بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

International Islamic University Chittagong

Department of Computer Science and Engineering

REPORT ON

INVENTORY POINT OF SALES MANAGEMENT SYSTEM

PREPARED BY: DELIMITER DUNGEON

COURSE CODE : CSE-3638

COURSE TITLE : SOFTWARE ENGINEERING SESSIONAL.

SUBMITTED TO

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Acknowledgement

We would like to thank Atia Binti Aziz Mam, for her best class input, feedback and support activity to perform us to inspire as well as to do different work to make our product a successful one. Her experience and effort and teaching technique which is fruitful & extensive when it came to the project requirements and development.

Abstraction

A "Point of Sale" initiative is being undertaken. Nowadays, a considerable number of independent firm Associations are transitioning to paperless business arrangements because to increased online collaboration and extensive data technology use. To manage well and efficiently, the point of sale becomes quite important. We tried to create a Point of Sale for the development of this system. Many business organizations have expressed a need for such a system. According to user requirements, the proposed system's design was created. Utilizing open-source software and hardware, the system is put into operation. A variety of functions were tried on the system, and it passed all of the tests. In the future, smart phone user integration will be available.

Introduction

Point of Sale is an internet business endeavor run by executives that benefits employees, suppliers and administrators. Only enrolled users are permitted to log in, and new users are not permitted to register for the application. It is suggested that this be a web application. POS system gathers all the information from your day-to-day operations and automatically generates data analytics and reports telling exactly how the business is doing. The data collected can give valuable insights that will help user run and manage business more effectively on a daily basis. Point of Sale is the application of business management to the create supplier, employee, add product, sales report, summary & handling account related task etc. Point of Sale involves studying the intricacies of the brand, identifying the target audience, devising the event concept, planning the logistics and coordinating the technical aspects before actually launching the event.

Objectives

The main objective of Web based Point of Sale is to provide flawless sales management dashboard. This system is basically aimed to provide organize and complete control over business, reports, summary etc.

The goals of our system are:

- To provide flawless event Point of Sale dashboard.
- Accuracy in maintaining the inventory levels.
- Accuracy in predicting the requirements of the next order.
- Admin will have total control over the sales and manage another part.
- Admin can fully manage the system.
- Add supplier, employee, customer.
- Add product.
- Online Registration & Payment.
- Reporting.
- Handle Accounts & purchases.

REQUIREMENT ANALYSIS

Functional Requirement

1. The system supports customers' purchase receipt.
2. System can search the product from the stock according to customer's demand.
3. System can add stock.
4. System can update stock.
5. System can delete stock.
6. System can show the stock report.
7. System can show the sales report.
8. System can register new staff.
9. System can add customer service.
10. System can update customer service.
11. System can view all the service records according to product specific ID.
12. System can update password (Admin & Staff).

Non-Functional Requirement

1. The system can save stock into the database safely.
2. The system can support all the PC (Personal Computer).

3. The system can create a backup database file after every transaction (sales, stock, service, update of authentication details).

4. Stock should be added after end of sales per day.

5. For security issues only admin can change the password on behalf of staffs.

6. Staffs can only access this system for sales, service and checking reports.

Materials and IDE-tools

Software Requirements

- Operating System: Windows (8.1,10,11).
- Netbeans 12.0.bin
- Inidreport 5.6.0
- Database: mysql-connector-java-5.1.22-bin
- MySQL Server Text editor
- Debugger
- Jdk
- Project related jar and library

Hardware Requirement

- RAM: Minimum 1GB or higher.
- HDD: Minimum 50 GB.

- Processor: Intel Pentium 4 or AMD.

Development Methodology

System Analysis And Design

Flow Chart:

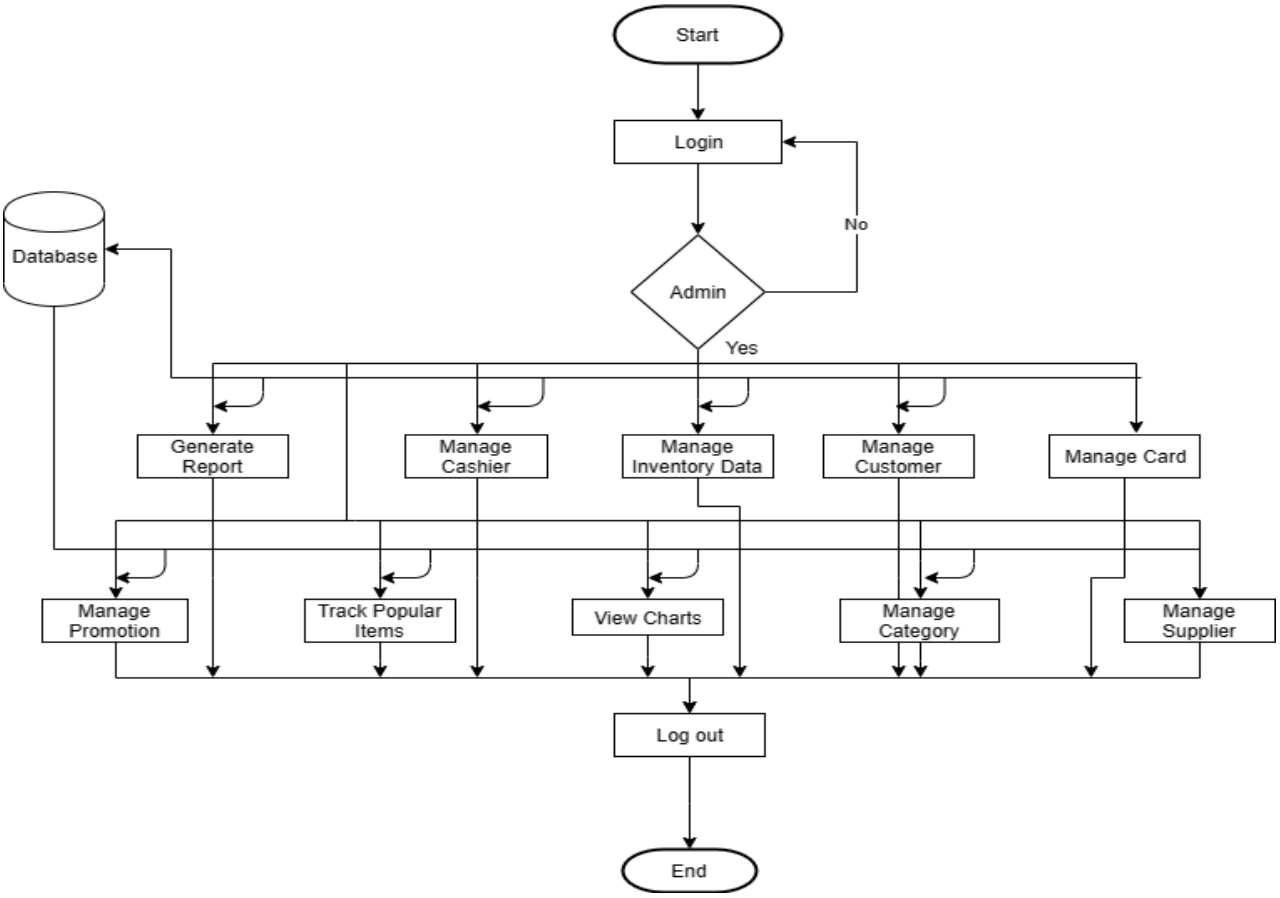

Fig 1: Flow Chart

Process model:

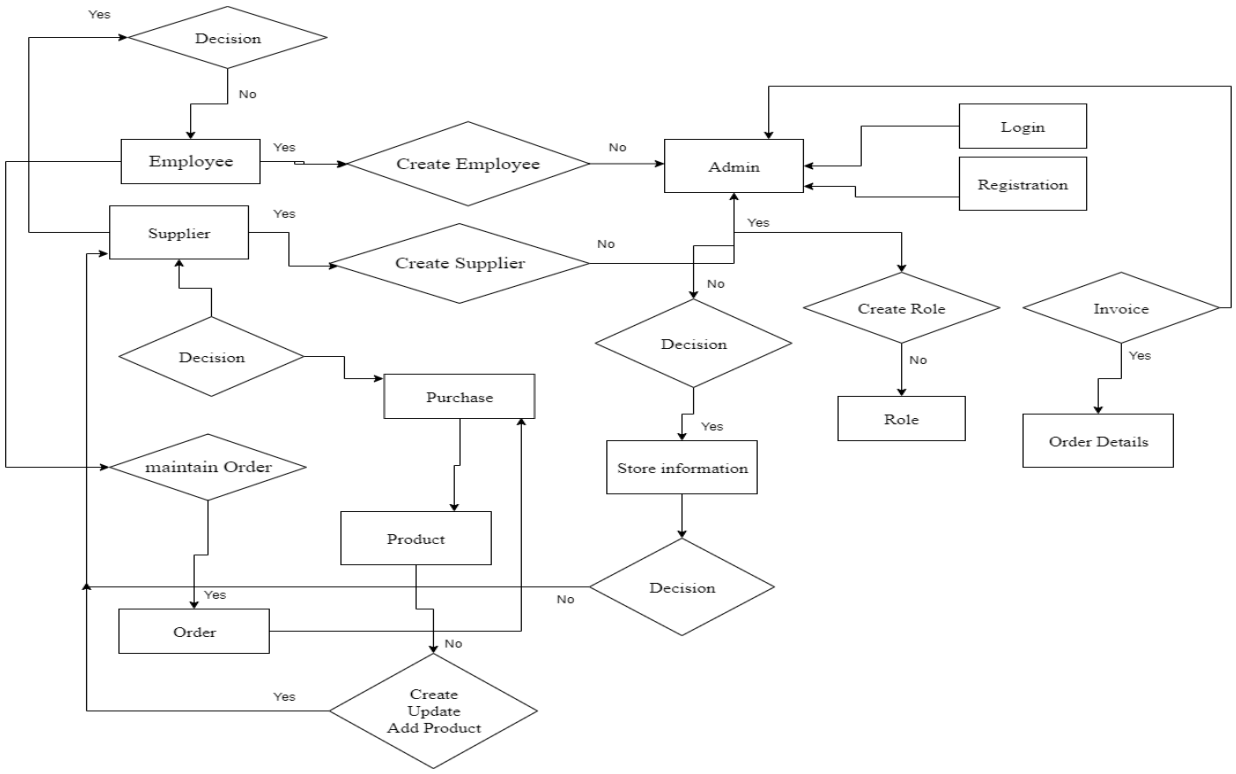

Fig 2: Process model

UML Design:

UML (Unified Modelling Language) is a standardized modelling language enabling developers to specify, visualize, construct and document artifacts of a software system. It is an important aspect involved in OO (Object-Oriented) software development.

