



Programme	: BTech. CSE Core	Semester	: Win 2021-22
Course	: Java Programming	Code	: CSE1007
Faculty	: Dr. Pradeep K	Slot	: L9+L10
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1. Write a program that stores the sales inventory of the popular books, based on the author's name. Create an interface **BookInfo** has a method to accept the book details like name of the book, year of publication, cost of the book, and language. Create another interface name **SalesInfo** has a method to read the book sales information, number of copies sold, and store name. This process must keep track of the total sales for each book, and generate a report specifying the total on whole, and calculating the sales for each author. Create a class name **BookSales** that implements the interface. Store the sales information of books using array particularly in order of their last sale. Whenever a book is purchased, modify the respective attribute by moving its complete details to the zeroth index and pushing the others one step down. So the last modified or purchased book information is first in the array and so on... Create a class named Customer who makes a purchase by entering the book name (display a set of book names) and quantity required.

```
package lab4;
import java.util.*;

interface BookInfo {
    void accept();
}

interface SalesInfo {
    void read_sales();
}

class BookSales implements BookInfo, SalesInfo {
    int year, cost, copies, temp = -1;
    String name, language, store, purchase, author;
    Scanner sc = new Scanner(System.in);
    void accept() {
        System.out.print("Enter the Name of book: ");
        name = sc.nextLine();
        System.out.print("Enter the Year of book: ");
        year = sc.nextInt();
        System.out.print("Enter the Cost of book: ");
        cost = sc.nextInt();
        String temp = sc.nextLine();
        System.out.print("Enter the Author of book: ");
        author = sc.nextLine();
        System.out.print("Enter the Language of book: ");
        language = sc.nextLine();
    }
}
```

```

    }
    void read_sales() {
        System.out.print("Enter the Name of store: ");
        store = sc.nextLine();
        System.out.print("Enter the Number of copies: ");
        copies = sc.nextInt();
    }
    void purchase(BookSales b1[], int num) {
        System.out.print("Enter the Book Name(Purchase): ");
        purchase = sc.nextLine();
        for (int i = 0; i < num; i++) {
            if (purchase.equals(b1[i].name)) {
                temp = i;
                break;
            }
        }
        if (temp == -1)
            System.out.println("This book is not present");
        else {
            BookSales b2 = b1[temp];
            for (int i = temp; i > 0; i--) {
                b1[i] = b1[i - 1];
            }
            b1[0] = b2;
        }
        return b1;
    }
}

public class Lab4 {
    public static void main(String[] args) {
        System.out.print("Enter the number of books: ");
        Scanner sc = new Scanner(System.in);
        int num = sc.nextInt();
        BookSales b1[] = new BookSales[num];
        for (int i = 0; i < num; i++) {
            b1[i] = new BookSales();
            b1[i].accept();
            b1[i].read_sales();
        }
        boolean cont = true;
        while (cont) {
            BookSales b2 = new BookSales();
            b2.purchase(b1, num);
            System.out.print("Do you wish to continue? (1: Yes | 0: No) ");
            int t = sc.nextInt();
            cont = (t == 1) ? true : false;
        }
        System.out.println("Printing Last Modified Sequence: ");
        for (int i = 0; i < num; i++) {
            System.out.println(b1[i].name);
        }
    }
}

```

OUTPUT:

```
Output - lab4 (run) x
run:
Enter the number of books: 4
Enter the Name of book: AAA
Enter the Year of book: 2003
Enter the Cost of book: 490
Enter the Author of book: TVB
Enter the Language of book: ENGLISH
Enter the Name of store: P11
Enter the Number of copies: 900
Enter the Name of book: BBB
Enter the Year of book: 2000
Enter the Cost of book: 903
Enter the Author of book: TCE
Enter the Language of book: HINDI
Enter the Name of store: P12
Enter the Number of copies: 30
Enter the Name of book: CCC
Enter the Year of book: 1998
Enter the Cost of book: 930
Enter the Author of book: YBX
Enter the Language of book: TAMIL
Enter the Name of store: P13
Enter the Number of copies: 90
Enter the Name of book: DDD
Enter the Year of book: 1997
Enter the Cost of book: 450
Enter the Author of book: EDH
Enter the Language of book: GUJARATI
Enter the Name of store: P14

Enter the Number of copies: 85
Enter the Book Name(Purchase): CCC
Do you wish to continue? (1: Yes | 0: No) 1
Enter the Book Name(Purchase): DDD
Do you wish to continue? (1: Yes | 0: No) 1
Enter the Book Name(Purchase): AAA
Do you wish to continue? (1: Yes | 0: No) 0
Printing Last Modified Sequence:
AAA
DDD
CCC
BBB
BUILD SUCCESSFUL (total time: 1 minute 49 seconds)
```

