**Java In Class Assignment**

You are tasked with creating a Java program that simulates a simple online shopping cart system using object-oriented programming principles. The program should allow users to add and remove products to/from their shopping cart and calculate the total cost of the items in the cart. Additionally, product data should be stored in a file for retrieval.

**Requirements:**

**Create a Product class that includes the following attributes:**

* productID (int)
* productName (String)
* price (double)

**Create a ShoppingCart class that represents a user's shopping cart. It should include the following methods:**

* addItem(Product product, int quantity): Adds a specified quantity of a product to the cart.
* removeItem(Product product, int quantity): Removes a specified quantity of a product from the cart.
* getTotalPrice(): Calculates and returns the total cost of the items in the cart.
* displayCart(): Displays the contents of the cart, including product names, quantities, and prices.

**Create a ProductManager class responsible for reading product data from and writing product data to a file. The data file should be in Object format.**

* Product (Product)
* Qty(int)

**The ProductManager class has methods.**

* **loadProducts()**
* **saveProducts()**
* **findbyID()**

Implement a main program that:

* Loads product data from a file into the system.
* Allows the user to add and remove items from their cart.
* Displays the contents of the cart and the total price.
* Saves the updated product data back to the file after each modification.

**Additional Notes:**

Ensure that the program handles cases where the requested quantity for adding/removing items is valid (greater than 0) and within the available stock quantity.

Assume that the product data file (products.csv) is in the same directory as your Java program.

Instructions for Students:

* Implement the Product, ShoppingCart, and ProductManager classes as described.
* Create a main program that interacts with these classes to demonstrate the functionality of the online shopping cart system.
* Use proper error handling to deal with potential issues related to file I/O and user input validation.
* Ensure that the program loads product data from the file at the beginning and saves any changes back to the file before exiting.
* Provide comments and documentation for your code.

Grading Criteria:

Proper implementation of the Product, ShoppingCart, and ProductManager classes.

Correct functionality of adding/removing items from the cart and calculating the total price.

Successful reading and writing of product data to/from a file.

Effective error handling and user input validation.

Clear and well-documented code.

Students should be able to complete this programming assignment to demonstrate their understanding of Java object-oriented programming concepts and file I/O.