate_Report()
Vendor
Supply_Item _Type
CreateVendor()
User
User Name
Employee_Id
Create Account()
0..1
lives at
1
Address
Street
City
State
Postal Code
Country
Validate()
Product
Product Name
Catagory
Price
Qantity
Add_Product()
Delete_Product()
Update()
0..1
Has
1
Stock
Catagory
Price
Qantity
Shiping Date
Add_Product()
Delete_Product()
Update()

4.5 ERD


Login_id
User_Password
User_name
Login
Has
User
User_id
Name
Email
User Name
Sales_id
Total_Sales
Most_Sales
Sales Report
Has
Manage
product_id
product_name
Catagory
Price
Product
Supplies
Vendor
Vendor_id
Vendor_name
Product_Type
Contact Info
Has
Stock
Shiping
Stock_id
Stock Descriction
Description
Date

Testing

5.2 Introduction

Testing is the process of making changes in software system to add one or more new features or to make modifications in the already existing features. Each of this feature is said to have a characteristic that is designed to be useful, intuitive and effective.

5.2 Unit testing

When I developed my project, I was trying to be tested smallest part of an application. Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually and independently scrutinized for proper operation. This testing methodology is done during the development process by the software developers and sometimes QA staff.

Modulate the logic of the module using one or more White box methods and then supplement these tests. White box testing is a software testing method in which the internal structure/implementation of the item being tested is known to the tester. The tester chooses inputs to exercise paths through the code and determines the appropriate outputs. Programming knowledge and the implementation knowledge is essential.

5.3 Integration testing

After testing the device, integration testing is the second step in the software testing process. These tests software test individual components of a device or group. The focus of the integration test level is to detect errors during interaction between connected components or devices or data.

5.4 Acceptance testing

A User Acceptance Test is carried out on a design build for which a set of requirements were submitted for it to be implemented. These processes, synonymous with your operations, are currently handled by available staff members. Initially, they were conveniently handled tracked through a stand-alone computer desktop application. Acceptance testing can take many forms, such as user acceptance testing, operational acceptance testing, contract acceptance testing and others. In this article, the focus is on user acceptance testing.

5.5 Security testing

The system is highly secure. When the user login to the system then only they can access to play the system. So, it is secured.

5.6 Accessibility testing

This system can be access from mobile also. so, this system has the portability to use all the platform. User can use the application from iPad or tablet also.

Critical Appraisal

6.1 Strength of the system

To walk in the good way, one’s had to face many obstacles. By facing obstacles, one will get some achievements. To store data and to get data in a correct format was an obstacle for me. Although I have done it by taking help from my supervisor, friends and by searching from google. Some obstacles and achievements are as follow:

Scope Change: Sometimes I was asked to add some features. Then I had to redesign the system. It made me sometimes hopeless.

Resource Deprivation: In some cases, I did not get proper resources to handle that situation.

6.2 Weakness of the system

It is very hard to develop something without any limitations. This project has some limitations. Limitation are as follows: -

- Not highly secure
- Some feature not completed yet

6.3 Future Scope

By working with this project, I have learnt many things. This project will give me some opportunity to work with this type of similar project.

