Database for Supermarket

Database class project 2020/2021

Student Name in English	Student Name in Arabic	Student ID	Section	Work percentage
Masa Masri	ماسه المصري		2 9:30-11	50%
Masa Sayegh	ماسه صايغ	11924354	2 9:30-11	50%
				100%

Date/time

----------This section is intended for the Instructor----------

Topic	**Mark**
Project Requirements and Modeling	
Correctness of Database mapping	
Functional Dependency and Normalization	
Project Tools	
Project Discussion	
Project Completeness	
Project Output Results or reporting (JasperReport, charts, graphs, etc.)	
Project Administration and Management	
Project Report	
Project Idea	
Project Complexity	
Team work	

Abstract

Database supermarket project is related to the internal matters of the supermarket. This project was developed in order to obtain a safe, reliable, easy-to-use and faster system to obtain benefits.

There are many reasons for doing such a project. Which initially helps the employees inside the supermarket, where each employee has his own number and password that he can enter through them. The manager can view all the employees and know their information as well as know all the existing products and buy them from suppliers, and thus he has the ability to know all details about the products. It is also possible to make an order that contains all the information and details needed about the products, the date and time of the order.

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Introduction

Technology today has become very important due to the rapid development that is taking place and also with the increase in the spread of supermarkets here, the importance of having a database that works to store different data and access it in an easy and simple way, and this project will help a lot of medium and small supermarkets scattered everywhere. It is possible that a lot of errors occur during the buying or selling process and thus getting problems. To avoid this the supermarket database project can be used, through which all products and their information are displayed, from price to available quantity, production and expiry dates, and through it also an order can be made containing the products, created by the cashier employee.

To know the information related to the employees, only the manager can access it, where he can view all the employees with their working hours and also update their data or remove them.

Through this project, we can obtain easy-to-use, structured data that saves time and effort, as well as safe.

Super market requirements

In this project we have 4 entities, the first entity is the person then the market , the order and the product.

Database supermarket relates to, employees their working days, the orders they prepare. The customers and the products they choose to be placed in the list of orders. And the market responsible for purchasing products from the dealer

Each person in the Database has his own information, which is the name, address, ID, date of birth and phone number. There are two subclasses for the person, which are customers and employees, and the information of employees in particular are their number, salary, university degree and professional competence. The employees also have subclasses, and they are the cashier, deliveryman and manager.

The manager can deliver all orders and the cashier is the one who records the orders and the delivery service delivers them.

Each customer has his own points when purchasing. The points are increased to an extent that allows them to obtain a discount. The customer can have more than one order.

Products whose information is the name, product number, type of product, quantity and price. The merchant sells different products and also the products have more than one source

Finally, the order contains information for the order number, the order date, and the total price of the order.

All the Functional Dependency of project

- Supermarket table(Name ,Address)

  Name primary key Name➔Address

- Person table (ID ,FirstName ,Middle Name ,Last Name ,Address ,B Date ,Gender) ID primary Key

  ID➔FirstName ID➔Middle Name ID➔Last Name
  ID➔Address ID➔B Date ID➔Gender

- Phone table(ID ,Phone No)
  ID primary Key ID➔Phone No

- Gender_Domain table (Gender)

- Employee table (Employee_ID ,Salary, If Available , Date Of Employment, Shift Type)

  (Employee_iD , Salary) primary key

  Employee_iD, Salary➔Shift Type

  Employee_iD, Salary➔Date Of Employment

  Employee_iD, Salary➔If Available

- Customer table(Customer ID , No of Visits)

  Customer ID primary key

  Customer ID➔No of Visits

- Shift_Type table(ST) ST primary key

- WokDay table(ID ,RC , Day) RC primary key
  RC➔ID RC➔Day

- Cashier table (ID,RC) RC➔ID

- Manager table (ID,RC) RC➔ID

- Supplier table (Supplier ID,Comodity_Type, Store Manger ID)
  Supplier ID primary key
  Supplier ID➔ Comodity _Type Supplier ID➔ Store Manger ID

- Payment Info (Order_ID , Cashier ID , Customer ID ,Total Price,Order Date , Payment Method)

  Order_ID primary key

  Order_ID➔Cashier ID Order_ID➔Customer ID
  Order_ID➔Total Price Order_ID➔Order Date
  Order_ID➔Payment Method

