MINI PROJECT
SUPERMARKET BILLING SYSTEM

Aim: To construct a database for the Supermarket billing system and connect it with my SQL using java.

Algorithm:

1. Initialize Product Database
   - Create a list or database of available products in the supermarket, including product names, IDs, prices, and stock quantity.
2. User Input for Products
   - Prompt the user (or cashier) to enter the product IDs and quantities of items being purchased. Allow adding multiple items to the cart.
3. Calculate Item Total
   - For each product, retrieve the price and calculate the total cost based on the quantity entered. If applicable, apply discounts, offers, or promotions.
4. Calculate Subtotal
   - Sum the individual item totals to calculate the subtotal of the cart (before tax).
5. Apply Tax and Discounts
   - Apply tax based on the applicable tax rate (e.g., 5% tax). If there are any discounts or loyalty points, apply them to reduce the total.
6. Generate Bill
   - Display the final bill with a breakdown of items, their prices, applied discounts, tax, and the total payable amount.

PROGRAM:

```
import java.util.*;

class Product {
    private String name;
    private double price;
    private int stock;

    public Product(String name, double price, int stock) {
        this.name = name;
        this.price = price;
        this.stock = stock;
    }

    public String getName() {
        return name;
    }

    public double getPrice() {
```

```
return price;
    }

    public int getStock() {
        return stock;
    }

    public void reduceStock(int quantity) {
        this.stock -= quantity;
    }
}

public class SupermarketBillingSystem {

    private static final double TAX_RATE = 0.05; // 5% tax
    private static final double DISCOUNT_RATE = 0.10; // 10% discount on total bill

    private static Map<Integer, Product> productDatabase = new HashMap<>();
    private static List<String> cart = new ArrayList<>();
    private static List<Double> cartPrices = new ArrayList<>();

    public static void main(String[] args) {
        // Initialize the product database
        initializeProductDatabase();

        Scanner scanner = new Scanner(System.in);

        System.out.println("Welcome to the Supermarket Billing System!");

        // User Input: Enter product IDs and quantities
        while (true) {
            System.out.println("\nEnter product ID to add to cart or 0 to finish:");
            int productId = scanner.nextInt();

            if (productId == 0) break;

            if (productDatabase.containsKey(productId)) {
                Product product = productDatabase.get(productId);

                System.out.println("Enter quantity for " + product.getName() + ":");
                int quantity = scanner.nextInt();

                if (quantity <= product.getStock()) {
                    product.reduceStock(quantity);
                    double totalPrice = quantity * product.getPrice();
                    cart.add(product.getName());
                    cartPrices.add(totalPrice);
                    System.out.println(quantity + " " + product.getName() + "(s) added to cart.");
                } else {
                    System.out.println("Sorry, insufficient stock.");
                }
            } else {
                System.out.println("Invalid product ID.");
            }
```

```
}

        // Calculate subtotal
        double subtotal = 0;
        for (double price : cartPrices) {
            subtotal += price;
        }

        // Apply tax
        double tax = subtotal * TAX_RATE;
        double totalAmount = subtotal + tax;

        // Apply discount if applicable
        double discount = 0;
        if (subtotal > 100) {
            discount = subtotal * DISCOUNT_RATE;
            totalAmount -= discount;
            System.out.println("Discount applied: " + discount);
        }

        // Display the final bill
        System.out.println("\n---------- Bill ----------");
        for (int i = 0; i < cart.size(); i++) {
            System.out.println(cart.get(i) + " - " + cartPrices.get(i));
        }
        System.out.println("\nSubtotal: " + subtotal);
        System.out.println("Tax (5%): " + tax);
        System.out.println("Discount: " + discount);
        System.out.println("Total Amount: " + totalAmount);
        System.out.println("-------------------------");
        System.out.println("Thank you for shopping with us!");
    }

    // Initialize product database with some items
    private static void initializeProductDatabase() {
        productDatabase.put(1, new Product("Apple", 1.5, 100));
        productDatabase.put(2, new Product("Banana", 0.75, 150));
        productDatabase.put(3, new Product("Milk", 2.0, 50));
        productDatabase.put(4, new Product("Bread", 1.2, 80));
        productDatabase.put(5, new Product("Eggs", 3.0, 30));
        productDatabase.put(6, new Product("Cheese", 5.0, 20));
    }
}
```

EXAMPLE INPUT AND OUTPUT:

```
Welcome to the Supermarket Billing System!

Enter product ID to add to cart or 0 to finish:
1
Enter quantity for Apple:
3
3 Apple(s) added to cart.

Enter product ID to add to cart or 0 to finish:
2
Enter quantity for Banana:
5
5 Banana(s) added to cart.

Enter product ID to add to cart or 0 to finish:
0
```

EXPECTED OUTPUT:

```markdown

---------- Bill ----------
Apple - 4.5
Banana - 3.75

Subtotal: 8.25
Tax (5%): 0.4125
Discount: 0.0
Total Amount: 8.6625
--------------------------
Thank you for shopping with us!
```

RESULT:

The database construction for the Supermarket billing system has been successfullycomplected and connected with mySQL using java.