2. Create an abstract class 'Parent' with a method 'message'. It has two subclasses each having a method with the same name 'message' that prints "This is first subclass" and "This is second subclass" respectively. Call the methods 'message' by creating an object for each subclass.

```
package lab4;
abstract class Parent {
    void message() {}
}

class Subclass_1 extends Parent {
    void message() {
        System.out.println("This is First subclass.");
    }
}

class Subclass_2 extends Parent {
    void message() {
        System.out.println("This is Second subclass.");
    }
}

public class Lab4 {
    public static void main(String args[]) {
        Subclass_1 s1 = new Subclass_1();
        Subclass_2 s2 = new Subclass_2();
        s1.message();
        s2.message();
    }
}
```

OUTPUT:



```
Output - lab4 (run) x
run:
This is First subclass.
This is Second subclass.
BUILD SUCCESSFUL (total time: 0 seconds)
```

3. We have to calculate the area of a rectangle, a square and a circle. Create an abstract class 'Shape' with three abstract methods namely 'RectangleArea' taking two parameters, 'SquareArea' and 'CircleArea' taking one parameter each. The parameters of 'RectangleArea' are its length and breadth, that of 'SquareArea' is its side and that of 'CircleArea' is its radius. Now create another class 'Area' containing all the three methods 'RectangleArea', 'SquareArea' and 'CircleArea' for printing the area of rectangle, square and circle respectively. Create an object of class 'Area' and call all the three methods.

```
package lab4;
abstract class Shape {
    abstract void RectangleArea(float Length, float breadth);
    abstract void SquareArea(float radius);
    abstract void CircleArea(float side);
}

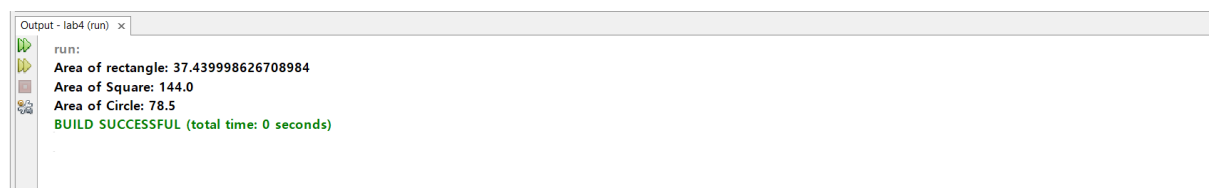
class Area extends Shape {
    double Area = 0;
    void RectangleArea(float Length, float breadth) {
        Area = length * breadth;
        System.out.println("Area of rectangle: " + Area);
    }

    void SquareArea(float Side) {
        Area = Side * Side;
        System.out.println("Area of Square: " + Area);
    }

    void CircleArea(float radius) {
        Area = (radius * radius) * 3.14;
        System.out.println("Area of Circle: " + Area);
    }
}

public class Lab4 {
    public static void main(String args[]) {
        Area a1 = new Area();
        a1.RectangleArea(10.4 f, 3.6 f);
        a1.SquareArea(12 f);
        a1.CircleArea(5);
    }
}
```

OUTPUT:



```
Output - lab4 (run) x
run:
Area of rectangle: 37.439998626708984
Area of Square: 144.0
Area of Circle: 78.5
BUILD SUCCESSFUL (total time: 0 seconds)
```