- Payment Method table Method primary key

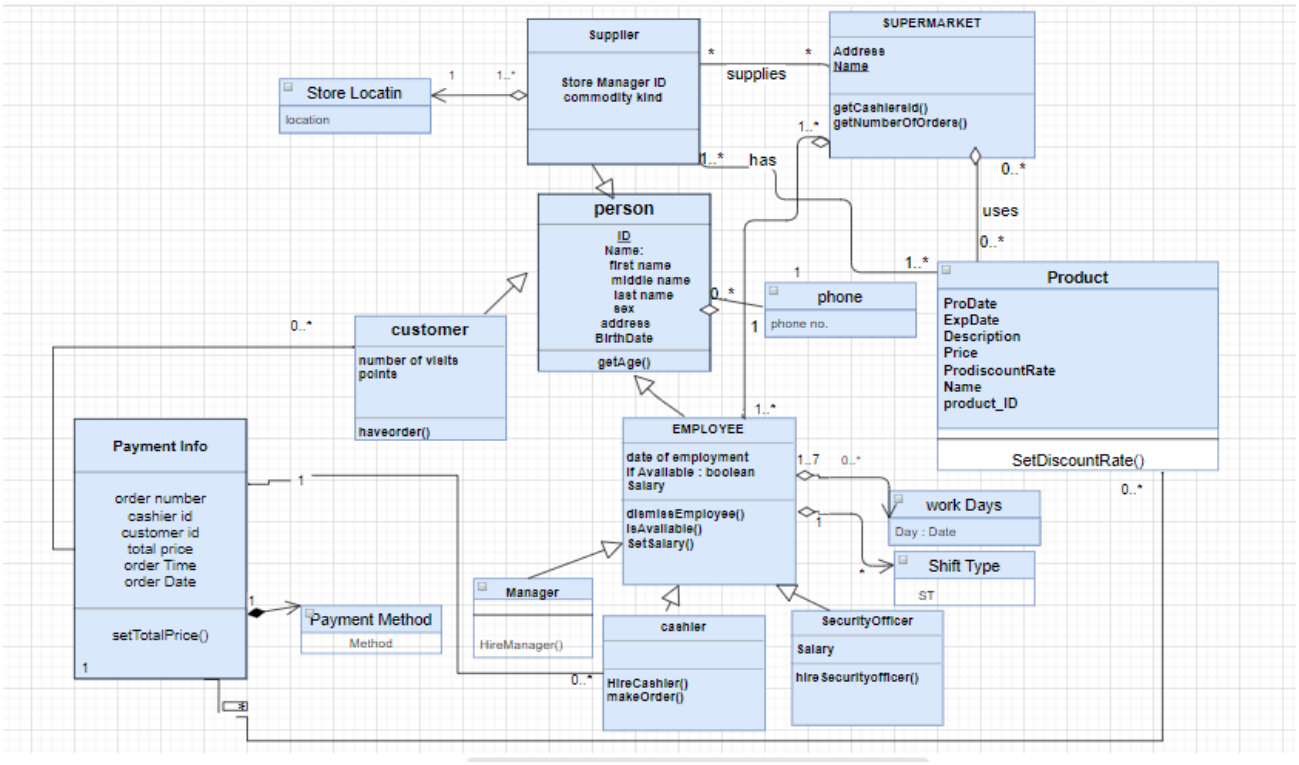
- Products table (Products ID , Pro Name , Pro Date ,Exp Date ,ProDescription ,Price ,Pro DiscountRate ,Supplier ID)
  Products ID primary key
  Products ID➔ Pro Name Products ID➔ Pro Date
  Products ID➔ Exp Date Products ID➔ ProDescription
  Products ID➔Price Products ID➔Pro DiscountRate
  Products ID➔Supplier ID

- Supermarket Uses product table (Product ID , Price ,Quantity)
  Products ID primary key
  Products ID➔Price Products ID➔Quantity

- Supplies table (Supplier ID ,ProductName ,Supermarket Name)
  (Supplier ID , Supermarket Name)primary key
  (Supplier ID , Supermarket Name)➔ ProductName

- Product Order table (Product ID ,Order ID ,Quantity)
  (Product ID ,Order ID) primary key
  (Product ID ,Order ID)➔Quantity

UML


Supplier
Store Manager ID
commodity kind
Store Locatin
location
supplies
SUPERMARKET
Address
Name
getCashierId()
getNumberOfOrders()
has
person
ID
Name:
first name
middle name
last name
sex
address
BirthDate
getAge()
uses
Product
ProDate
ExpDate
Description
Price
ProdiscountRate
Name
product_ID
SetDiscountRate()
phone
phone no.
customer
number of visits
points
haveorder()
EMPLOYEE
date of employment
if Available : boolean
Salary
dismissEmployee()
isAvailable()
setSalary()
work Days
Day : Date
Shift Type
ST
Payment Info
order number
cashier id
customer id
total price
order Time
order Date
setTotalPrice()
Payment Method
Method
Manager
HireManager()
cashier
HireCashier()
makeOrder()
SecurityOfficer
Salary
hireSecurityofficer()

BNCF and Normalization

- Person table

ID	F Name	M Name	L name	B Date	Address	Gender

1NF: in this table every column and record contains only one value

2NF :No composite primary key

3NF:transitive dependencies

BNCF: All attribute depended to primary key

ID→ F Name ID→ M Name ID→ L Name ID→ B date ID→ Address

ID→ Gender

- Employee table

ID	Salary	Date of Employment	Shift type	If available

1NF: in this table every column and record contains only one value

2NF: composite primary key

ID→Sift Type ID ,Salary→Date of Employment ID ,Salary→if available

Employee(2NF)

ID	Salary	Date of Employment	If Availble

Employee shift(2NF)

ID	Shift Type

3NF: transitive dependencies

BNCF: All attribute depended to primary key

- Payment Info table

OrderID	Cashier ID	CustomerID	Total Price	Order Date	Payment Method

1NF: in this table every column and record contains only one value

2NF: No composite primary key

3NF: transitive dependencies

BNCF: All attribute depended to primary key

Order_ID→Cashier ID Order_ID→Customer ID Order_ID→Total Price Order_ID→Order Date Order_ID→Payment Method

