Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 7_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Maria, a software developer, is working on an inventory management system project using Java that utilizes an inventory interface to manage a store's products.

The interface should define two methods: addProduct, which adds a product by accepting its name, price, and quantity, and calculateTotalValue, which computes the total value of all products in the inventory. Implement the interface in a class called SimpleInventory, which internally manages a list of Product objects.

Each Product object should encapsulate the product's name, price, and quantity and include a method to calculate its value as price × quantity. The system should allow users to dynamically add products to the inventory and calculate the total value of all products stored.

Help Maria achieve the task.

The first line of input consists of an integer to choose one of the following options:

1 - to add a product to the inventory.

2 - to calculate and view the total inventory value.

3 - to exit the program.

For Choice 1 (Add Product):

The next input line is the string representing the product name as a string (single or multi-word, without quotes).

The next line is a double value representing the price as a decimal value

The next line is an integer value representing the quantity as an integer

For Choices 2 and 3, no additional input is required

Output Format

The output displays the results of the commands as follows:

- For the addProduct command, the program should display "Product added to inventory."
- For choice 2, the program should display "Total inventory value [totalvalue]. "The total value should be displayed with one decimal place. If there is no product in the inventory, print the total as 0.0.
- For choice 3, the program should exit

If the choice is not 1, 2, or 3, then print "Invalid choice. Please select a valid option (1/2/3).".

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 1
Laptop
800.0
3
2
5
3

Output: Product added to inventory.
Total inventory value: $2400.0
Invalid choice. Please select a valid option (1/2/3).

Answer

import java.util.Scanner;

class Product{

```java
    private String name;
    private double price;
    private int quantity;

    public Product(String name, double price, int quantity)

    {

        this.name = name;
        this.price = price;
        this.quantity = quantity;

    }

    public String getName()

    {

        return name;
```

```java
}

    public double getPrice()

    {

        return price;

    }

    public int getQuantity()

    {

        return quantity;

    }

    public double getValue()

    {

        return price * quantity;

    }

}

interface Inventory

{

    void addProduct(String name, double price, int quantity);
```

```java
    double calculateTotalValue();

}

class SimpleInventory implements Inventory

{


    private Product[] products;
    private int count;

    public SimpleInventory(int size)

    {


        products = new Product[size];
        count = 0;


    }

    @Override
    public void addProduct(String name, double price, int quantity)

    {


        if (count < products.length)

        {


            products[count] = new Product(name, price, quantity);
            count++;
            System.out.println("Product added to inventory.");


    }
```

```java
    }
    @Override
    public double calculateTotalValue()

    {

        double totalValue = 0.0;
        for (int i = 0; i < count; i++)

        {

            totalValue += products[i].getValue();

        }
        return totalValue;

    }

}
public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        Inventory inventory = new SimpleInventory(10);
        while (true) {
            int choice = scanner.nextInt();
            if (choice == 1) {
                scanner.nextLine();
                String productName = scanner.nextLine();
                double price = scanner.nextDouble();
                int quantity = scanner.nextInt();
                inventory.addProduct(productName, price, quantity);
            } else if (choice == 2) {
                double totalValue = inventory.calculateTotalValue();
                System.out.println("Total inventory value: $" + totalValue);
            } else if (choice == 3) {
                break;
            } else {
```

```java
        System.out.println("Invalid choice. Please select a valid option
(1/2/3).");
        }
    }
    scanner.close();
  }
}
```

Status : Correct   **Marks : 10/10**