

# Rajalakshmi Engineering College

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Batch: 2028

Degree: B.E - AI & DS

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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  $\text{price} \times \text{quantity}$ . 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.

### ***Input Format***

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;  
  
// You are using Java  
interface Inventory{  
    void addProduct(String productName, double price, int quantity);  
    double calculateTotalValue();  
}  
class Product{  
    private String productName;  
    private double price;  
    private int quantity;  
  
    public Product(String productName,double price, int quantity){  
        this.productName= productName;  
        this.price=price;  
        this.quantity=quantity;  
    }  
    public double getValue(){  
        return price * quantity;  
    }  
}  
class SimpleInventory implements Inventory{  
    private Product[] products;  
    private int count;  
  
    public SimpleInventory(int capacity){  
        products = new Product[capacity];  
        count = 0;  
    }  
}
```

```
@Override
public void addProduct(String productName, double price, int quantity) {
    if (count < products.length) {
        products[count++]=new Product(productName, price, quantity);
        System.out.println("Product added to inventory.");
    } else {
        System.out.println("Inventory full. Cannot add more products.");
    }
}

public double calculateTotalValue() {
    double total =0.0;
    for (int i=0; i<count; i++) {
        total += products[i].getValue();
    }
    return total;
}

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

**Status : Correct**

**Marks : 10/10**