- Product table

Products ID	Pro Name	Pro Date	Exp Date	ProDescription	Price	ProDiscount Rate	Supplier ID

1NF: in this table every column and record contains only one value

2NF: No composite primary key

3NF: transitive dependencies

BNCF: All attribute depended to primary key

Products ID→ Pro Name Products ID→ Pro Date

Products ID→ Exp Date Products ID→ ProDescription Products ID→Price

Products ID→Pro DiscountRate Products ID→Supplier ID

- Supermarket Uses product table

Product ID	Price	Quantity

1NF: in this table every column and record contains only one value

2NF: No composite primary key

3NF: transitive dependencies

BNCF: All attribute depended to primary key

Products ID➔Price Products ID➔Quantity

Project Tools

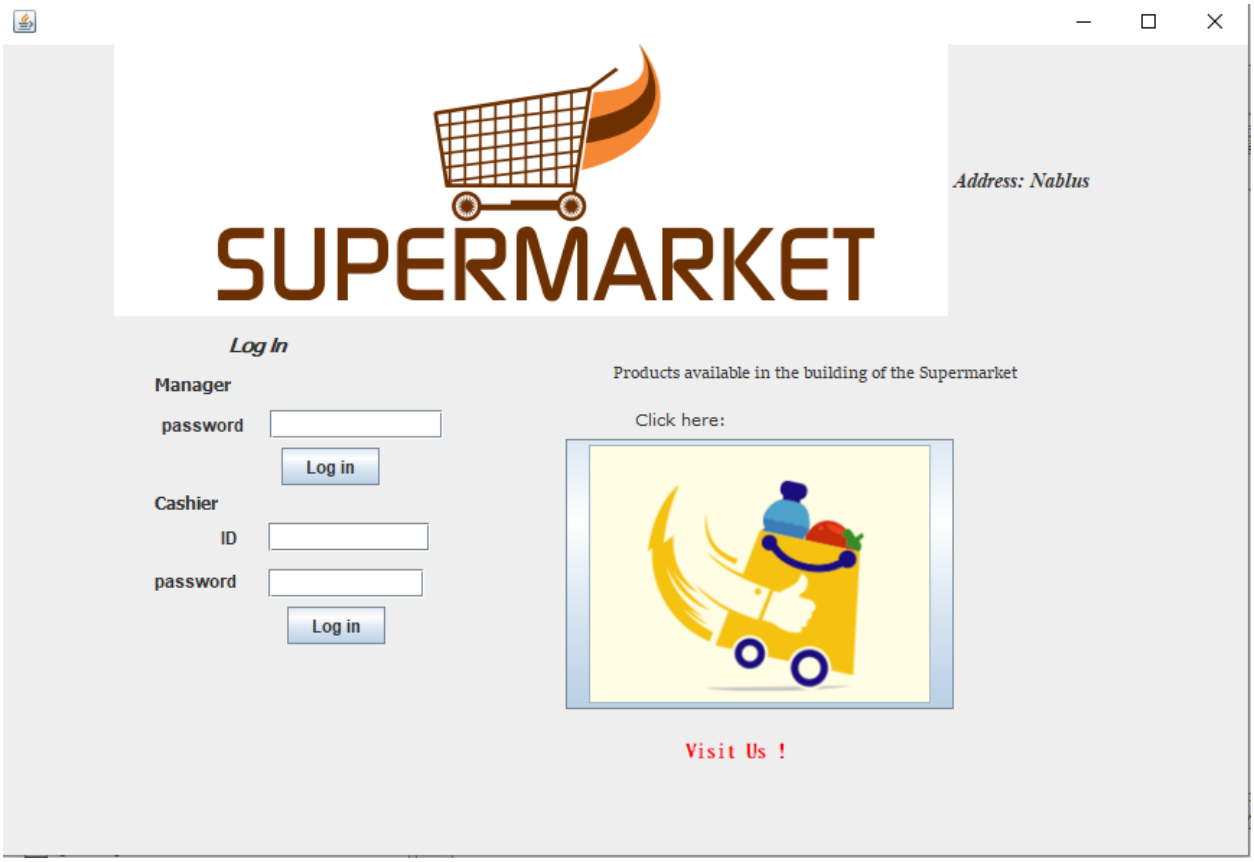
In this project we used three programs

Oracle Database : is a collection of data treated as a unit. The purpose of a database is to store and retrieve related information.

