IUBAT— International University of Business Agriculture and Technology

Founded 1991 by Md Alimullah Miyan

Project Documentation

CSC – 284
Submitted To
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Project Name	IUBAT Super Shop Billing System
Technology	C++

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📂 Structure of the Code

The project is designed with a modular approach, adhering to **Object-Oriented Programming (OOP)** principles. Here's a breakdown of its structure:

1. **Classes:**
   - `Bill`: The base class for handling general billing operations.
   - `DiscountBill`: A derived class that extends `Bill` to calculate discounted totals.
2. **Functions:**
   - `addItemToCart(Bill&)`: Adds items to the customer's shopping cart.
   - `printTotalBill()`: Displays the total bill, calculates discounts, and shows a detailed summary.
   - `main()`: Controls the flow of the program and provides a user interface.
3. **File Handling:**
   - The project uses file I/O to save and retrieve item details in a text file (`totalbill.txt`), ensuring smooth data handling.

🌟 OOP Concepts Used

This project utilizes several fundamental **OOP principles**:

1. Encapsulation:

- Private and protected attributes like `itemName`, `itemPrice`, and `itemQuantity` in the `Bill` class ensure data security.
- Getter and setter methods provide controlled access to these attributes.

2. Inheritance:

- The `DiscountBill` class inherits from the `Bill` class, enabling code reuse and extension of functionality.

3. Polymorphism:

- The `calculateTotalCost()` method is overridden in the `DiscountBill` class to include discount logic.

4. Abstraction:

- High-level methods like `addItemToCart()` and `printTotalBill()` abstract complex logic, making the code cleaner and easier to maintain.

💡 Benefits of This Project

1. **Efficiency:**
   - Automates the billing process, reducing human error and saving time.
2. **Flexibility:**
   - Allows users to add multiple items and apply customizable discounts.
3. **Scalability:**
   - Can be easily extended to include features like taxes, loyalty points, or barcode scanning.
4. **User-Friendly:**
   - Simple menu-driven interface ensures ease of use.

🎥 Outputs Explained

1. Start Shopping

Input: The user enters item details (name, price, quantity).
Output: The program saves the item details (name, price, quantity, and total cost) to totalbill.txt and displays a success message confirming the addition of the item.
Example:

- User adds a "Laptop" (price: $1000, quantity: 2).
- The program saves "Laptop: $2000" and displays: "Item 'Laptop' added to your shopping list."

2. View Total Bill

Input: The user enters a discount percentage (e.g., 10%).
Output: The program lists all purchased items with their details and calculates the total before and after applying the discount.
Example:

- Items:
  - "Laptop: $1000 x 2 = $2000"
  - "Phone: $500 x 3 = $1500"
- Total before discount: $3500
- After 10% discount: $3150
  The program outputs the item list and the total amounts.
-

3. Exit Program

Action: The program terminates, and the totalbill.txt file is deleted, clearing all saved shopping data.
Example: A message like "Thank you for shopping" confirms the program has ended and data has been cleared.

Sample Outputs

```
========================================
            IUBAT SUPER SHOP
 ========================================
  [1] Start Shopping
  [2] View Total Bill
  [3] Exit Program
 ========================================
 Enter your choice:
```

```
========================================
            Add to Cart Menu
========================================
 [1] Add Item to Cart
 [2] Return to Main Menu
========================================
Enter your choice:
```

```
========================================
            Add Item Details
 ========================================
 Enter item name: Apple
 Enter item price: 450
 Enter item quantity: 12
```

```
========================================
            Items Purchased
 ========================================
 Apple - 450 x 12 = 5400
 ========================================
 Enter discount percentage: 5
 Total Amount (Before Discount): 5400
 Discount Applied: 5%
 Total Amount (After Discount): 5130
 ========================================
 ========================================
            View Total Bill
 ========================================
  [1] View Bill
  [2] Return to Main Menu
 ========================================
 Enter your choice:
```

❗ Handling User Inputs

Case 1: Invalid Menu Option

- **Input:** A number outside the menu range (e.g., 4).
- **Output:** Displays an error message and prompts for re-entry.

Case 2: Non-Numeric Input for Numeric Fields

- **Input:** Entering text for price or quantity.
- **Output:** Program crashes (can be handled by adding input validation).

Case 3: Empty Input for Item Name

- **Input:** Pressing Enter without entering a name.
- **Output:** Item added with an empty name (not ideal; can be enhanced).

🔗 Project Repository

You can access the full project repository for the Super Shop Billing System on GitHub by clicking the link below

Super Shop Billing System Github Repository > username – wasif-h

Link - https://github.com/wasif-h/Super-Shop-Billing-System.git

🏆 Conclusion

The **IUBAT Super Shop Billing System** is a practical application of OOP concepts in C++, providing an efficient and scalable solution for billing operations. By integrating features like discounts and file handling, it demonstrates the versatility of C++ for real-world projects.

Thank You

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