UML Diagram:

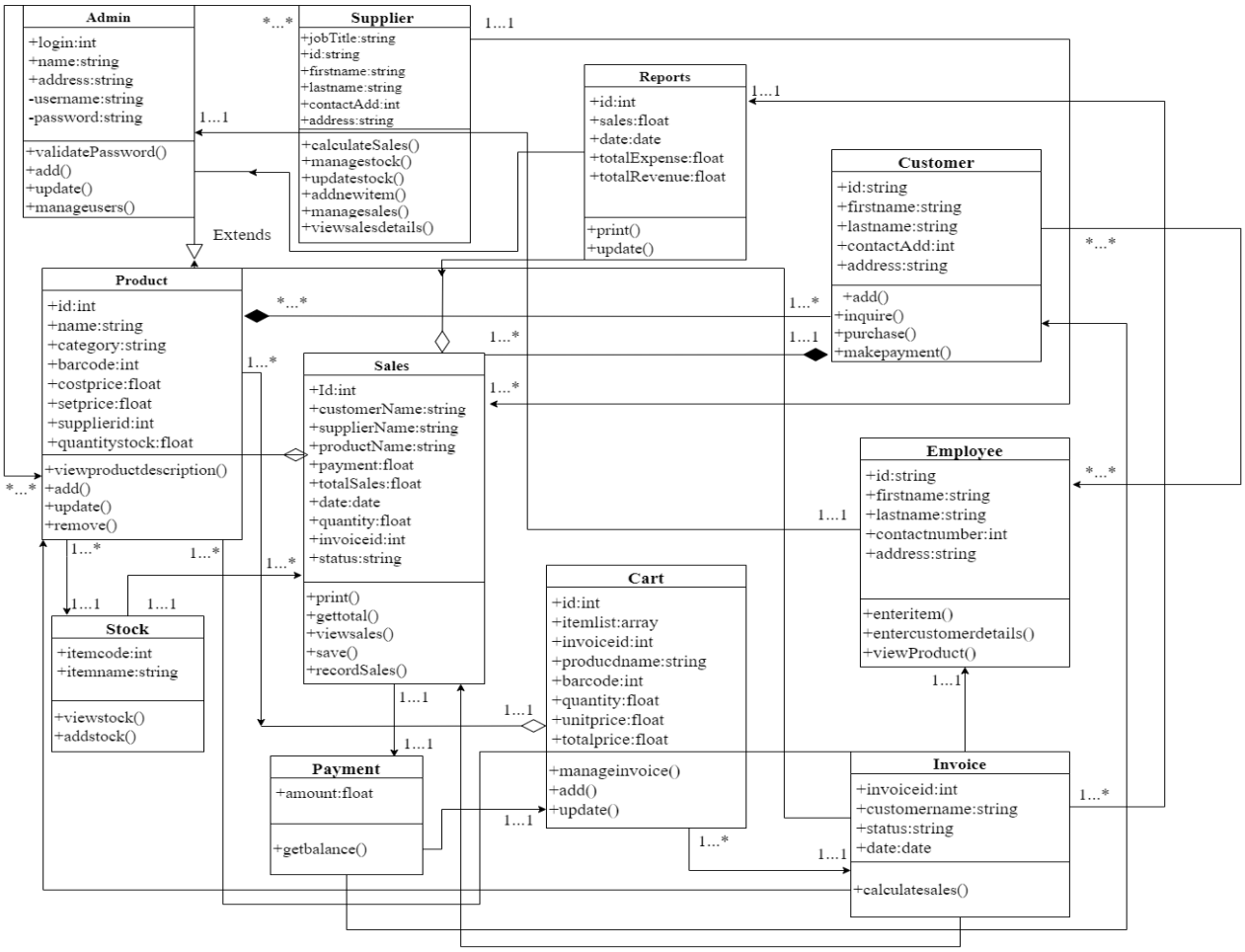

Fig 3: UML diagram

Use Case:

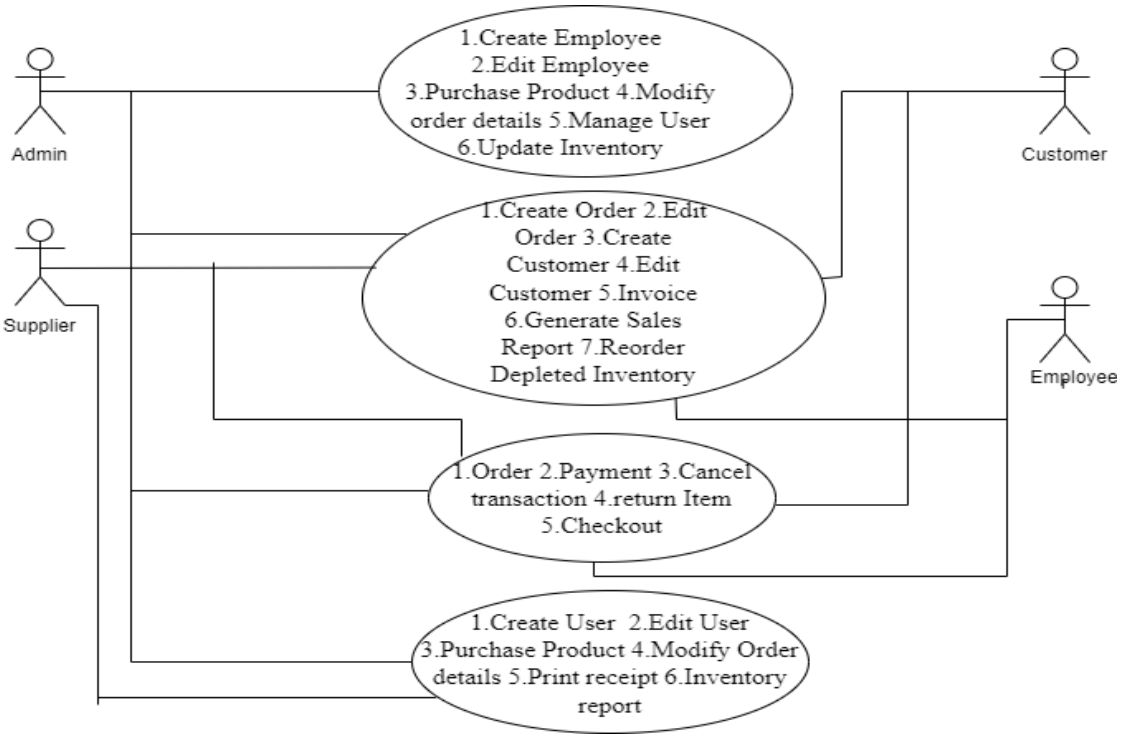

Fig 4: Use Case

Name: Use case 1

Actor: Admin

Description: 1. Described the process used to add a new product and modify

2. Add and edit details of an Employee

3. manage user and update inventory

Successful Completion: 1. Admin can add new product and modify

2. Admin can Add and edit details of an Employee

3. Admin can manage user and update inventory

4. Staffs can check updated stock report

Alternative: None

Precondition: Admins username and password need to be registered first.

Post Condition: 1. employee and product are added by Admin

2. inventory is updated.

Assumption: None

Name: Use case 2

Actor: Supplier

Description: 1. Describe the process of creating order and modify it through the system

2. Describe the process of creating customer and modify it through the system

3. generate sales report and invoice

4. reorder depleted inventory

Successful Completion:

1. employee can create order and modify it through the system

2. employee can create customer and modify it through the system

3. employee can generate sales report and invoice

4. employee can reorder depleted inventory

Alternative: None

Precondition: Supplier needs to login to the system

Post Condition: 1. The product has been placed to the right customer.

2. sales report and invoice has been generated.

Assumption: None

Name: Use case 3

Actor: employee

Description: 1. Describe the process of customer service (Order, payment, checkout, cancel transaction, return item)

Successful Completion: 1. employee can provide service to its customer 2. employee will receive service receipt

Alternative: None

Precondition: employee needs to be logged in first

Post Condition: service provided to customers

Assumption: None

Name: use case 4

Actor: Customer

Description: Describe the process of purchasing product

Successful Completion: Customer can purchase the product and complete payment.

Alternative: None

Precondition: Existing customers and products

Post Condition: Customers receive the after sales service

Assumption: None

Implementation

Design Specification

ERD:

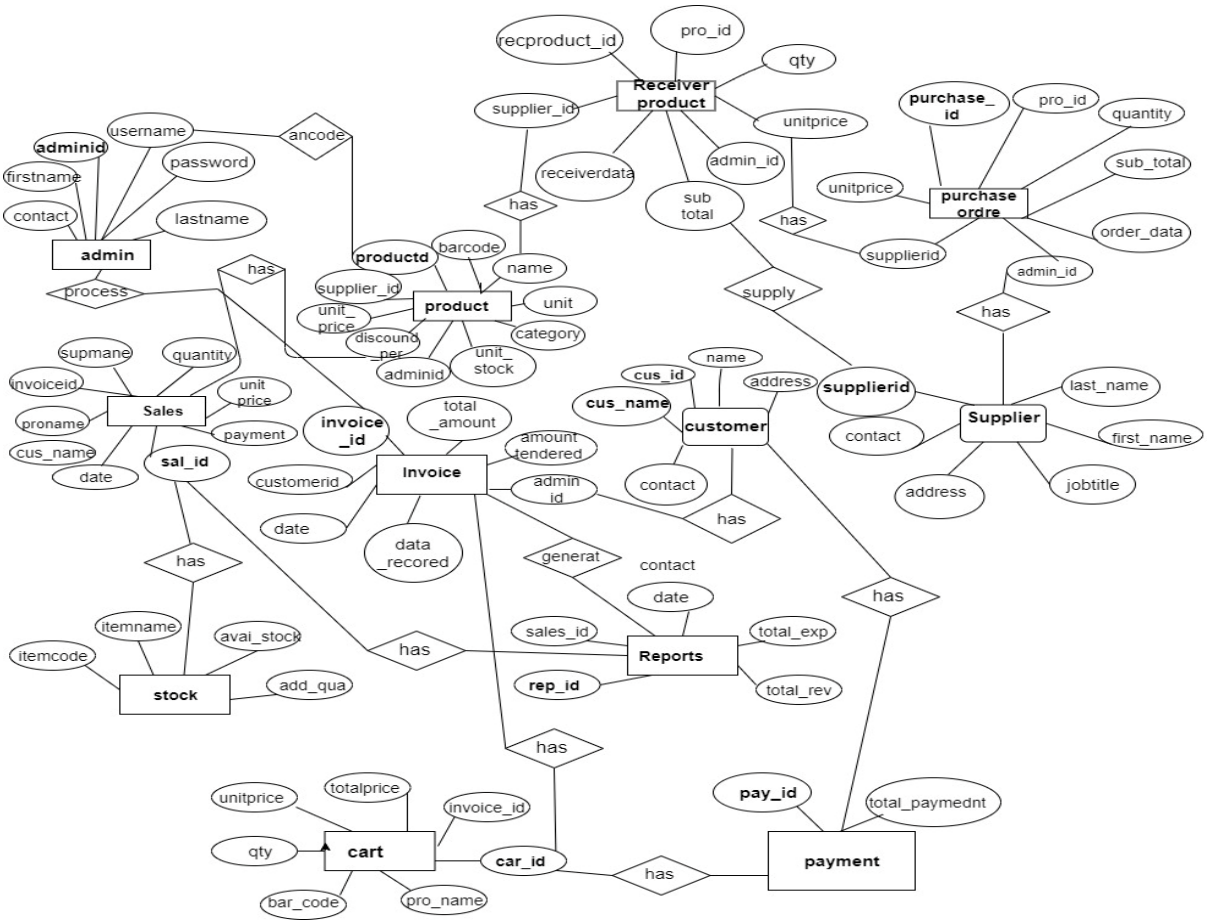

Fig 5: ERD

DFD:

Level 0:

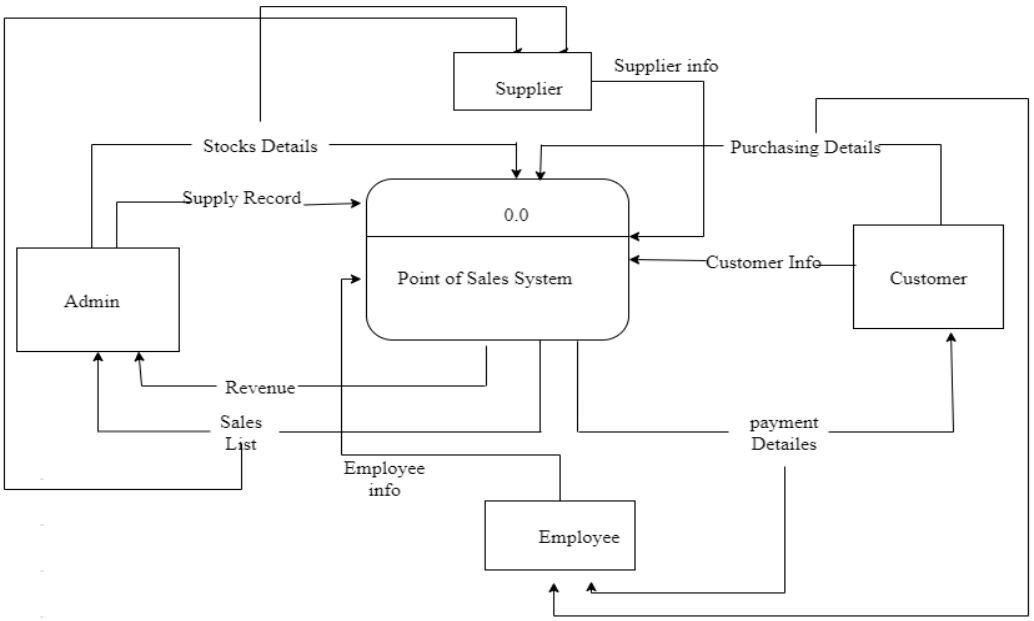

Fig: DFD Level 0

Level 1:

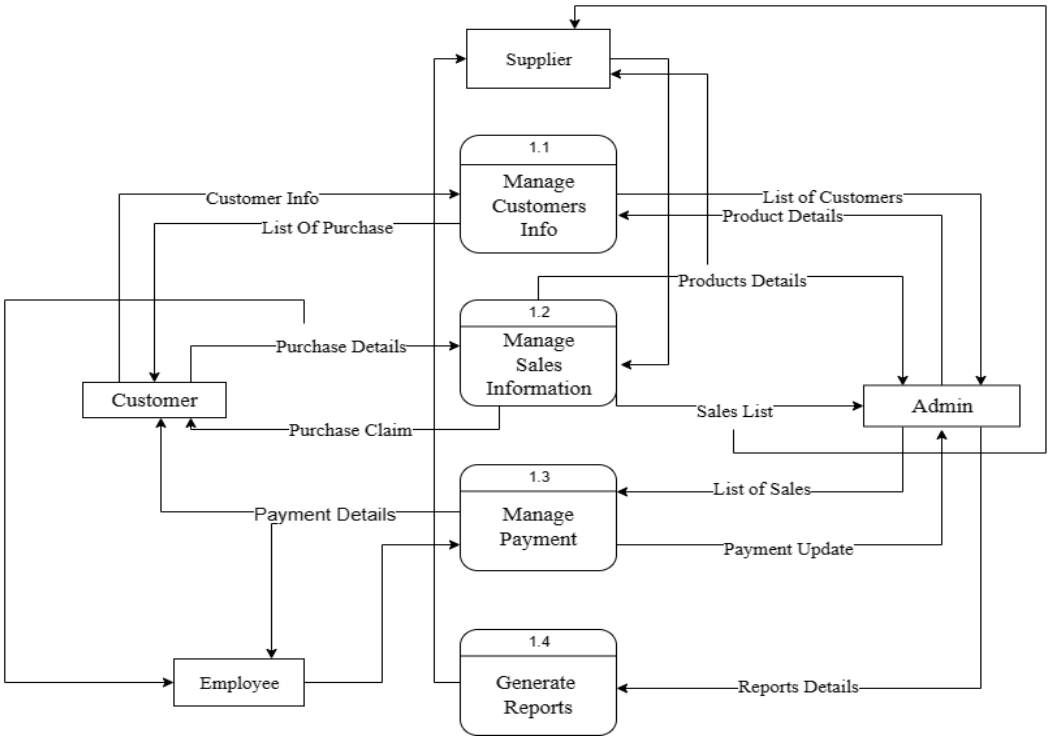

Fig: Level 1

Level 2:

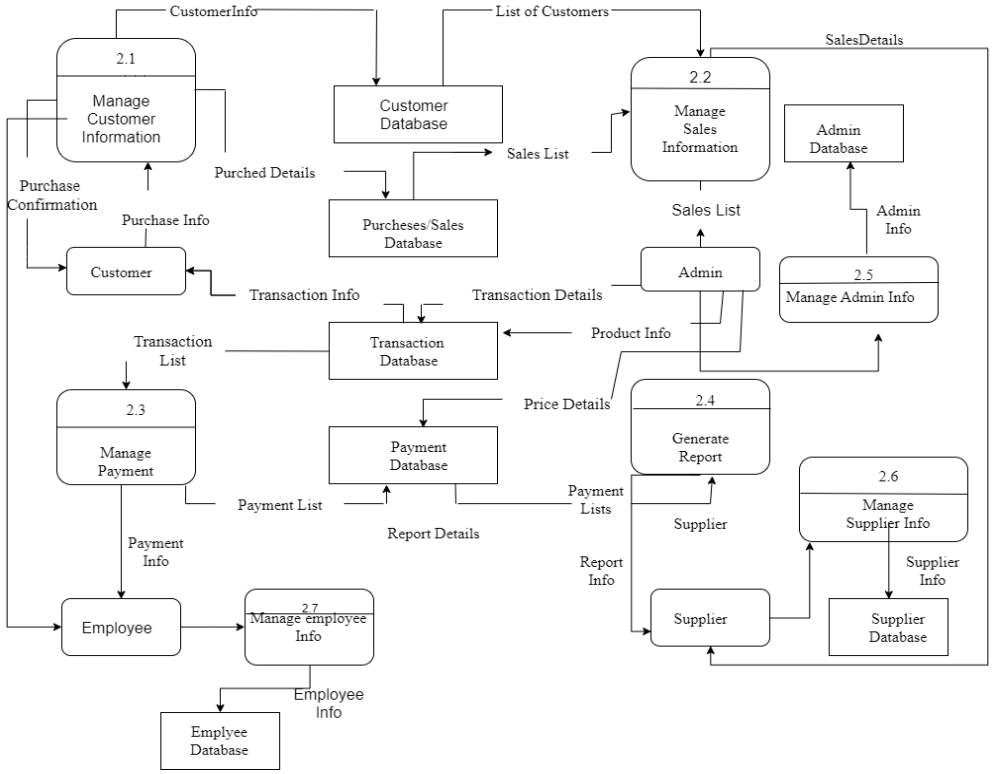

Fig: Level 2

Front-end and back end:

The Design & Development of Inventory Point of sale has two active actors. The Admin and Seller, Customer and employee describes the system environment. All actors can access the system through web links. Every branch Admin has one login id and password through which they can access the system.

1. Login/Register

After completing registration, the admin gets a user id. Each time the admin requests access, the system matches the user id in the login/registration database.