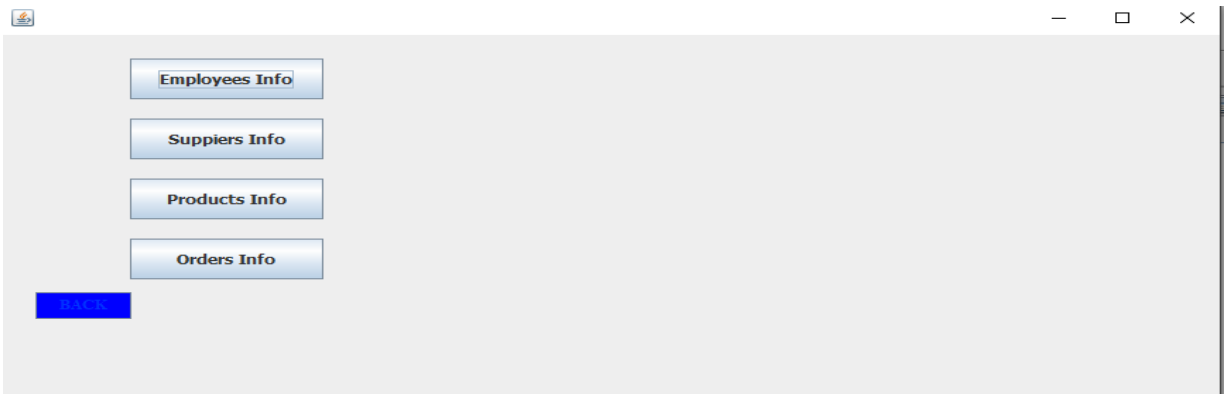
NetBeans IDE :We used this program to design interfaces and connect them with Database using the Java language

Jasper Report Studio:This program we used to create a report and then convert it to pdf with NetBeans IDE