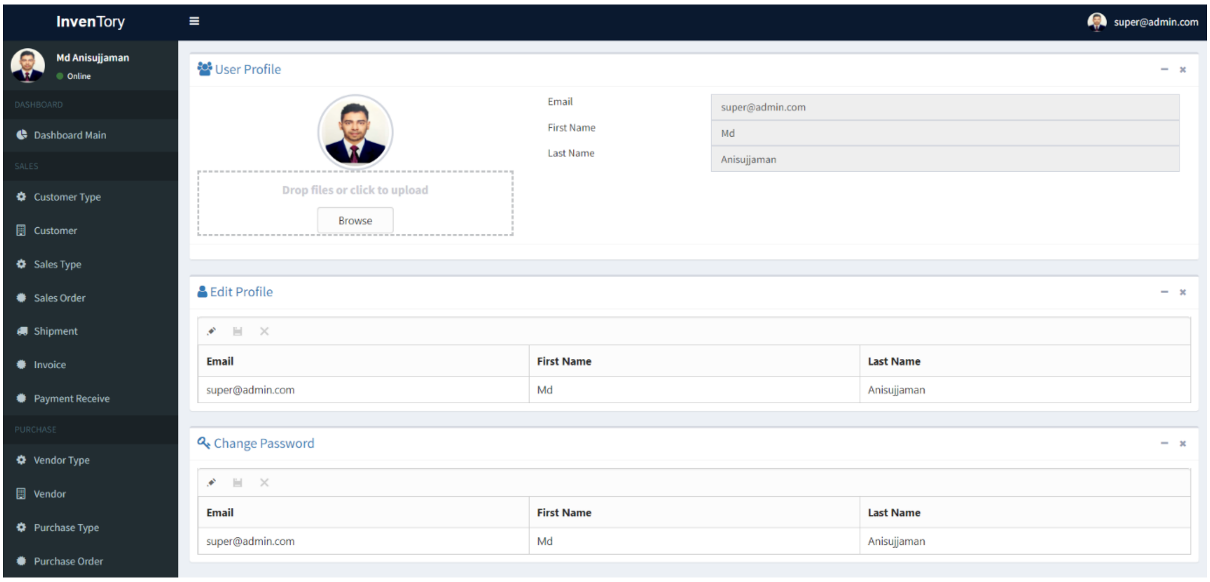
6.4 References

To complete audit application, I have taken help from many places. Some references are given bellow:

- GitHub
- React.org
- Stack Overflow
- https://dotnet.microsoft.com/

Some Screenshot of project

01: Admin Profile


InvenTory
super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
User Profile
Drop files or click to upload
Browse
Edit Profile
Change Password

Email: super@admin.com
First Name: Md
Last Name: Anisujjaman

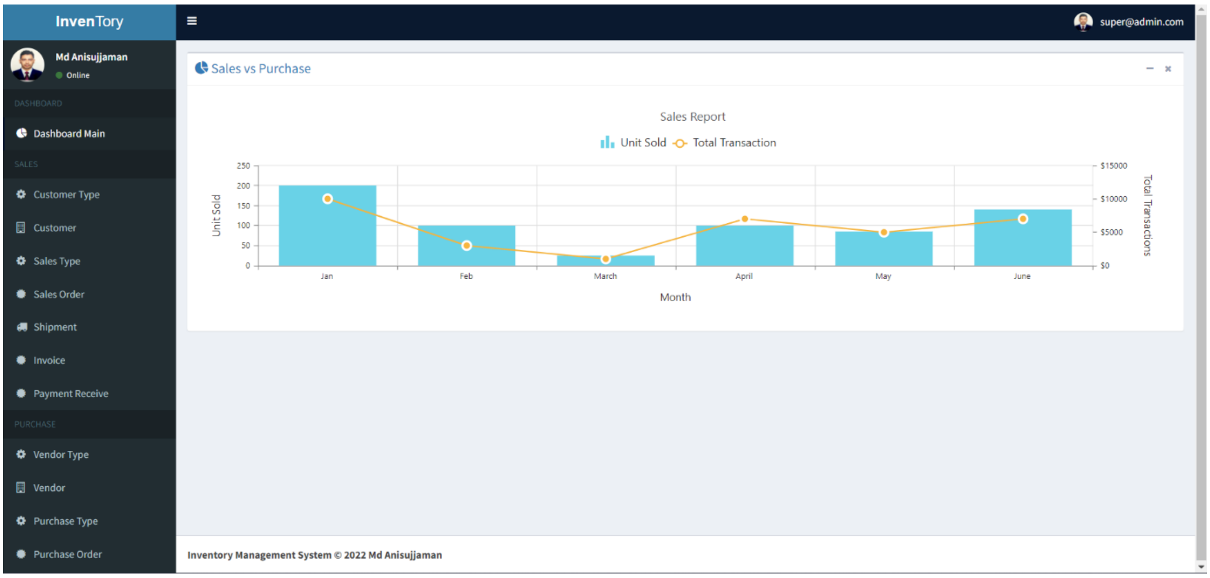
Edit Profile

Email	First Name	Last Name
super@admin.com	Md	Anisujjaman

Change Password

Email	First Name	Last Name
super@admin.com	Md	Anisujjaman

02: Dashboard


InvenTory
super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Sales vs Purchase
Sales Report
Unit Sold
Total Transaction
Unit Sold
250
200
150
100
50
0
Jan
Feb
March
April
May
June
Month
$15000
$10000
$5000
$0
Total Transactions