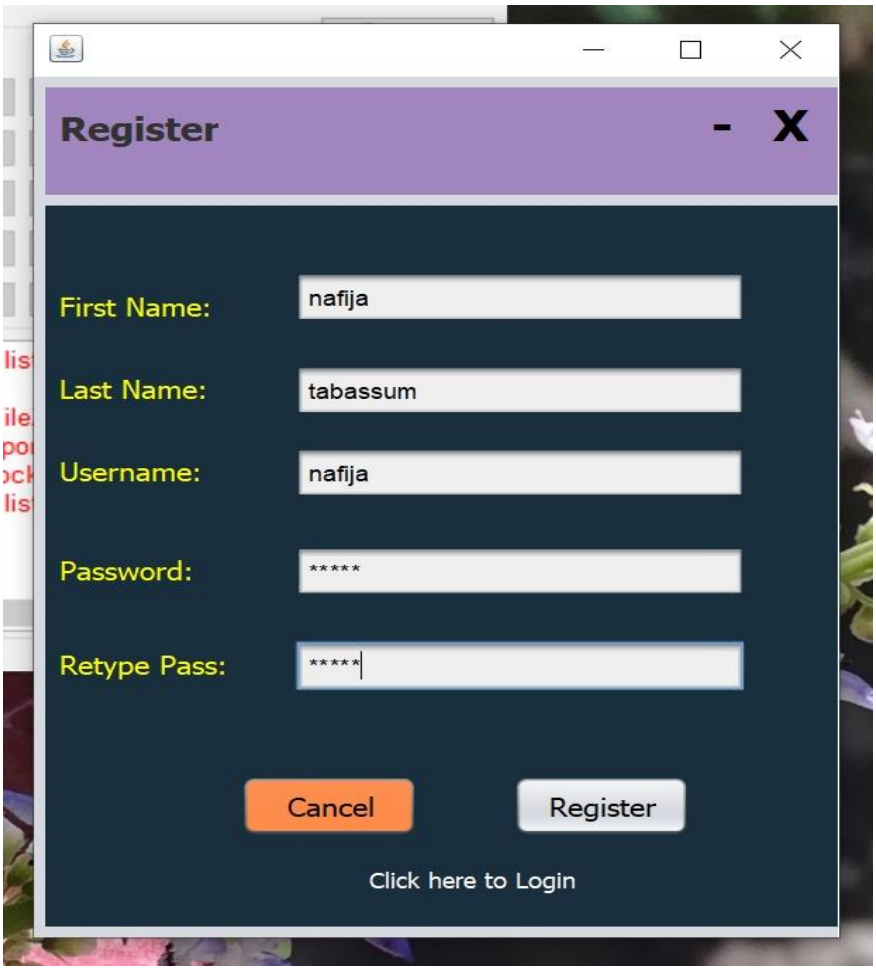

Fig 6: Registration

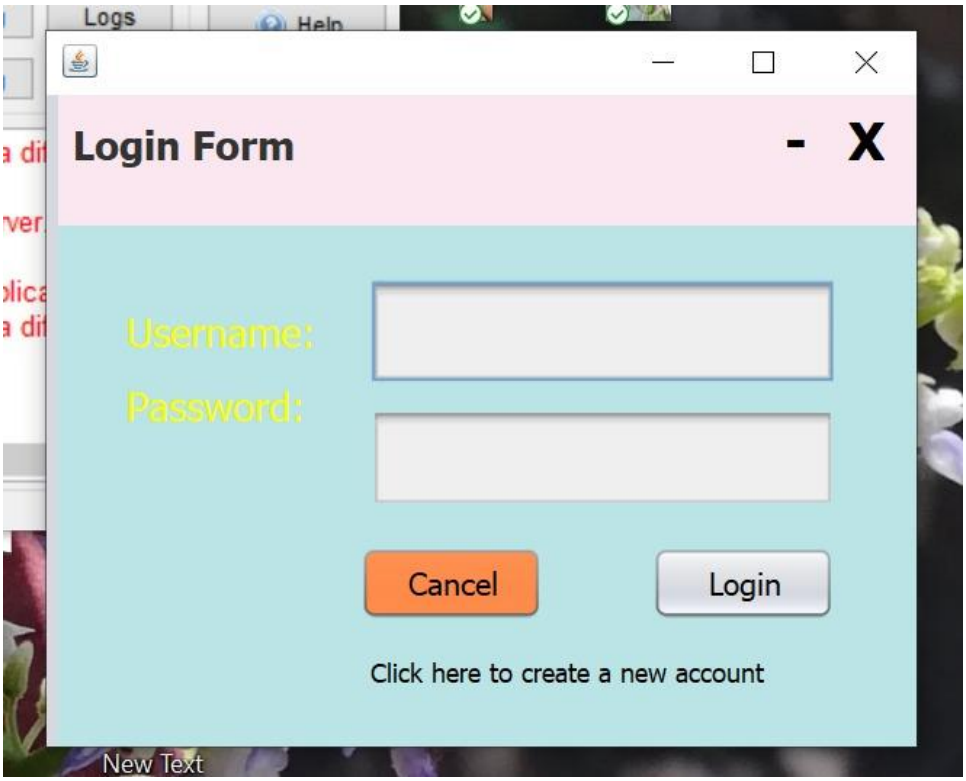

Fig 7: Login

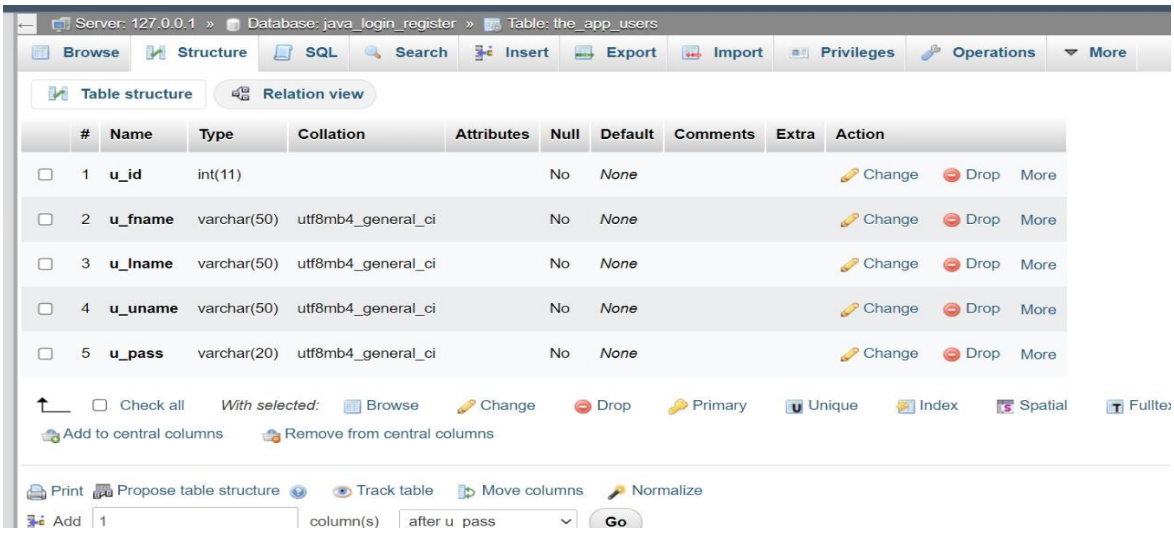

Fig 8: Admin DB

Above is the startup interface for POS System. Here user need to enter their credentials (username and password) to access as Admin. It will show the user panel (admin or staff) following their roles from the database.

2. Home Page: shows the Home Page of the system. After login, the user is redirected to this page.

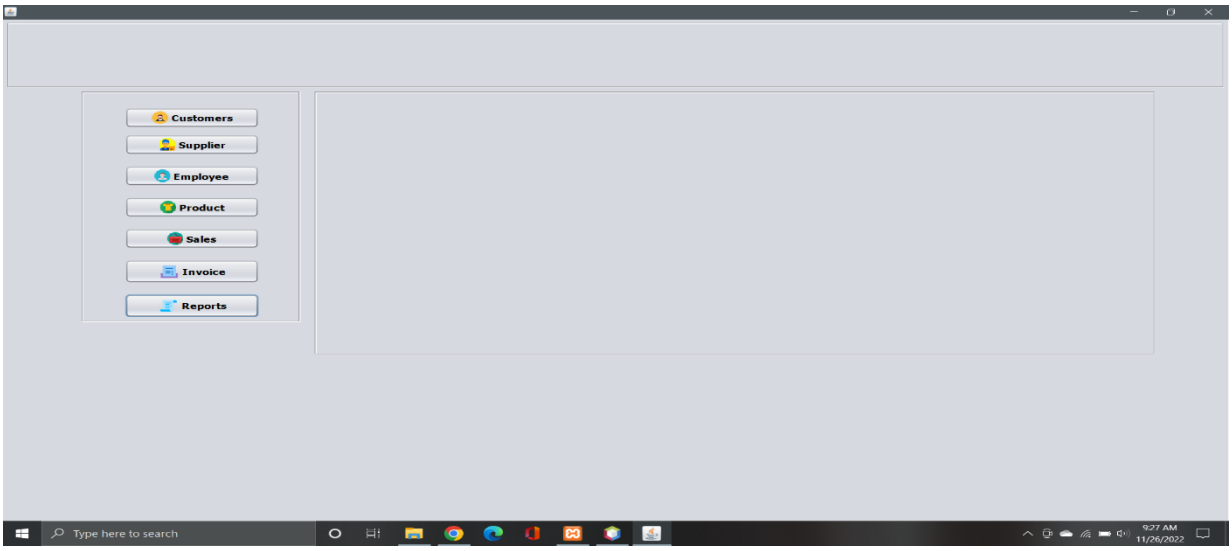

Fig 9: Home Page

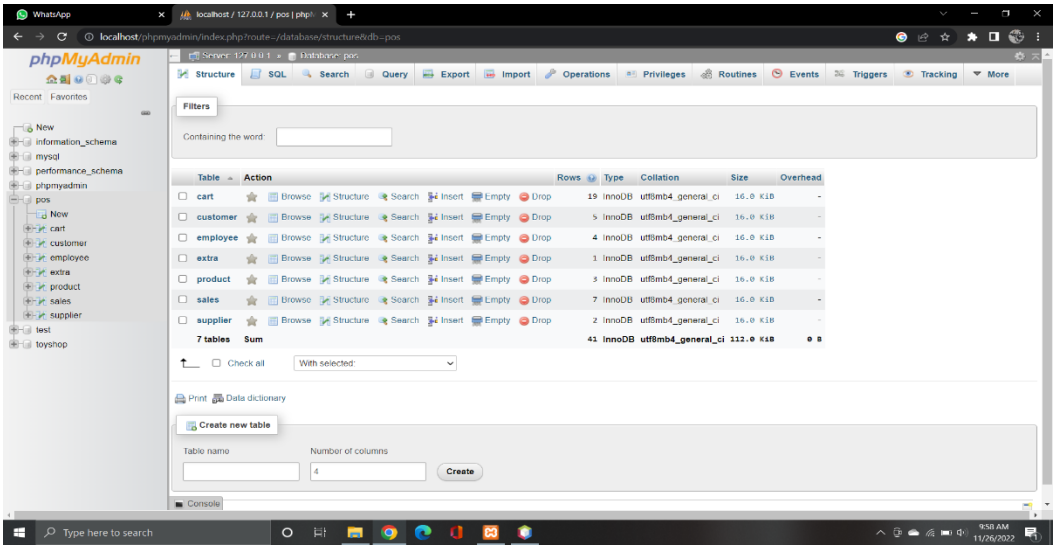

Fig 10: database tables

This is the Home Page where Admin can see all the operation buttons. From this panel admin can manage the stock, check the sales report, access the customer service,

update password as well as register a new staff. Below is the description of each operation.