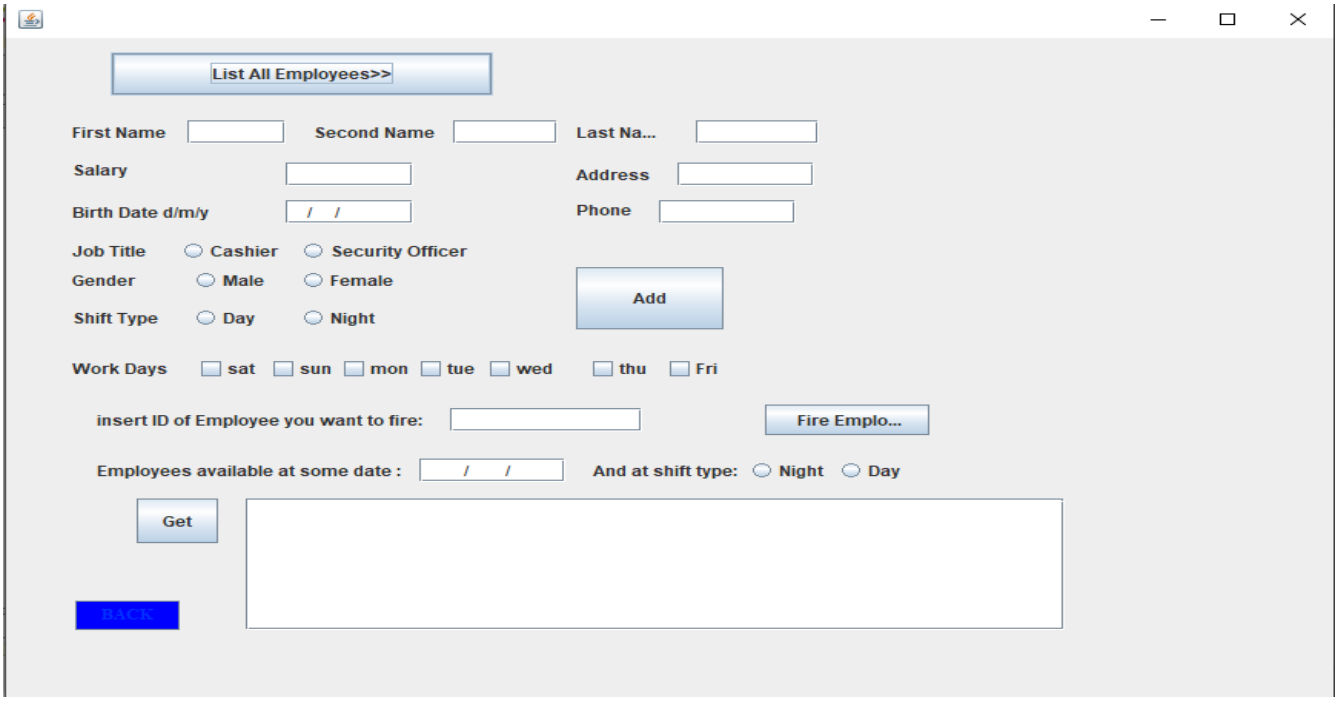
Discussion



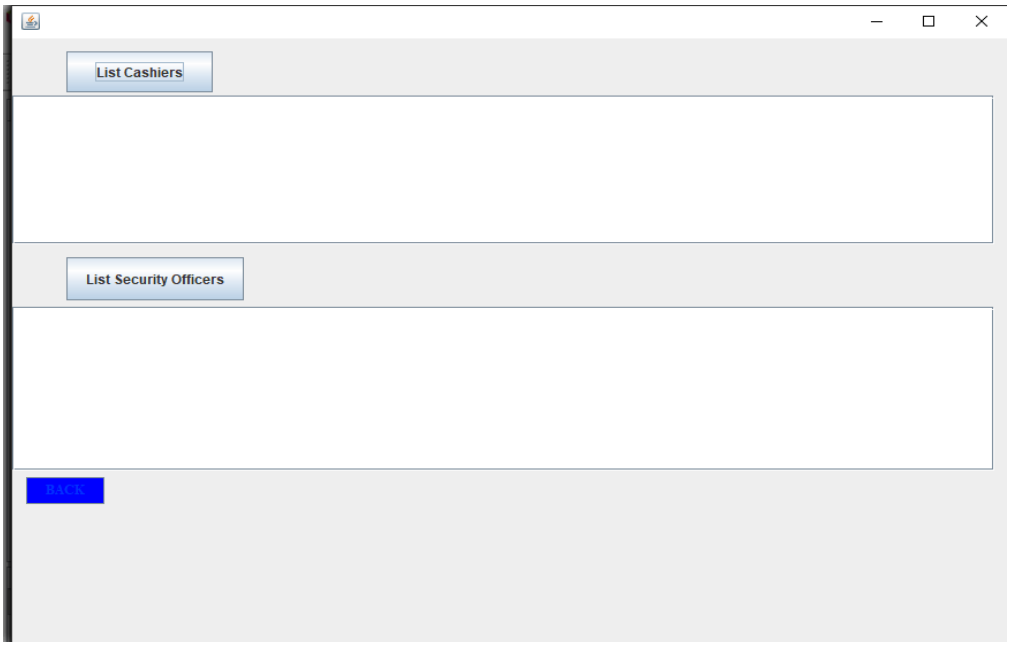
This is the first screen through which you can enter the system by
1- Login as a Manager, you must enter the id number and his password .
2- Login as a cashier also you must write the id number the password .
On this screen there is also a button to see some of the available products



When entering as a manager, this screen appears that consists of 5 buttons, the first one goes to employee information, the second one goes to supplier information, the third one is about product information, the fourth is about order information, and the last button is to go back to the previous screen.

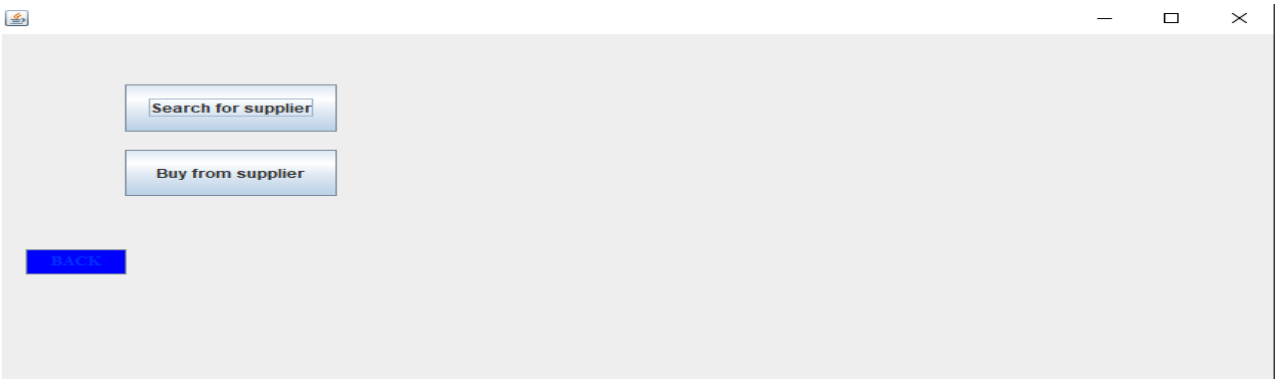


This screen appears when pressing the employee info button.
This screen enters the employee and takes the information with the possibility of removing the employee by typing his id number and then pressing the fire employee button. Through this screen also, all employees can be displayed according to a specific date and select the shift type. As for the existing button At the top, you can go to other screen to display the employees, and the back button at the bottom to go back to the previous screen