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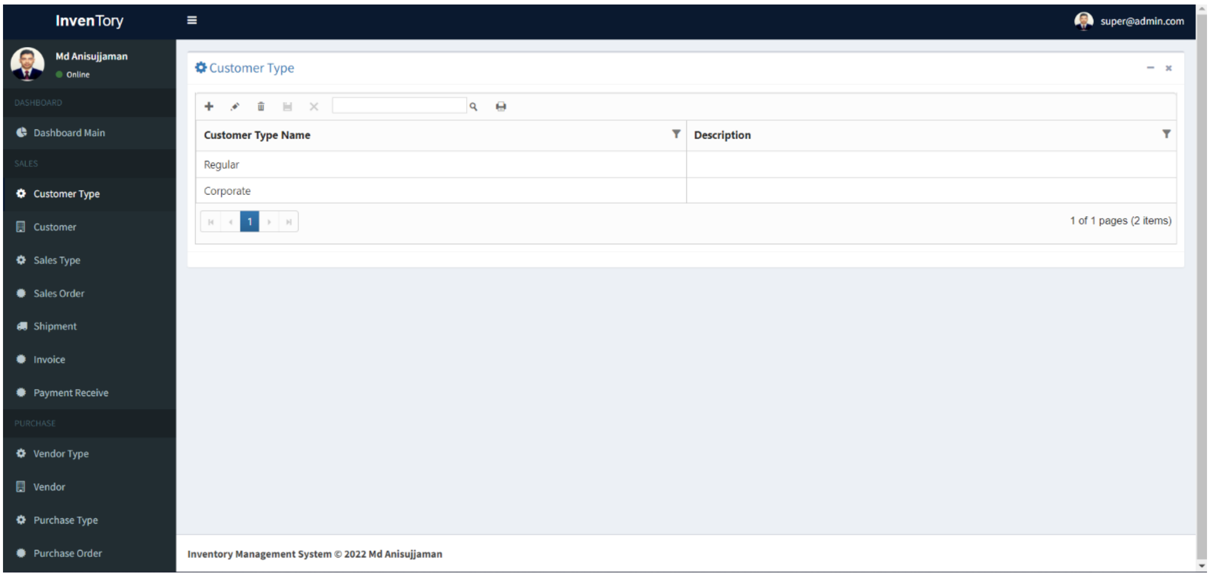
03: Customer Type


InvenTory
super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Customer Type
1

Customer Type Name	Description
Regular	
Corporate	

1 of 1 pages (2 items)

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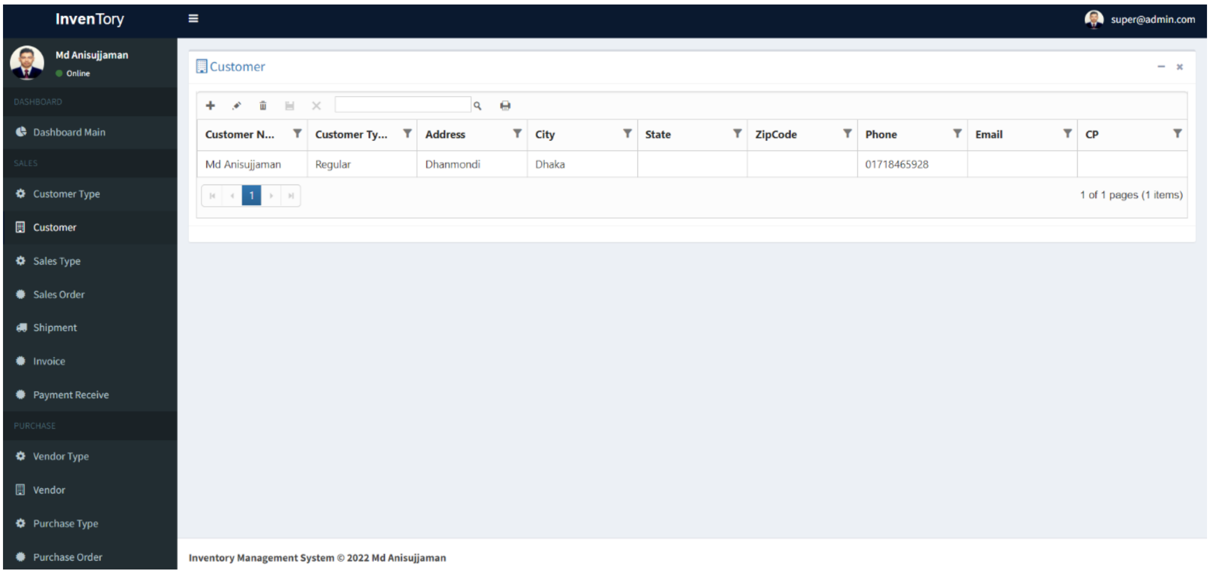
04: Customer