3. Customer

keeps a record of existing customers. top customers, the frequency of visits per customer, purchase amounts per customer, and new customers added. useful when it comes to customer loyalty and maintaining a good relationship with customers.

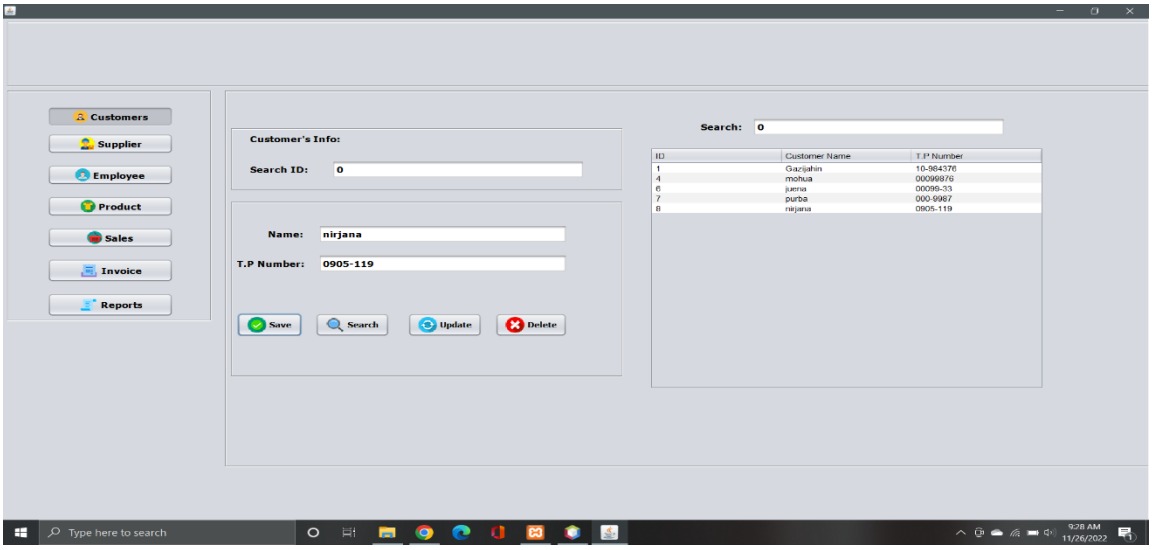

Fig 11: Customer Page

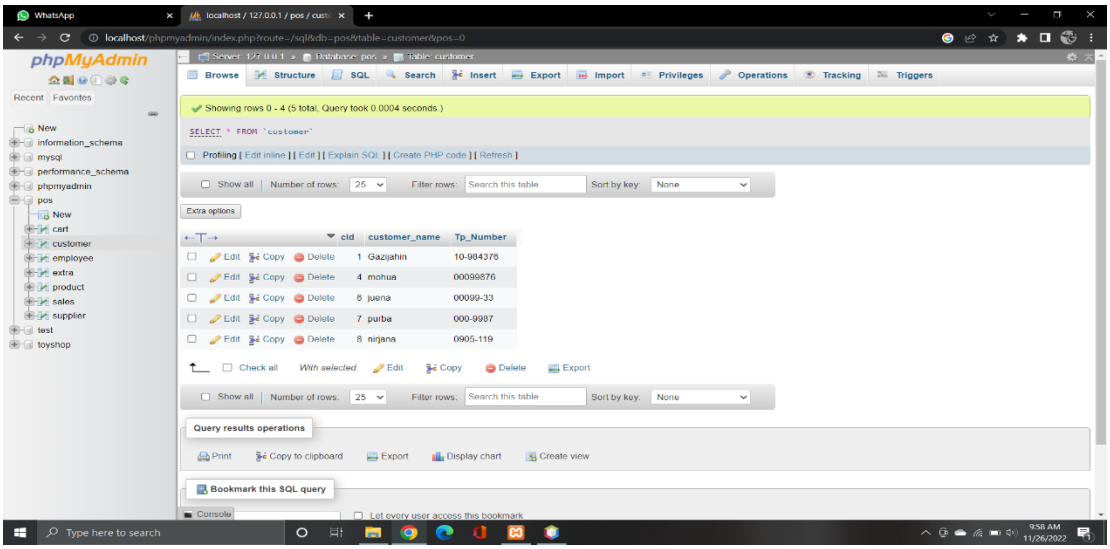

Fig 12: Customer DB

Above is the Customer panel where user can add customers according to their purchase. To add a new customer, it needs to enter the Name with details like contact number and address. The entry date of the product will show automatically based on system settings. For easy access we added some drop down box so that all information need not to enter by user. Delete, search (by name or CID) and update operations can be performed as well. A dashboard table will be available to show all the current data present in the database.

4. Supplier

provides a product or service to another entity

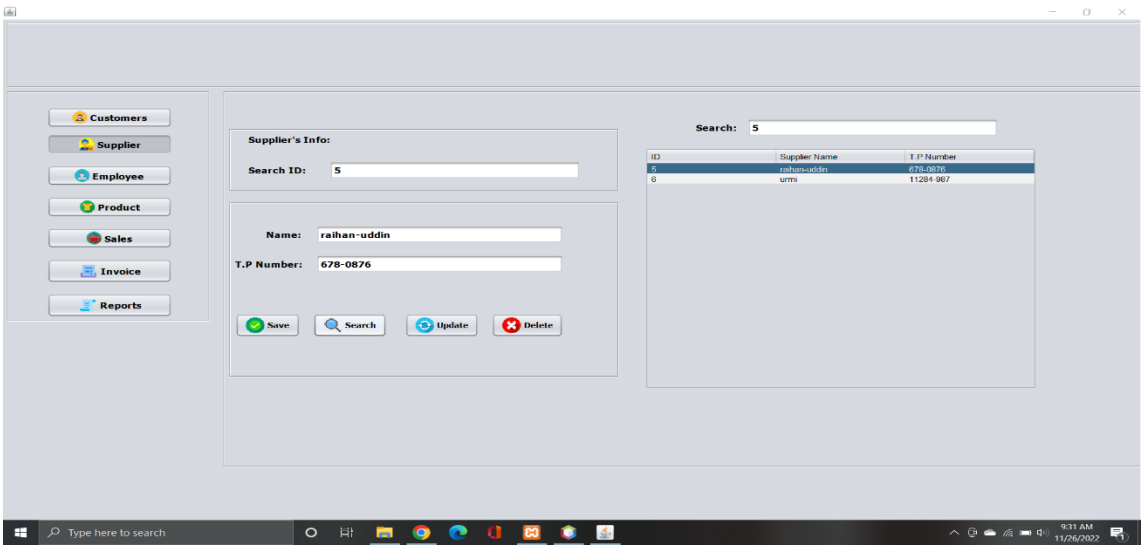

Fig 13: Supplier Page

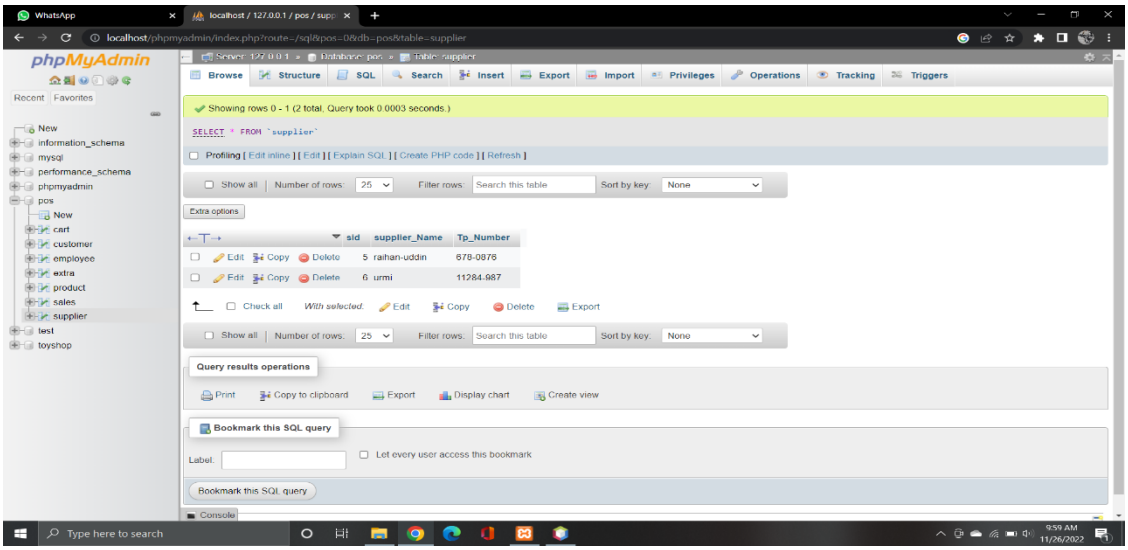

Fig 14: Supplier DB

Above is the Supplier panel where user can add suppliers according to their orders. To add a new supplier, it needs to enter the Name with details like contact number and address. The entry date of the product will show automatically based on system settings. For easy access we added a drop-down box so that every information need

not to enter by user. Delete, search (by name or SID) and update operations can be performed as well.