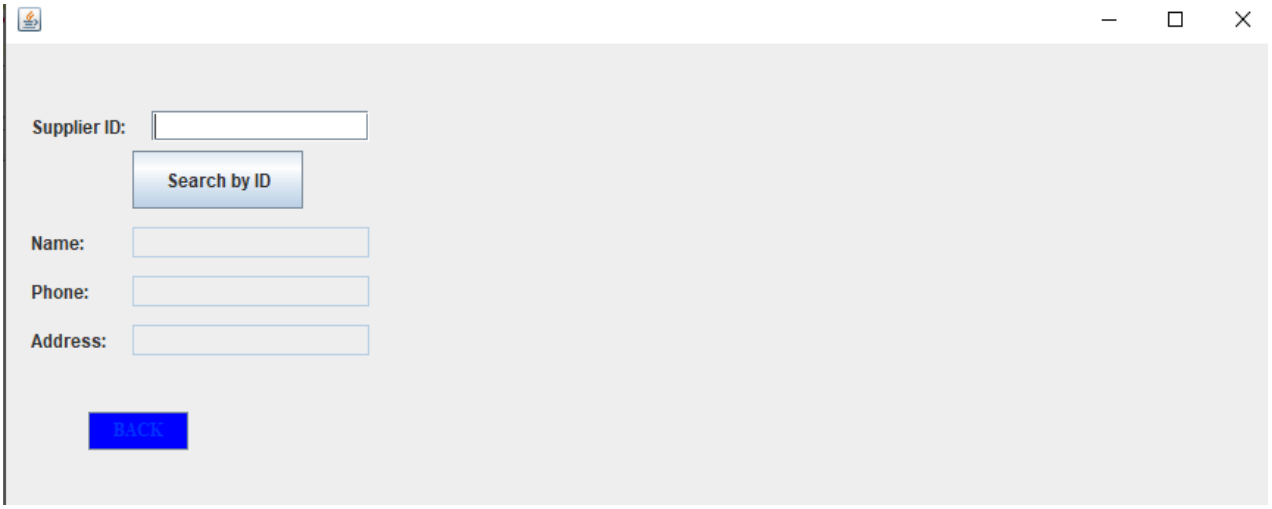


This screen when we click on the list of all employees The first button can show all cashiers

The second is for show all security officer Then the back button to return to the previous screen

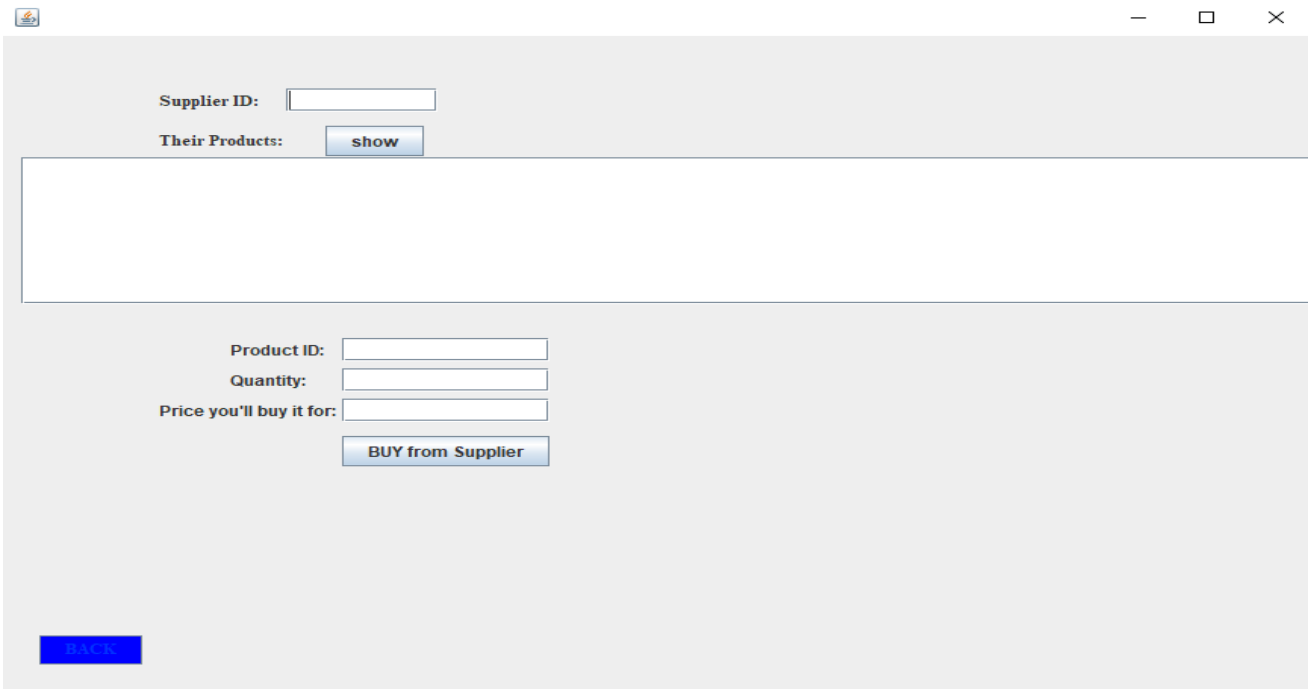


When pressing the “Suppliers Info” button, this screen appears, which includes three buttons, the first to search for a supplier, the second to buy products from the supplier, and the last button to return to the previous screen

