January 2023 CSE 108
Online 1

Time: 30 minutes

Subsections B1 & B2

You need to simulate an Online Shopping Management System using basic OOP concepts. The system should allow the manager to add different products to the online store, and the users can select and add products to their carts from the store. For simplicity, the functionalities from both ends would be incorporated in a single program.

Tasks

1. Create a class named **Product** with private member variables for the product's name and price. For storing strings, you can use the C++ `<string>` library if convenient.

2. Include public member functions to:

    - Set the product details (product name, price).
    - Get the product details.
    - Display the product details.

3. Implement the appropriate constructor(s) and destructor for the Product class.

4. Create a class named **OnlineStore** that manages the collection of products to be added to the store.

5. Include private member variables to store the products [use arrays with a maximum specified size (for example: 100)].

6. Include public member functions to:

    - Add a new product to the store.
    - Display all the available products in the store.

7. Implement the appropriate constructor(s) and destructor for the OnlineStore class.

8. Create a class named **ShoppingCart** that manages the collection of products to be added to the cart.

9. Include private member variables to store the products [use arrays with a maximum specified size].

10. Include public member functions to:

    - Add a new product to the cart.
    - Display the products present in the cart.
    - Show the total cost of the cart.

    Including the following would be regarded as **Bonus (+20%):**

    - Remove an added product from the cart.

11. Implement the appropriate constructor(s) and destructor for the ShoppingCart class.

See the expected outputs below to have a clear understanding.

Sample main()

```
int main() {
    OnlineStore store;

    // Add products to the online store
    Product product1("Laptop", 999.99);
    Product product2("Smartphone", 699.99);
    Product product3("Headphones", 99.99);

    store.addProduct(product1);
    store.addProduct(product2);
    store.addProduct(product3);

    // Display available products
    store.displayProducts();

    // Create a new shopping cart
    ShoppingCart cart;

    // Add products to the shopping cart
    cart.addProduct(product1);
    cart.addProduct(product2);

    // Display the shopping cart
    cart.displayCart();

    // Add another product to the cart
    cart.addProduct(product3);

    // Display the updated shopping cart
    cart.displayCart();

    // Remove a product from the cart
    cart.removeProduct("Laptop");

    // Display the updated shopping cart
    cart.displayCart();

    return 0;
}
```

Expected Output

```
Available Products in the Store:
    Product: Laptop - Price: $999.99
    Product: Smartphone - Price: $699.99
    Product: Headphones - Price: $99.99

Shopping Cart:
    Product: Laptop - Price: $999.99
    Product: Smartphone - Price: $699.99
    Total Cost: $1699.98

Shopping Cart:
    Product: Laptop - Price: $999.99
    Product: Smartphone - Price: $699.99
    Product: Headphones - Price: $99.99
    Total Cost: $1799.97

Shopping Cart:
    Product: Smartphone - Price: $699.99
    Product: Headphones - Price: $99.99
    Total Cost: $799.98
```