LAB-7

202203028

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Question 1:

Code:

```java
import java.util.*;

class Product{
    String name;
    double price;
    static int totalProduct = 0;
    public Product(String n,double p){
        name = n;
        price = p;
        totalProduct++;
    }
    public String getName(){
        return name;
    }
    public double getPrice(){
        return price;
    }
    public void setName(String n){
        name = n;
    }
    public void setPrice(double p){
        price = p;
    }
    public static int getTotalProducts(){
        return totalProduct;
    }
}

public class Lab_7_1
{
```

```java
    public static void main(String[] args) {

        Product p1 = new Product("phone",20000);
        System.out.println("Product name = "+p1.name);
        System.out.println("Product price = "+p1.price);
        p1.setPrice(21000);
        p1.setName("OPPO A15s");
        System.out.println("Updated values");
        System.out.println("Product name = "+p1.name);
        System.out.println("Product price = "+p1.price);
        System.out.println("Total Number of Products =
"+Product.getTotalProducts());


    }
}
```

Output:

```
PS C:\Users\Admin\Desktop\OOPs-LAB> javac Lab_7_1.java
PS C:\Users\Admin\Desktop\OOPs-LAB> java Lab_7_1
Product name = phone
Product price = 20000.0
Updated values
Product name = OPPO A15s
Product price = 21000.0
Total Number of Products = 1
PS C:\Users\Admin\Desktop\OOPs-LAB>
```

Question 2:

Code:

```java
import java.util.*;


class Geometry{
    public double calculateArea(double r){
        return Math.PI*r*r;
    }
    public double calculateArea(double l,double m){
        return m*l;
    }
}
```

```java
public class Lab_7_2
{
    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);
        Geometry g1 = new Geometry();
        System.out.println("Enter the radius of circle");
        double r = sc.nextInt();
        System.out.println("Enter the length of ractangle");
        double l = sc.nextInt();
        System.out.println("Enter the width of ractangle");
        double m = sc.nextInt();
        System.out.print("Area of circle is = "+g1.calculateArea(r));
        System.out.println();
        System.out.print("Area of Ractangle is = "+g1.calculateArea(l,m));


    }
}
```

Output:

```
PS C:\Users\Admin\Desktop\OOPs-LAB> javac Lab_7_2.java
PS C:\Users\Admin\Desktop\OOPs-LAB> java Lab_7_2
Enter the radius of circle
5
Enter the length of ractangle
5
Enter the width of ractangle
6
Area of circle is = 78.53981633974483
Area of Ractangle is = 30.0
PS C:\Users\Admin\Desktop\OOPs-LAB>
```

Question 3:

Code:

```java
import java.util.*;

class Animal{
    public void makeSound(){
        System.out.println("The animal makes a sound");
```

```java
        }

}
class Dog extends Animal{
    public void makeSound(){
        System.out.println("Woof!");
    }
}
class Cat extends Animal{
    public void makeSound(){
        System.out.println("Meow!");
    }
}

public class Lab_7_3
{
    public static void main(String[] args) {
        Animal a1 = new Animal();
        Dog d1 = new Dog();
        Cat c1 = new Cat();
        a1.makeSound();
        d1.makeSound();
        c1.makeSound();


    }
}
```

Output:

```
PS C:\Users\Admin\Desktop\OOPs-LAB> javac Lab_7_3.java
PS C:\Users\Admin\Desktop\OOPs-LAB> java Lab_7_3
The animal makes a sound
Woof!
Meow!
PS C:\Users\Admin\Desktop\OOPs-LAB> S
```

Question 4:

Code:

```java
import java.util.*;


class Shape{
```

```java
        public double calculateArea(){
            return 0;
        }


}
class Circle extends Shape{
    double r;
    public double calculateArea(){
        return Math.PI*r*r;
    }
}
class Ractangle extends Shape{
    double m;
    double l;
    public double calculateArea(){
        return m*l;
    }
}

public class Lab_7_4
{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Shape s1 = new Shape();
        Circle c1 = new Circle();
        Ractangle r1 = new Ractangle();
        System.out.println("Enter the radius of circle");
        c1.r = sc.nextInt();
        System.out.println("Enter the length of ractangle");
        r1.l = sc.nextInt();
        System.out.println("Enter the width of ractangle");
        r1.m = sc.nextInt();
        System.out.println(s1.calculateArea());
        System.out.println("Area of circle");
        System.out.println(c1.calculateArea());
        System.out.println("Area of Ractangle");
        System.out.println(r1.calculateArea());



    }
}
```

Output:

Question 5:

Code:

```java
import java.util.*;

class Person{
    String name;
    int age;
    public void dislayInfo(){
        System.out.println("name of the person is "+this.name);
        System.out.println("age of the person is "+this.age);
    }
    public Person(String name,int age){
        this.name = name;
        this.age = age;
    }
}
class Student extends Person{
    int id;
    public void dislayInfo(){
        System.out.println("name of the student is "+this.name);
        System.out.println("age of the student is "+this.age);
        System.out.println("id of the student is "+this.id);
    }
    public Student(String name,int age,int id){
        super(name,age);
        this.id = id;
    }
}
```

```java
public class Lab_7_5
{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Person p1 = new Person("Dhava",18);
        Student s1 = new Student("Dhaval",18,202203028);
        Student s2 = new Student("Deep",18,202203012);
        p1.dislayInfo();
        s1.dislayInfo();
        s2.dislayInfo();


    }
}
```

Output:

```
PS C:\Users\Admin\Desktop\OOPs-LAB> javac Lab_7_5.java
PS C:\Users\Admin\Desktop\OOPs-LAB> java Lab_7_5
name of the person is Dhava
age of the person is 18
name of the student is Dhaval
age of the student is 18
id of the student is 202203028
name of the student is Deep
age of the student is 18
id of the student is 202203012
PS C:\Users\Admin\Desktop\OOPs-LAB>
```