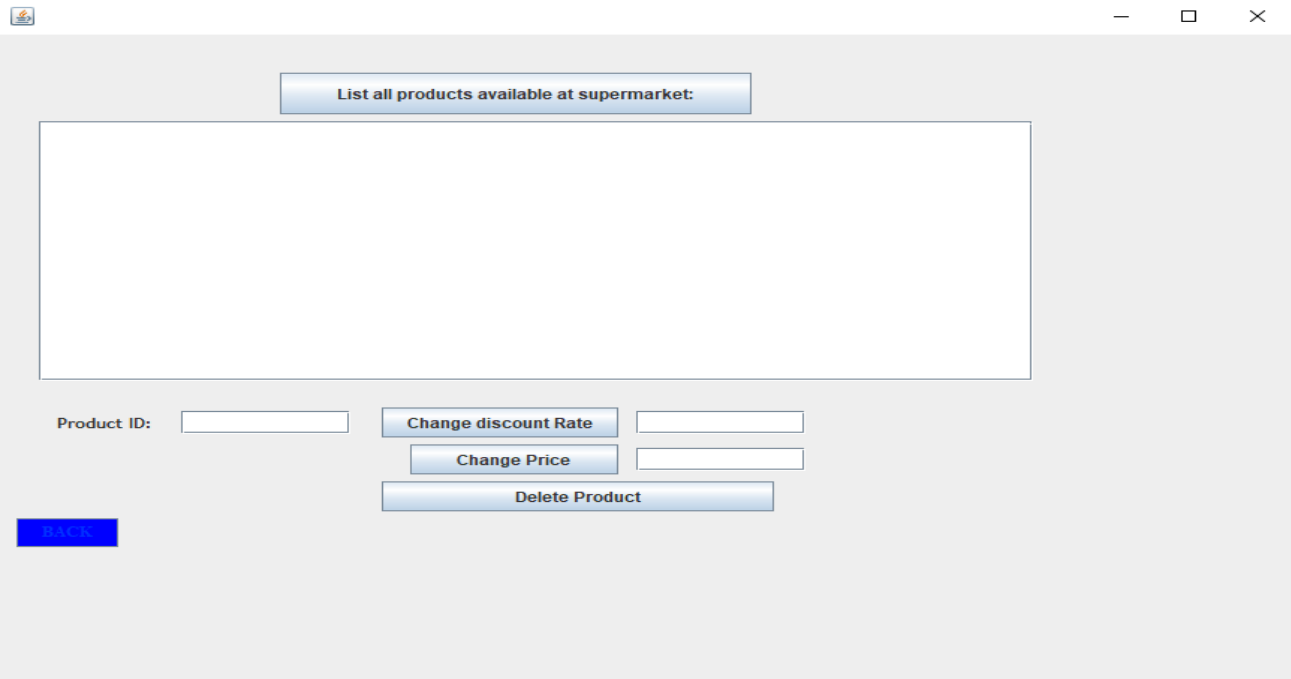


After pressing the search for supplier button, this screen appears.

We enter the id number of the supplier within the filed text, then click on search by id. The name, number and address of the supplier appears. We can return to the previous screen by pressing back

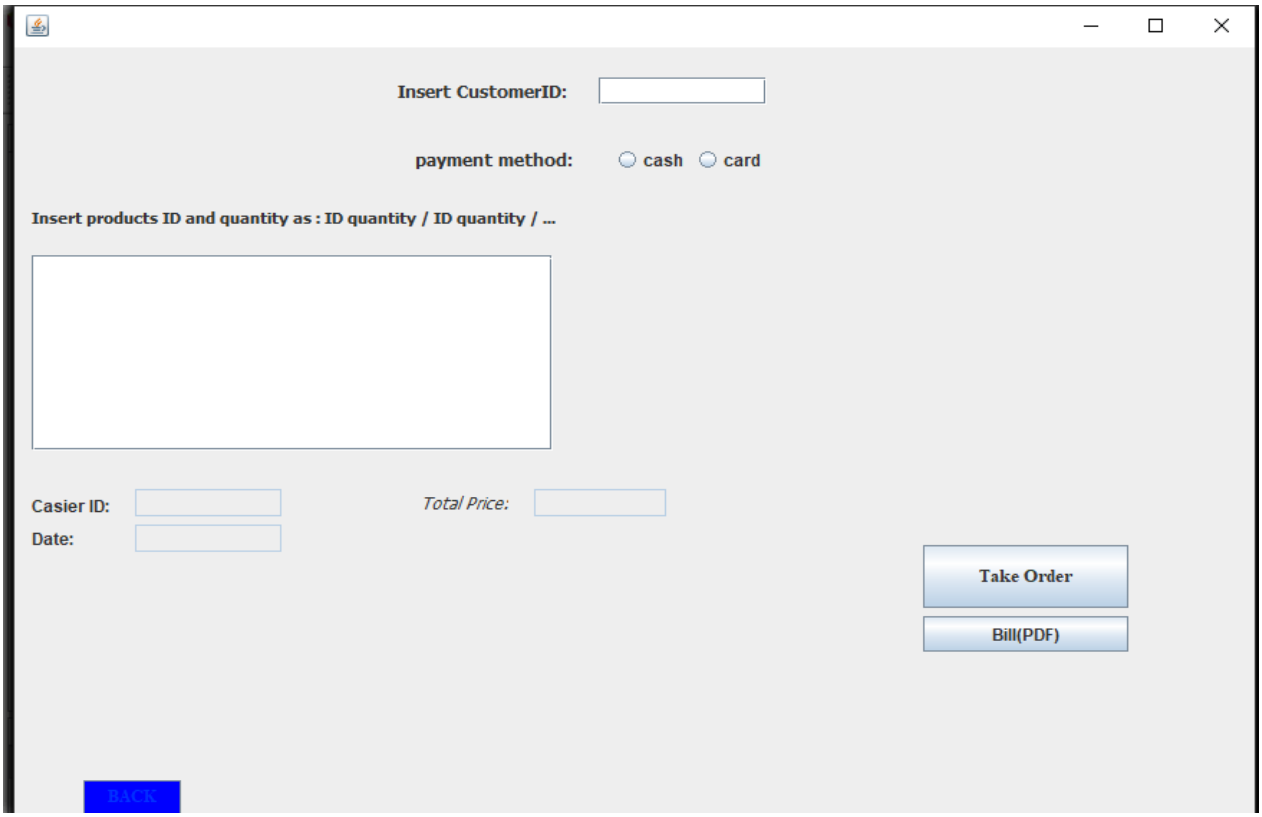


By pressing the "Buy from supplier" button, this screen appears, through which the products that belong to the supplier are first displayed. The search is done by the supplier ID number. The products are displayed in the text area after pressing the display button The second part is to choose one of the products and write the product ID in the text field, price and quantity, click on the button to buy from the supplier. Purchased at the end of the screen. Back button.