InvenTory
super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Customer
1

Customer N...	Customer Ty...	Address	City	State	ZipCode	Phone	Email	CP
Md Anisujjaman	Regular	Dhanmondi	Dhaka			01718465928		

1 of 1 pages (1 items)

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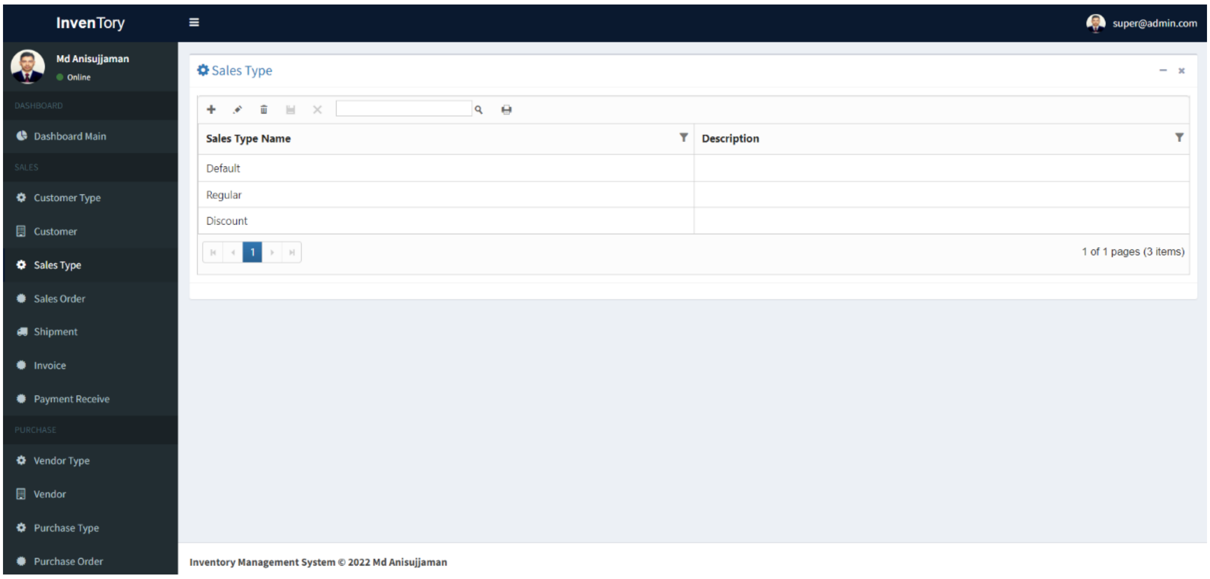
05: Sales Type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super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Sales Type
1
1 of 1 pages (3 items)
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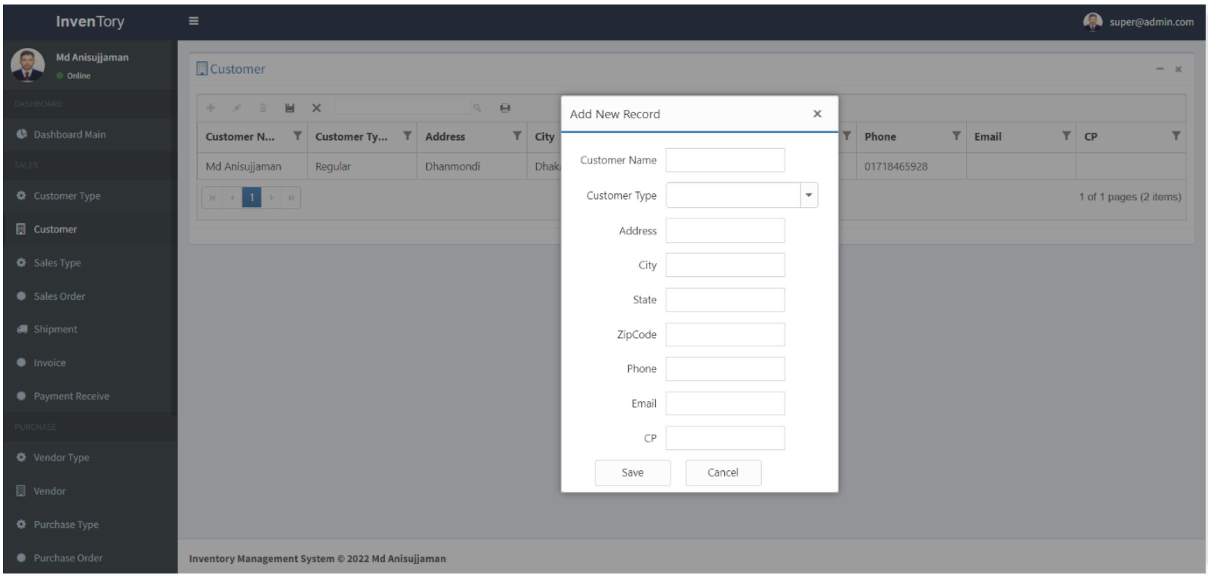
Sales Type Name	Description
Default	
Regular	
Discount	

