MINI PROJECT: SHOPPING DISCOUNT SYSTEM USING JAVA OOPS

The objective of this assessment is to **apply Object-Oriented Programming concepts in Java** by developing a **real-world Shopping Discount System**.

By completing this project, students will demonstrate their understanding of:

- Class and Object
- Constructor and this
- static keyword
- Encapsulation (private data with getters/setters)
- Inheritance
- Method Overriding (Polymorphism)
- Access Modifiers (private, protected, public)

You are required to design and implement a **Shopping Discount System** where different **types of customers receive different discount percentages** based on:

- Their **customer type**
- Their **total purchase amount**

The system must calculate the **final payable amount** after applying the correct discount using **OOPS principles only**.

Base Class: Product

This class should represent a general product.

Attributes (Instance Variables)

- protected String productName
- protected double price
- protected int quantity

Constructor

- Accepts productName, price, quantity
- Uses this keyword for assignment

Methods

- double getTotalAmount() → returns price * quantity
- void displayProduct() → displays product details

Derived Class: CustomerPurchase (inherits from Product)

This class represents a customer's purchase and applies discount logic.

Additional Attributes

- private String customerType
  (Regular / Premium / Wholesale)
- private double finalAmount

Constructor

- Accepts all product details + customer type
- Calls parent constructor using super()
- Initializes customer type

Discount Logic (Mandatory)

Apply discount based on **customer type AND total bill amount**:

If Customer is Regular

- If total < 1000 → **5% discount**
- If total ≥ 1000 → **10% discount**

If Customer is Premium

- If total < 2000 → **15% discount**
- If total ≥ 2000 → **20% discount**

If Customer is Wholesale

- Flat **25% discount**
- Additional **5% extra discount if total ≥ 5000**

This logic must be implemented using **method overriding**.

Overridden Method

Override the following method in CustomerPurchase:

- double getFinalAmount()
  Applies discount and returns final payable amount.

Main Class: ShoppingApp

This class should:

- Take input using Scanner
- Allow the user to:
  - Enter product details
  - Enter customer type
  - Calculate final bill
- Display:
  - Product details
  - Original amount
  - Discount applied
  - Final payable amount

Program Utilization Flow (How the System Works)

1. User enters:
    - Product name
    - Price per item
    - Quantity
2. User selects customer type:
    - Regular
    - Premium
    - Wholesale
3. System calculates:
    - Total amount
    - Discount percentage
    - Final payable amount
4. System displays the **complete bill summary**.