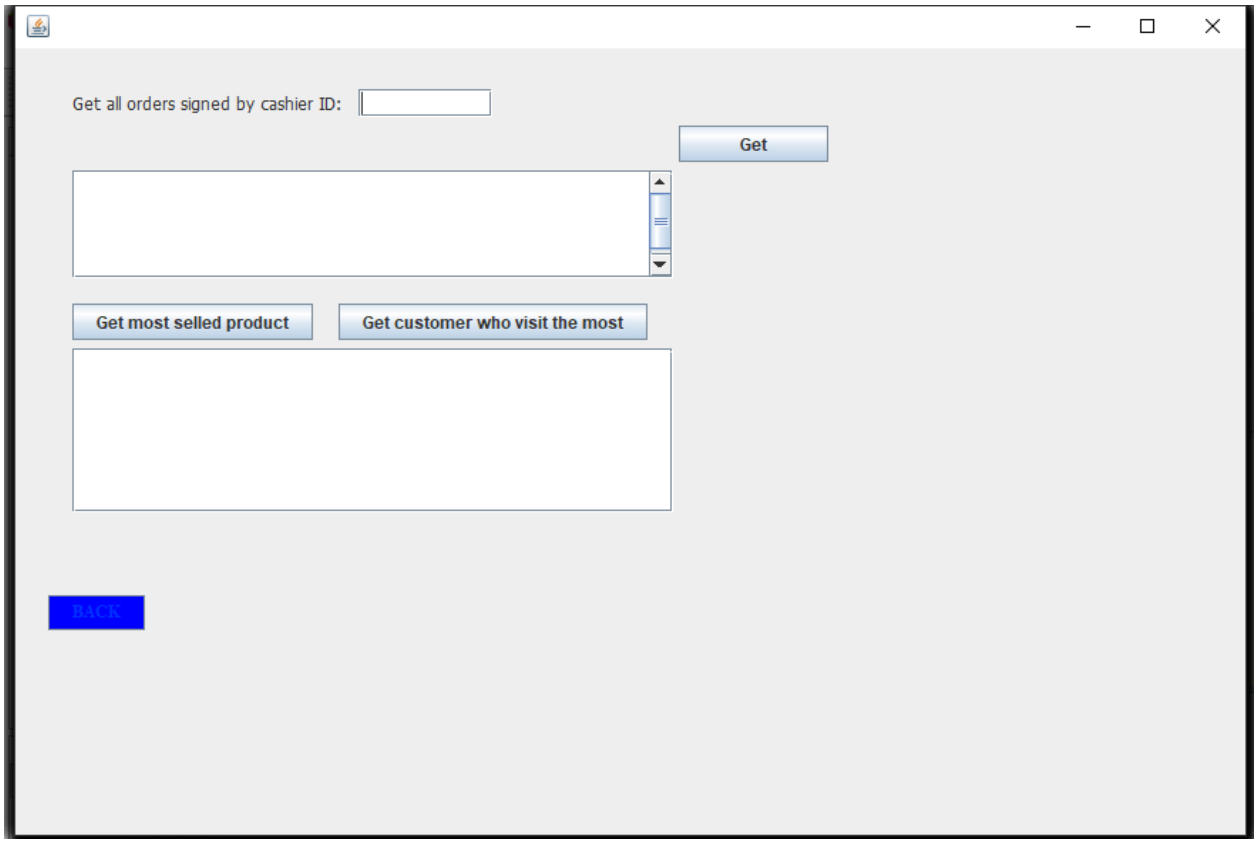


From screen No. 2 after pressing the "*products info*" button we see this screen

that first displays all the products in the supermarket when you press the" *list all products available at supermarket*" button You can also change the discount rate and price. At first, you must write the product id, then write the discount rate and press the change discount rate button To change the price. Click on change price and you can also you can delete a product by "Delete product" button and return to the previous screen through the back button



From the main screen and when entering as a cashier, this screen appears that creates an order by entering the customer ID number and specifying the payment method, then entering the products that he wants to buy on Text Aria then cashier id number price and Date back appear on screen then “Bill pdf” button make order as pdf to go back to the previous screen



“Order info”

This screen displays all the orders created by the cashier where once you enter the cashier id And pressing get, all orders will be shown. It also has a button to know the most selling products and another button to find out the most customers who visit the supermarket

Conclusion

In the conclusion, this project is very important for all large as well as small supermarkets. Where it's the place to keep all needed data and information. By pressing a button the data can be save and obtained without spending any time or effort.

References

- ✓ **Lectures**
- ✓ **Database Systems book**
- ✓ **oracle.com**
- ✓ **YouTube**
- ✓ **Online Websites**