OOP

Practical 3, Week 3

Submission

1. Your submission should contain two files. One of these files is **PDF** document with screenshots of the implementation (Java code) and testing only. Another file is **ZIP** file with the Java project.
2. You must save the files with name

   {YourStudentNumber}-Practical3.pdf;

   {YourStudentNumber}-Practical3.zip;

   For example: 202107081314-Practical3.pdf, 202107081314-Practical3.zip
3. You must upload from the student website: student.zy.cdut.edu.cn

Marking scheme

You will gain up to 5 marks for the completion of the exercise.

The markers will use the following marking scheme for each exercise.

Rubric	marks
No attempt has been made to answer the question. No implementation at all, or completely inappropriate considerations	0
Some attempt has been made to answer the question and some considerations shown. No effort to implement a working solution and test it.	1
Incomplete programming, but significant effort has gone into it. Some consideration and implementation of the result, but very limited, some of the rules have not been properly implemented, no testing.	2
Mostly complete programming but the implementation does not follow a correct standard. The program works but does not match the testing given properly.	3
Complete programming and good implementation, and some testing shown.	4
Excellent programming and implementation of the whole problem, including testing and implementation.	5

OOP

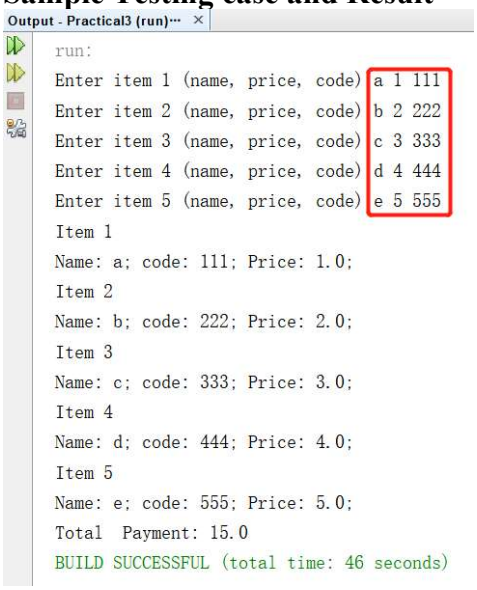
Week 3, Assessed exercise

Invoice

1. Implement a class called **Item** with the following specification:
   - An attribute/field called **name** to store the name of the item
   - An attribute/field called **price** that stores the price in pounds (real)
   - An attribute called **code** that stores the barcode of the item (String)
   - A constructor with two parameters (the **name** of the item and the **code**) that initialises **prices** to zero
   - Accessor methods and mutator methods for the attributes
   - A method display to display the **name**, **price** and **code** of the item.

2. Create in the **main program** a variable called **bill** that stores 5 items
3. Write code that asks the user to input the **name**, **price and code** of 5 items, create instances of the class Item and add them to the variable **bill**. Then, use the mutator method to change price for each item.
4. Write code that given them information data in the **bill** variable, print an invoice by displaying the items bought with their prices and the total payment.

Sample Testing case and Result



Your program should follow the test case with same input and output.
You also need to show your own different test case. The red rectangle is input.

Complete the implementation and testing.