06: Add Customer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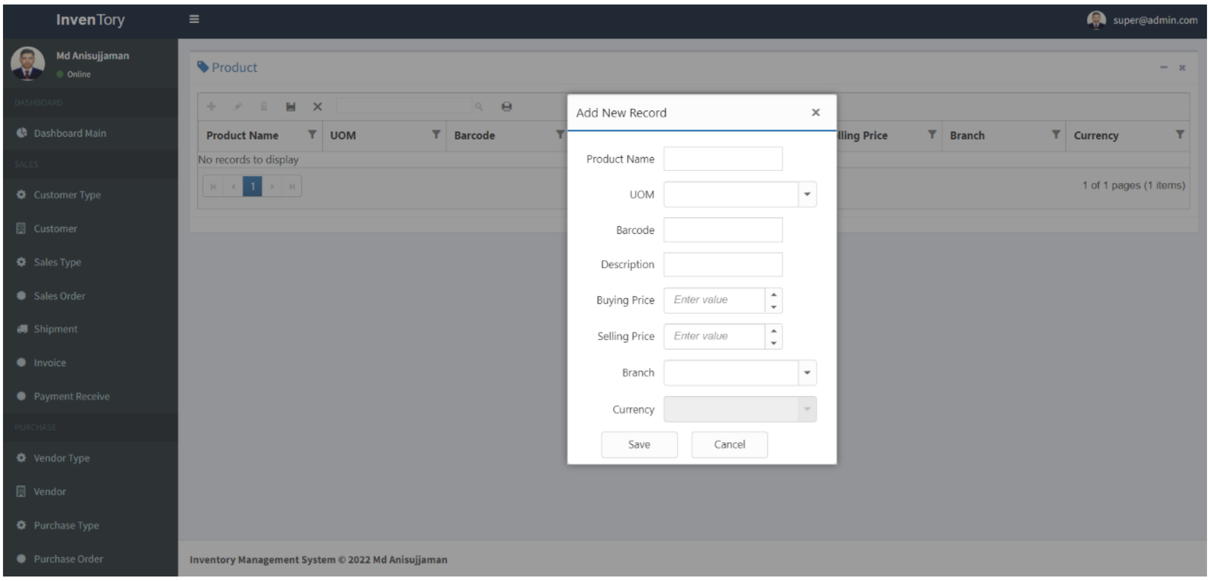
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Customer
1
1 of 1 pages (2 items)
Add New Record
Customer Name
Customer Type
Address
City
State
ZipCode
Phone
Email
CP
Save
Cancel
Inventory Management System © 2022 Md Anisujjaman