5. Employee

have their own identification number

any sales or transaction made during that time will be recorded under that employee's name

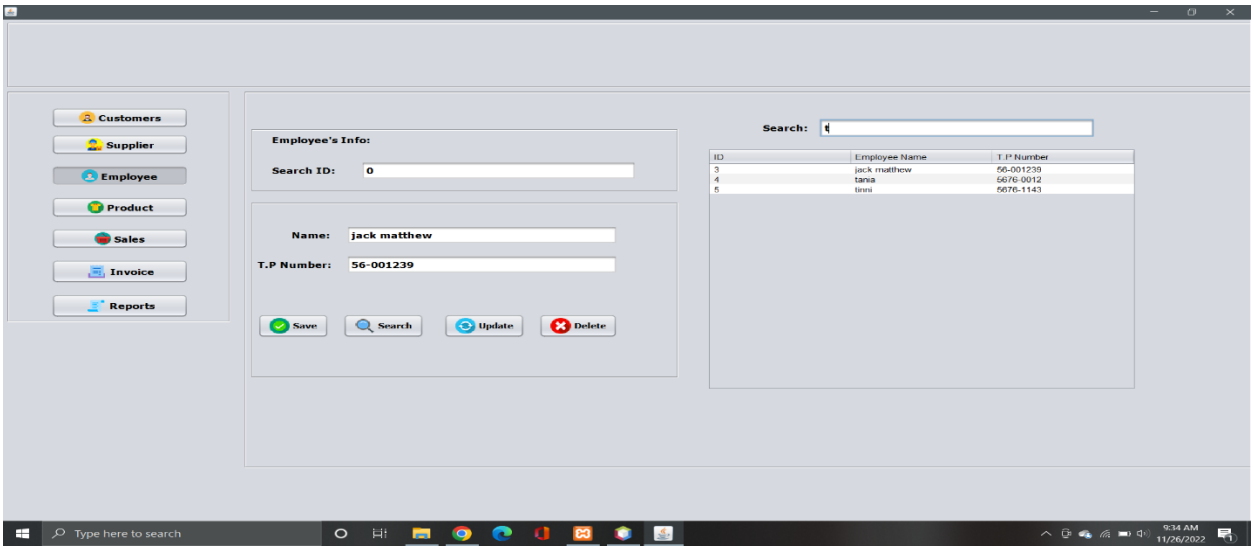

Fig 15: Employee Page

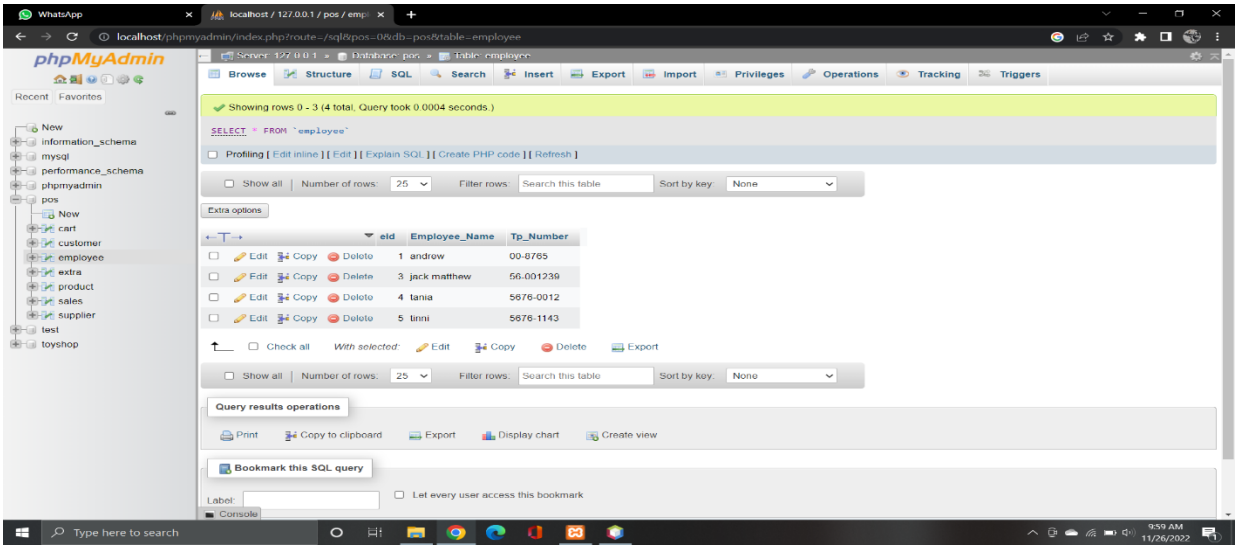

Fig 16: Employee DB

Above is the Employee panel where user can add suppliers according to their services. To add a new employee, it needs to enter the Name with details like contact number and address. The entry date of the product will show automatically based on system settings. For easy access we added a drop-down box so that every information need not to enter by user. Delete, search (by name or EID) and update operations can be performed as well.

6. product

For each of products, we can track the:

- SupplierID
- Barcode
- Name
- Price
- Quantity

easily find and identify individual products from their barcode. keeps track of the cost, price and margin of individual products so can easily recognize what actions need to be taken for products that aren’t producing good profit margins. The quantity feature allows to track how much of each product is left in stock and available for sale.

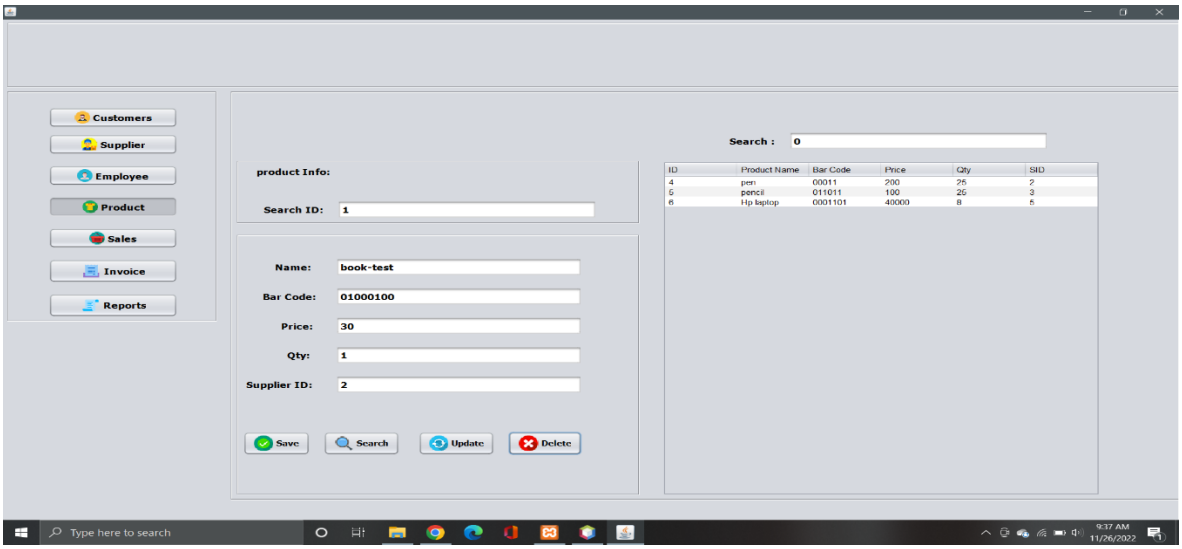

Fig 17: Product Page

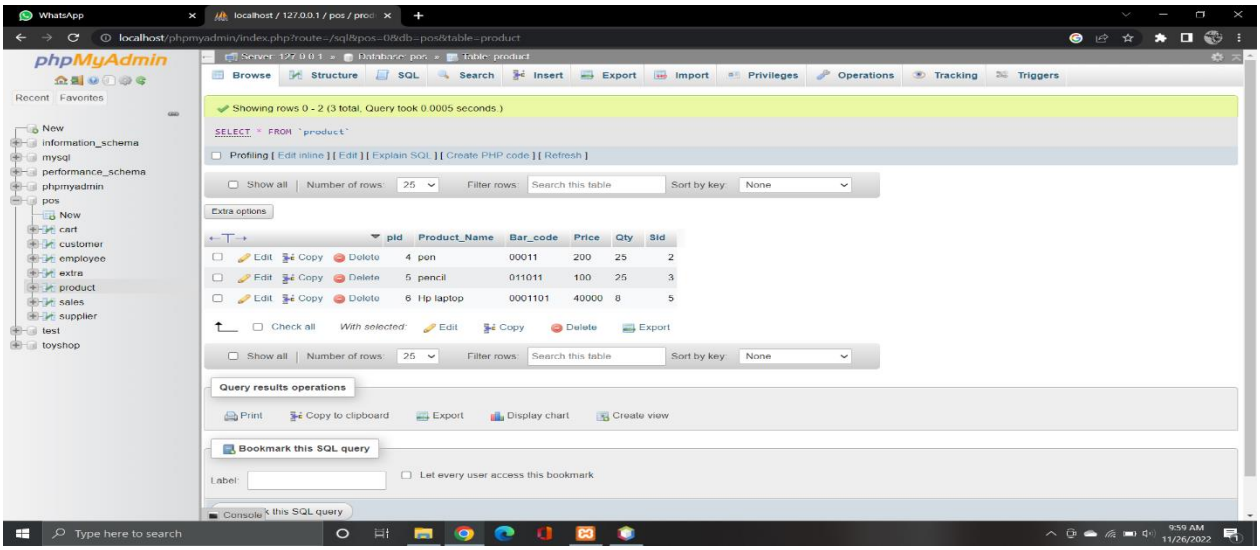

Fig 18: product DB

Above is the Product panel where user can add products according to their quantity. To add a new product, it needs to enter the Name with details like barcode, price, quantity & that product supplier ID. The entry date of the product will show automatically based on system settings. For easy access we added some drop-down box so that every

information need not to be entered by user. Delete, search (by name or PID) and update operations can be performed as well.

7. Sales

sales volume throughout the day.

have the ability to generate detailed sales reports.

highlight which items are being sold the most.