（1） Implementation

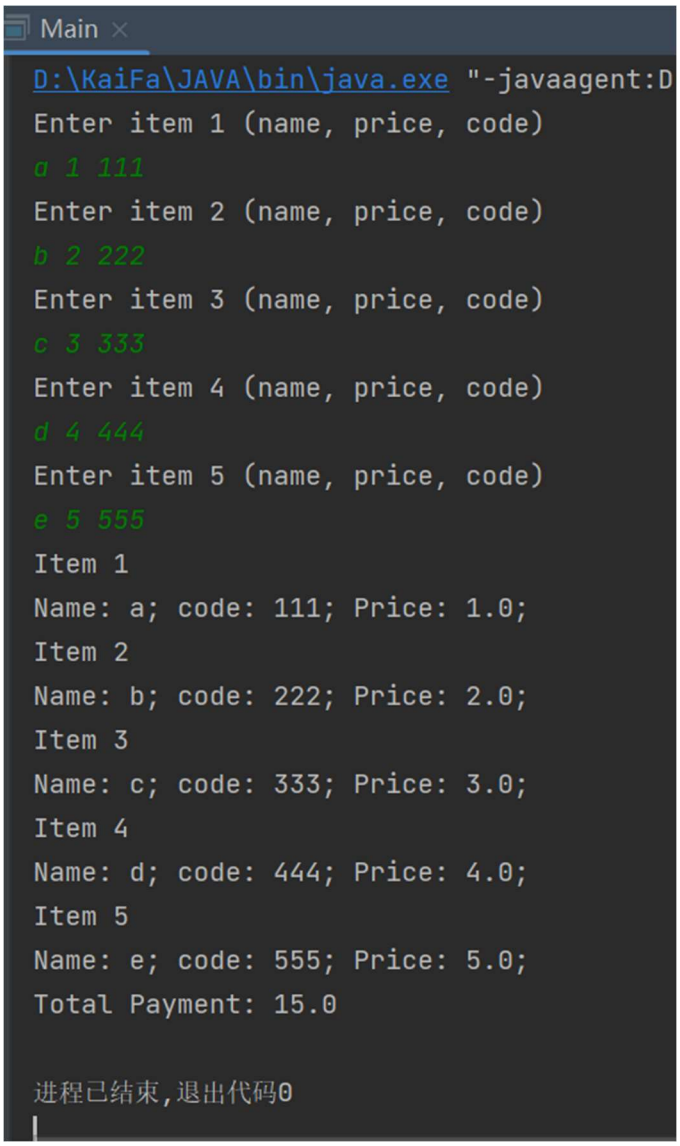
(Please show your design with some comments in your program and paste all of your source code with screenshots to here)

```
0 个用法
public class Main {
    0 个用法
    public static void main(String[] args) {
        Item[] bill = new Item[5];//Create in the main program a variable called bill that stores 5 items

        double total = 0;//The total payment of all items

        Scanner input = new Scanner(System.in);

        for (int i = 1;i <= 5;i++) {
            /*
            Write code that asks the user to input the name, price and code of 5 items, create instances of the
            class Item and add them to the variable bill. Then, use the mutator method to change price for each item
             */
            System.out.println("Enter item "+i+" (name, price, code)");
            //asks the user to input the name, price and code
            String name = input.next();
            double price = input.nextInt();
            String code = input.next();

            Item item = new Item(name,code);//create instances of the class Item
            bill[i-1] = item;//add them to the variable bill
            item.setPrice(price);//use the mutator method to change price
            total += item.price;//calculate the total payment
        }

        for (int i = 1;i <= 5;i++) {
            /*
            Write code that given them information data in the bill variable, print an invoice by displaying the items
            bought with their prices
             */
            System.out.println("Item "+i);
            System.out.println("Name: "+bill[i-1].name+"; "+"code: "+bill[i-1].code+"; "+"Price: "+bill[i-1].price+"; ");
        }

        System.out.println("Total Payment: "+total);//display the total payment
    }
}
```

```java
public class Item {
    /*
    A class called Item
     */
    5 个用法
    String name;//An attribute/field called name to store the name of the item
    6 个用法
    double price;//An attribute/field called price that stores the price in pounds (real)
    5 个用法
    String code;//An attribute called code that stores the barcode of the item (String)

    1 个用法
    public Item (String name,String code) {
        //A constructor with two parameters (the name of the item and the code) that initialises prices to zero
        this.name = name;
        this.code = code;
        this.price = 0;
    }

    0 个用法
    public String getName() {
        //Accessor method
        return name;
    }public void setName(String name) {
        //Mutator method
        this.name = name;
    }

    0 个用法
    public double getPrice() {
        return price;
    }public void setPrice(double price) {
        this.price = price;
    }

    0 个用法
    public String getCode() {
        return code;
    }public void setCode(String code) {
        this.code = code;
    }

    0 个用法
    public void display() {
        //A method display to display the name, price and code of the item
        System.out.println("Name: "+name+"; "+"code: "+code+"; "+"Price: "+price+"; ");
    }
}
```

（2） Testing (screenshots)

Testing 1(Same sample test case)



Testing 2(Your own different test case with different input)

```
D:\KaiFa\JAVA\bin\java.exe "-javaagent:D:
Enter item 1 (name, price, code)
aa 111 2
Enter item 2 (name, price, code)
dd 33 444
Enter item 3 (name, price, code)
dd 44 555
Enter item 4 (name, price, code)
ddr 45 768
Enter item 5 (name, price, code)
sdc 34 677
Item 1
Name: aa; code: 2; Price: 111.0;
Item 2
Name: dd; code: 444; Price: 33.0;
Item 3
Name: dd; code: 555; Price: 44.0;
Item 4
Name: ddr; code: 768; Price: 45.0;
Item 5
Name: sdc; code: 677; Price: 34.0;
Total Payment: 267.0

进程已结束,退出代码0
```