Customer N...	Customer Ty...	Address	City	Phone	Email	CP
Md Anisujjaman	Regular	Dhanmondi	Dhak	01718465928		

07: Add Product


InvenTory
super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Product
Product Name
UOM
Barcode
lling Price
Branch
Currency
1
1 of 1 pages (1 items)
Add New Record
Product Name
UOM
Barcode
Description
Buying Price
Enter value
Selling Price
Enter value
Branch
Currency
Save
Cancel
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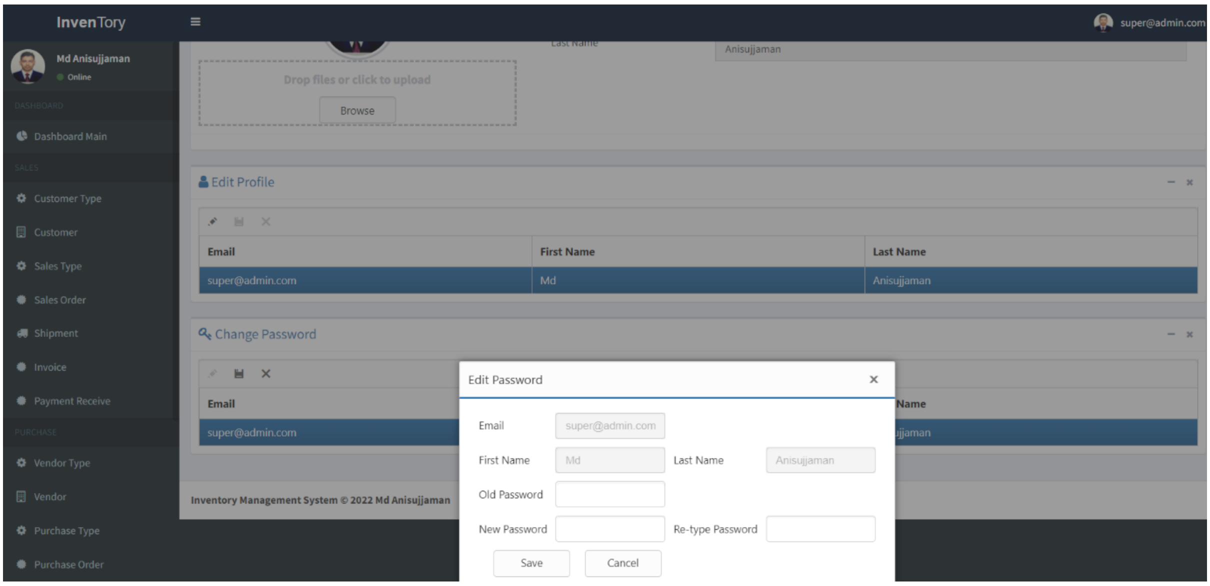
No records to display

08: Change Admin Password


InvenTory
super@admin.com
Md Anisujjaman
Online
DASHBOARD
Dashboard Main
SALES
Customer Type
Customer
Sales Type
Sales Order
Shipment
Invoice
Payment Receive
PURCHASE
Vendor Type
Vendor
Purchase Type
Purchase Order
Last Name
Drop files or click to upload
Browse
Edit Profile
Change Password
Edit Password
Save
Cancel

Last Name: Anisujjaman

Edit Profile

Email	First Name	Last Name
super@admin.com	Md	Anisujjaman

Change Password

Email	Last Name
super@admin.com	Anisujjaman

Edit Password

Email: super@admin.com

First Name: Md

Last Name: Anisujjaman

Old Password:

New Password:

Re-type Password:

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