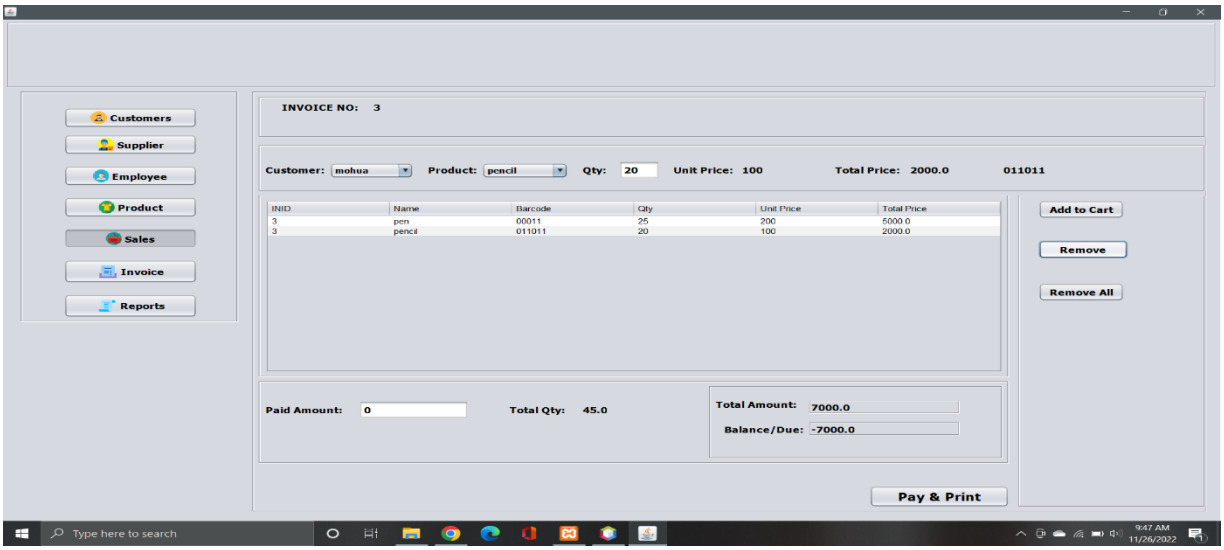

Fig 19: Sales Page

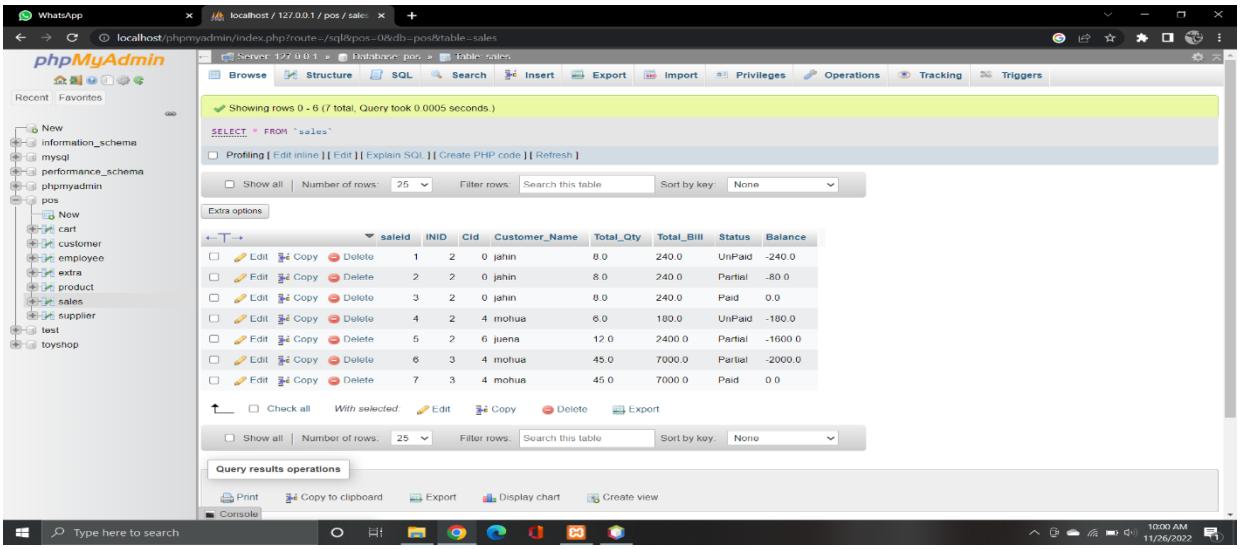

Fig 20: Sales DB

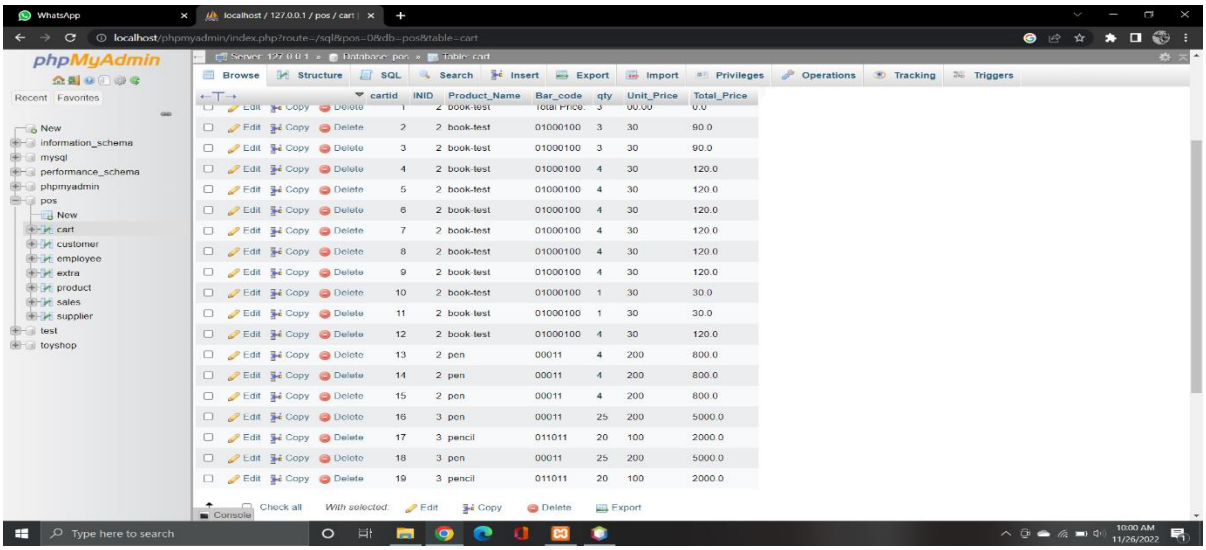

Fig 21: ADD to Cart DB

Above is the sales panel where employee can proceed for new product sales. First, they need to enter the Product and/or customer name, quantity. After they click SEARCH button the system will show all the information based on that PRODUCT. Before they proceed to purchase the product, they need to click SHOW SALES button where a sales receipt will be generated based on product

information. Staff can also clear the sales receipt by clicking the button Refresh. For purchasing they need to click Add to cart. We also added a button name pay and print which will save the receipt on the system for future reference and also can print for customer. It has remove function to remove a particular row and remove all to clear all rows. The panel shows the total amount to be paid and the actual amount paid by the customer and calculates due accordingly. The total price corresponds with the quantity of products.

8. Invoice

Invoice is the ability to keep a legal record of the sale.

This makes it possible to find out when a good was sold, who bought it, and who sold it.

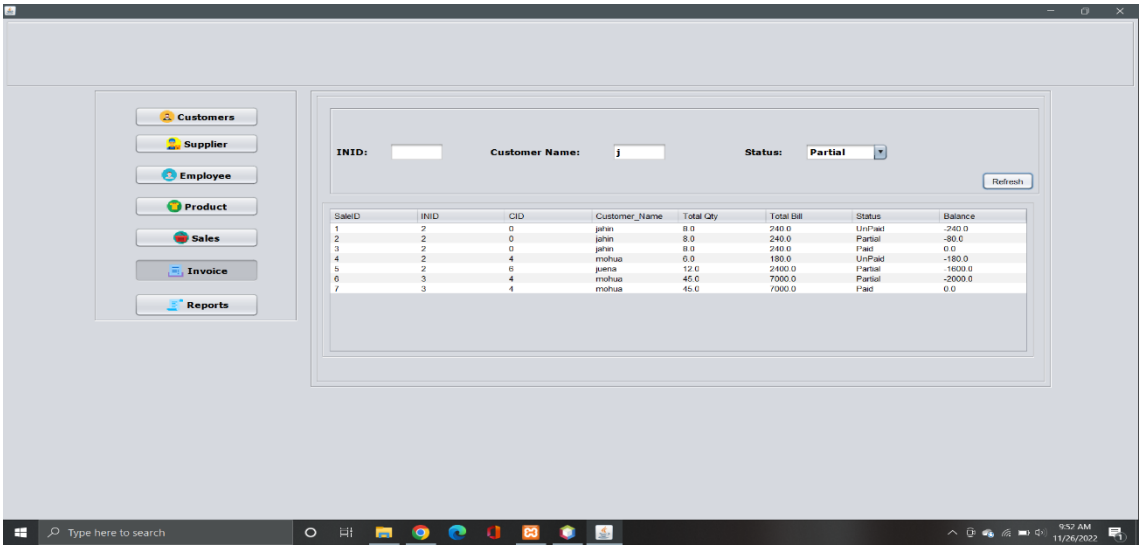

Fig 22: Invoice Page

Above is the Invoice panel. The search could be performed using INID, Customer name or status. The refresh button is present here as well.

9. report:

Weekly/monthly sales will give a clear understanding of the overall performance and profitability of the business throughout the year. It allows to compare current business performance to past years/months.