4. Write a java program using interface to find different rate of interest in bank.

```
package lab4;
import java.util.*;

interface Interest {
    void getInterest(int rate, int balance, String bank);
}

class Account implements Interest{
    Scanner sc = new Scanner(System.in);
    int balance, interest;
    void get(){
        System.out.print("Enter Balance Amount: ");
        balance = sc.nextInt();
    }
    public void getInterest(int rate, int balance, String bank) {
        int amt = (int)((balance * 2 * rate)/ 100);
        System.out.println("Name of Bank: " + bank);
        System.out.println("Interest by Bank: " + amt);
        System.out.println("Amount: " + (balance + amt));
    }
};

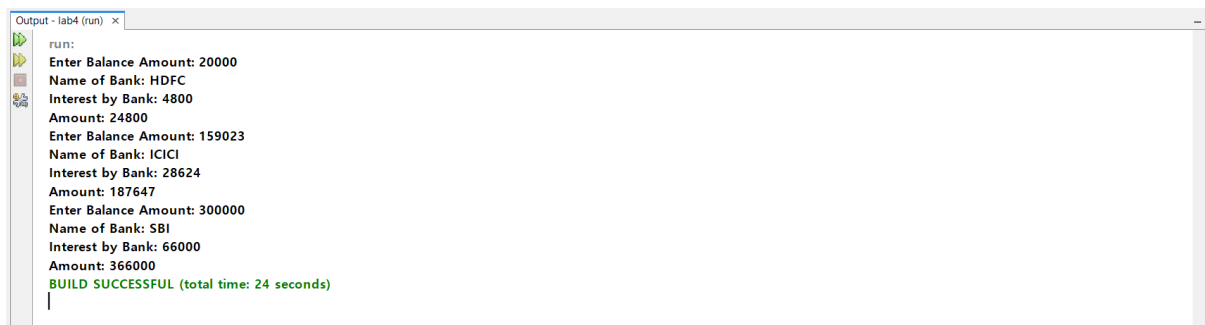
class HDFC extends Account {
    void display() {
        super.get();
        interest = 12;
        super.getInterest(interest, balance, "HDFC");
    }
}

class ICICI extends Account {
    void display() {
        super.get();
        interest = 9;
        super.getInterest(interest, balance, "ICICI");
    }
}

class SBI extends Account {
    void display() {
        super.get();
        interest = 11;
        super.getInterest(interest, balance, "SBI");
    }
}

public class Lab4 {
    public static void main(String[] args) {
        HDFC acc1 = new HDFC();
        ICICI acc2 = new ICICI();
        SBI acc3 = new SBI();
        acc1.display();
        acc2.display();
        acc3.display();
    }
}
```

OUTPUT:



```
Output - lab4 (run) x
run:
Enter Balance Amount: 20000
Name of Bank: HDFC
Interest by Bank: 4800
Amount: 24800
Enter Balance Amount: 159023
Name of Bank: ICICI
Interest by Bank: 28624
Amount: 187647
Enter Balance Amount: 300000
Name of Bank: SBI
Interest by Bank: 66000
Amount: 366000
BUILD SUCCESSFUL (total time: 24 seconds)
```

5. Calculate the percentage of marks obtained in three subjects (each out of 100) by student A and in four subjects (each out of 100) by student B. Create an abstract class 'Marks' with an abstract method 'getPercentage'. It is inherited by two other classes 'A' and 'B' each having a method with the same name which returns the percentage of the students. The constructor of student A takes the marks in three subjects as its parameters and the marks in four subjects as its parameters for student B. Create an object for each of the two classes and print the percentage of marks for both the students.

```
package lab4;
abstract class Marks {
    abstract double getPercentage();
}

class A extends Marks {
    float m1, m2, m3;
    A(float m_1, float m_2, float m_3) {
        m1 = m_1;
        m2 = m_2;
        m3 = m_3;
    }
    double getPercentage() {
        return (m1 + m2 + m3) / 300.0 * 100;
    }
}

class B extends Marks {
    float m1, m2, m3, m4;
    B(float m_1, float m_2, float m_3, float m_4) {
        m1 = m_1;
        m2 = m_2;
        m3 = m_3;
        m4 = m_4;
    }
    double getPercentage() {
        return (m1 + m2 + m3 + m4) / 400.0 * 100;
    }
}

public class Lab4 {
    public static void main(String[] args) {
        A student1 = new A(90, 81, 99);
        B student2 = new B(69, 98, 73, 87);
        System.out.println("Percentage of student A: " + student1.getPercentage());
        System.out.println("Percentage of student B: " + student2.getPercentage());
    }
}
```

OUTPUT:

itput - lab4 (run) x

run:

Percentage of student A : 90.0

Percentage of student B : 81.75

BUILD SUCCESSFUL (total time: 0 seconds)