**Grocery Shop Billing System**

**Objective:**

* Build a system to manage grocery shop inventory and billing process efficiently. It will allow:
* Adding and updating products in inventory
* Adding items to customer's cart
* Calculating total bill with discounts
* Updating stock after purchases

**Core Classes & Their Responsibilities:**

1.Product: Holds product details (name, price, stock).

* Attributes:
* name (string): Name of the product.
* price (float): Price per unit (e.g., per kg).
* stock (float): Quantity available in stock (e.g., kg).
* Responsibilities:
* Store product details.
* Update stock after sales.

2.Inventory: Maintains a collection of products, supports adding and updating products.

* Attributes:
* A collection (e.g., dictionary) of products.
* Responsibilities:
* Add new products.
* Update existing product stock and price.
* Check stock availability.
* Fetch product info.

3.Bill: Keeps track of purchased products, calculates totals, and applies discounts.

* Attributes:
* Purchased products and their quantities.
* Total price.
* Responsibilities:
* Add items to the bill/cart.
* Calculate the total cost.
* Apply discounts if any.
* Get the final total.

**Core Features:**

1.Add/Update Products

* Ability to add new products or update existing ones in inventory.

2.Add Items to Cart and Calculate Total

* Add product and quantity to bill.
* Check stock before confirming.
* Deduct sold quantity from stock.
* Calculate total price dynamically.

3.Apply Discounts

* Discounts will be based on percentage.
* Apply discounts on the total bill.

1. Actors (Users)

* Admin/Shopkeeper → manages inventory.
* Customer → purchases items, gets bill.

2. System Workflow

Home Page

* Inventory
* Billing

3.Inventory Prototype

* Inventory starts with some preloaded items:
* Rice – ₹50/kg – 20kg
* Wheat – ₹40/kg – 15kg
* Sugar – ₹45/kg – 10kg

Show Inventory (prototype output):

------ Available Products ------

Rice - ₹50/unit | Stock: 20

Wheat - ₹40/unit | Stock: 15

Sugar - ₹45/unit | Stock: 10

--------------------------------

4.Add/Update Product Prototype

Input Flow

Enter product name: Oil

Enter price: 120

Enter stock: 25

Output

* Oil added/updated successfully!

Billing Flow Prototype

1.Customer adds items to cart.

* Enter product name to buy: Rice
* ✅ Enter quantity: 2
* ✅ 2 Rice added to bill!
* Enter product name to buy: Sugar
* Enter quantity: 1
* ✅ 1 Sugar added to bill!

2.Option to apply discount:

* Apply discount? (y/n): y
* Enter discount %: 10
* Discount of ₹14.50 applied!

Inventory After Purchase

------ Available Products ------

Rice - ₹50/unit | Stock: 18

Wheat - ₹40/unit | Stock: 15

Sugar - ₹45/unit | Stock: 9

Oil - ₹120/unit | Stock: 25

--------------------------------

Flowchart