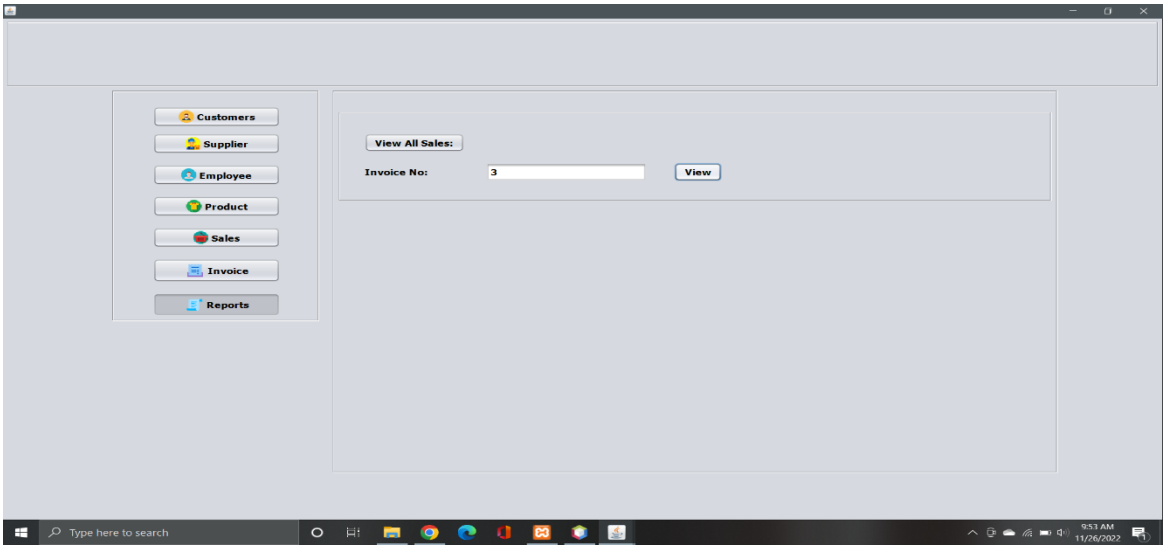

Fig 23: Reports Page

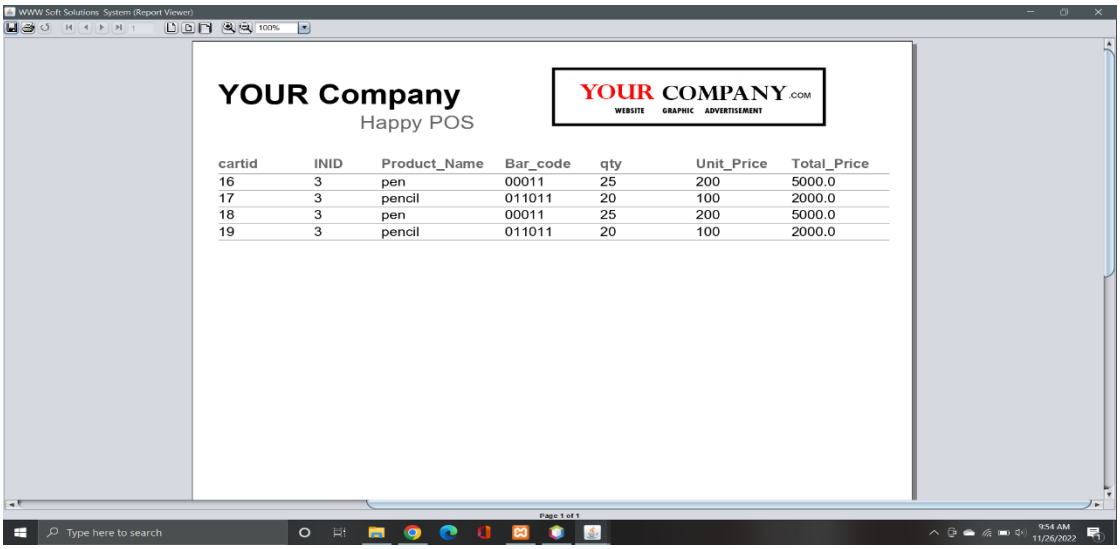

Fig 24: Report

This is the REPORTS panel. From here staff can check the SALES REPORT, SERVICE REPORT as well as STOCK REPORT. They can also check records according to dates. From this report user can check all the completed and pending customer services. check the full stock records. Operations that can be performed are:

- View: Particular Invoice no
- View all sales: All invoices for the particular week/month/year
- User must input INID in order to view the report.

Test Plan

Test Case 001

Test Title: Registration Button

Test Procedure: Click on the button “Register”

Test Data: Users need to click on the button

Expected Result: System will register new user

Test Case 002

Test Title: Login Button

Test Procedure: Click on the button “Login”

Test Data: Users need to click on the button

Expected Result: It will redirect to Home panel

Test Case 003

Test Title: Customer Button

Test Procedure: Click on the button “Customer”

Test Data: Users need to click on the button

Expected Result: It will redirect to Customer panel

Test Case 004

Test Title: Save Button

Test Procedure: Click on the button “Save”

Test Data: Users need to click on the button

Expected Result: It will save the new customer details into the database

Test Case 005

Test Title: Search Button

Test Procedure: Click on the button “Search”

Test Data: Users need to click on the button

Expected Result: It will search the customer details in the database

Test Case 006

Test Title: Update Button

Test Procedure: Click on the button “Update”

Test Data: Users need to click on the button

Expected Result: It will update the customer details in the database

Test Case 007

Test Title: Delete Button

Test Procedure: Click on the button “Delete”

Test Data: Users need to click on the button

Expected Result: It will delete the customer details from the database

Test Case 008

Test Title: Supplier Button

Test Procedure: Click on the button “Supplier”

Test Data: Users need to click on the button

Expected Result: It will redirect to Supplier panel

Test Case 009

Test Title: Save Button

Test Procedure: Click on the button “Save”

Test Data: Users need to click on the button

Expected Result: It will save the new Supplier details into the database

Test Case 010

Test Title: Search Button

Test Procedure: Click on the button “Search”

Test Data: Users need to click on the button

Expected Result: It will search the Supplier details in the database

Test Case 011

Test Title: Update Button

Test Procedure: Click on the button “Update”

Test Data: Users need to click on the button

Expected Result: It will update the Supplier details in the database

Test Case 012

Test Title: Delete Button

Test Procedure: Click on the button “Delete”

Test Data: Users need to click on the button

Expected Result: It will delete the Supplier details from the database

Test Case 013

Test Title: Employee Button

Test Procedure: Click on the button “Employee”

Test Data: Users need to click on the button

Expected Result: It will redirect to Employee panel

Test Case 014

Test Title: Save Button

Test Procedure: Click on the button “Save”

Test Data: Users need to click on the button

Expected Result: It will save the new Employee details into the database

Test Case 015

Test Title: Search Button

Test Procedure: Click on the button “Search”

Test Data: Users need to click on the button

Expected Result: It will search the Employee details in the database

Test Case 016

Test Title: Update Button

Test Procedure: Click on the button “Update”

Test Data: Users need to click on the button

Expected Result: It will update the Employee details in the database

Test Case 017

Test Title: Delete Button

Test Procedure: Click on the button “Delete”

Test Data: Users need to click on the button

Expected Result: It will delete the Employee details from the database

Test Case 018

Test Title: Product Button

Test Procedure: Click on the button “Product”

Test Data: Users need to click on the button

Expected Result: It will redirect to Product panel

Test Case 019

Test Title: Save Button

Test Procedure: Click on the button “Save”

Test Data: Users need to click on the button

Expected Result: It will save the new Product details into the database

Test Case 020

Test Title: Search Button

Test Procedure: Click on the button “Search”

Test Data: Users need to click on the button

Expected Result: It will search the Product details in the database

Test Case 021

Test Title: Update Button

Test Procedure: Click on the button “Update”

Test Data: Users need to click on the button

Expected Result: It will update the Product details in the database

Test Case 022

Test Title: Delete Button

Test Procedure: Click on the button “Delete”

Test Data: Users need to click on the button

Expected Result: It will delete the Product details from the database

Test Case 023

Test Title: Sales Button

Test Procedure: Click on the button “Sales”

Test Data: Users need to click on the button

Expected Result: It will redirect to Sales panel

Test Case 024

Test Title: add to cart Button

Test Procedure: Click on the button “ADD to Cart”

Test Data: Users need to click on the button

Expected Result: It will add new sales information into the database

Test Case 025

Test Title: Remove Button

Test Procedure: Click on the button “Remove”

Test Data: Users need to click on the button

Expected Result: It will remove a particular sales row from the database

Test Case 026

Test Title: Remove all Button

Test Procedure: Click on the button “Remove All”

Test Data: Users need to click on the button

Expected Result: It will remove all sales row from the database

Test Case 027

Test Title: Pay & Print Button

Test Procedure: Click on the button “Pay & Print”

Test Data: Users need to click on the button

Expected Result: It will print from the database & store payment details in database

Test Case 028

Test Title: Invoice Button

Test Procedure: Click on the button “Invoice”

Test Data: Users need to click on the button

Expected Result: It will redirect to invoice panel

Test Case 029

Test Title: Report Button

Test Procedure: Click on the button “Reports”

Test Data: Users need to click on the button

Expected Result: It will redirect to Reports panel

Test Case 030

Test Title: View Button

Test Procedure: Click on the button “View”

Test Data: Users need to click on the button

Expected Result: System will view all the records of the stock

Test Case 031

Test Title: View all sales Button

Test Procedure: Click on the button “View All Sales”

Test Data: Users need to click on the button

Expected Result: System will show all the records of customer service

Result And Discussion

- Outstanding performance for business calculates and logic
- Robust, secure and portable
- Easy to use and user friendly
- Customizable
- Integrity features
- Smart reporting system of invoice
- Dynamic look of UI
- Fast performance
- Data backup and restore system

Software Documentation

This Point-of-Sale System is aimed for small business companies which are still unfamiliar with computerized systems of running the business. This system is simple yet effective as the functions are easy to use for the users, that is, for the business owner or manager and employee. This project is implemented with Model–view–controller (MVC) software design pattern.

For end-user use, check out the enduserguide.pdf file. Database.sql file is also included in the directory. In the admin panel-The admin can manage list of product items, product categories and Employee information, customer

information, supplier information. In the employee panel- the user will be provided with interfaces to sell items to customers. He/she can search the selling items by barcode or item-name. It is capable of managing product items, product categories, employee information, customer information, sales information and supplier information. It is also available for calculating promotions, viewing popular items and sale reports. The software offers stability, cost-effectiveness and usability.

Limitations

1. When the admin registers a new user, he or she should restart the system so that the new user can access the system with his new username and password.
2. Users need to enter every detail manually.

Future Work

- Resolve inventory issues
- Real-time inventory tracking, reconciliation, and inventory levels to make sure stores are always stocked
- Ensure item availability with a low stock alert, auto-replenishment, and restocking system
- Accommodate various payment methods

- Credit and debit cards
- Mobile wallet and e-wallets payments
- Gift card
- Buy Now, Pay Later
- Provide multiple options for receipts
- Build customer profiles
- Try chatbot features on POS
- Design product displays based on data-driven insights
- Send personalized emails at the right time and taste based on customer POS data to increase open rates and revenue per email.

Conclusion

This system has some immense benefits. Because it's lightweight, fast and secure. Users will be able to manage orders and invoice quickly with safety. It’s keeping every record of employee, customer and product. Thus makes the system more reliable. Moreover, they can manage their stock more handily.

References

http://www.smartdraw.com/data-flow-diagram/

https://www.techopedia.com/definition/3243/unified-modeling-language-uml

http://www.uml-diagrams.org/examples/point-of-sales-uml-use-case-diagram-example.html

https://stackoverflow.com/

https://www.investopedia.com/terms/p/point-of-sale.asp

GitHub link

https://github.com/Gazi3Jahin/POS-SE/tree/main
https://github.com/RKPurba/POS-Management-project-system

https://github.com/NTNirjana/POS-Management-System-JAVA

https://github.com/TTMohua/pos-Management-system