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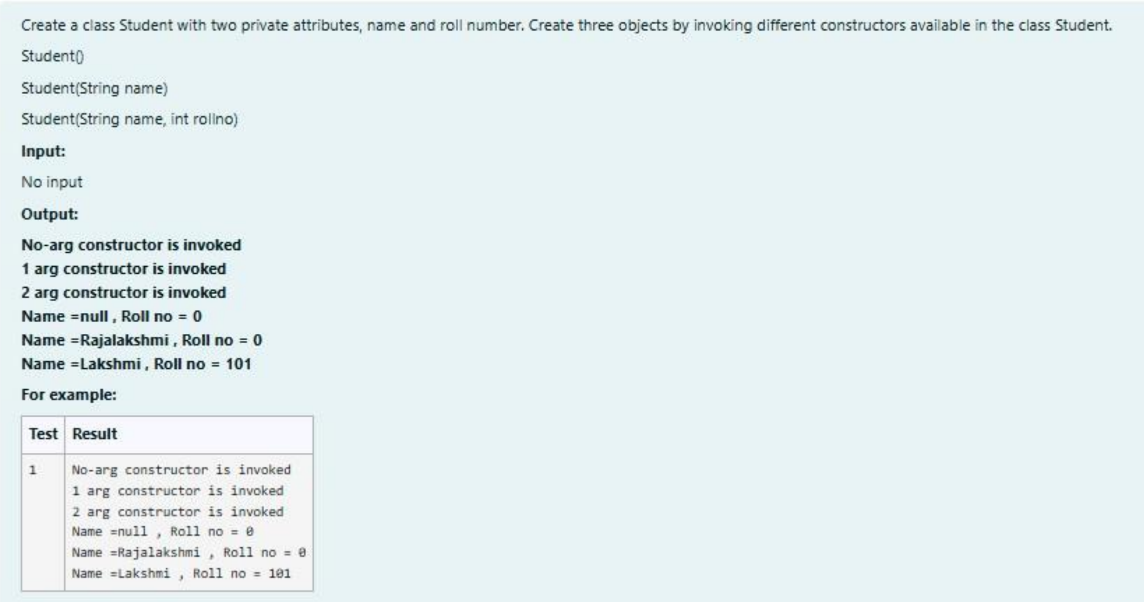
# Object Oriented Programming Using Java

Week 4

1)



Create a class Student with two private attributes, name and roll number. Create three objects by invoking different constructors available in the class Student.

Student()

Student(String name)

Student(String name, int rollno)

**Input:**

No input

**Output:**

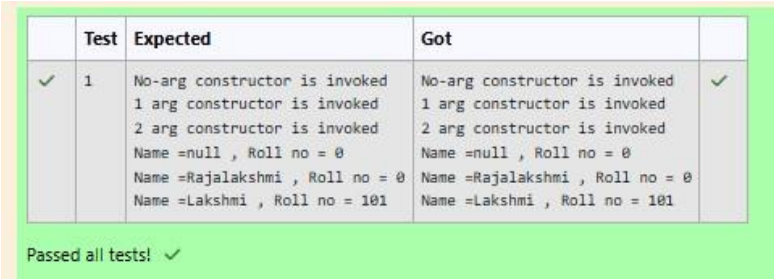
**No-arg constructor is invoked**
**1 arg constructor is invoked**
**2 arg constructor is invoked**
**Name =null , Roll no = 0**
**Name =Rajalakshmi , Roll no = 0**
**Name =Lakshmi , Roll no = 101**

**For example:**

| Test | Result |
|---|---|
| 1 | No-arg constructor is invoked<br>1 arg constructor is invoked<br>2 arg constructor is invoked<br>Name =null , Roll no = 0<br>Name =Rajalakshmi , Roll no = 0<br>Name =Lakshmi , Roll no = 101 |

```
class prog{     private
int rollNo;     private
String name;     public
prog(){
       System.out.println("No-arg constructor is invoked");
this.name=null;        this.rollNo=0;
   }
   public prog(String name) {
      System.out.println("1 arg constructor is invoked");
this.name=name;       this.rollNo=0;
   }
   public prog(String name, int rollNo) {
      System.out.println("2 arg constructor is invoked");
this.name=name;       this.rollNo=rollNo;
```

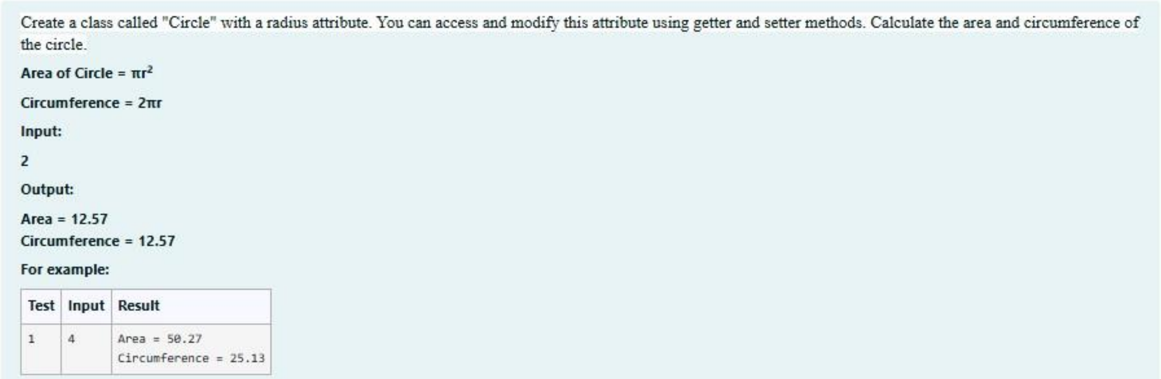
```
   }
   public void display(){
     System.out.println("Name ="+name+" , Roll no = "+rollNo);
   }
   public static void main(String[] args) {
prog stul=new prog();       prog stu2=new
prog("Rajalakshmi");       prog stu3=new
prog("Lakshmi", 101);
     stul.display();
stu2.display();
stu3.display();
   }
}
```



|  | Test | Expected | Got |  |
|---|---|---|---|---|
| ✓ | 1 | No-arg constructor is invoked<br>1 arg constructor is invoked<br>2 arg constructor is invoked<br>Name =null , Roll no = 0<br>Name =Rajalakshmi , Roll no = 0<br>Name =Lakshmi , Roll no = 101 | No-arg constructor is invoked<br>1 arg constructor is invoked<br>2 arg constructor is invoked<br>Name =null , Roll no = 0<br>Name =Rajalakshmi , Roll no = 0<br>Name =Lakshmi , Roll no = 101 | ✓ |

Passed all tests! ✓

2)



Create a class called "Circle" with a radius attribute. You can access and modify this attribute using getter and setter methods. Calculate the area and circumference of the circle.

**Area of Circle = $\pi r^2$**

**Circumference = $2\pi r$**

**Input:**

**2**

**Output:**

**Area = 12.57**
**Circumference = 12.57**

**For example:**

| Test | Input | Result |
|---|---|---|
| 1 | 4 | Area = 50.27<br>Circumference = 25.13 |

```
import java.io.*;
import java.util.*; class
Circle
```

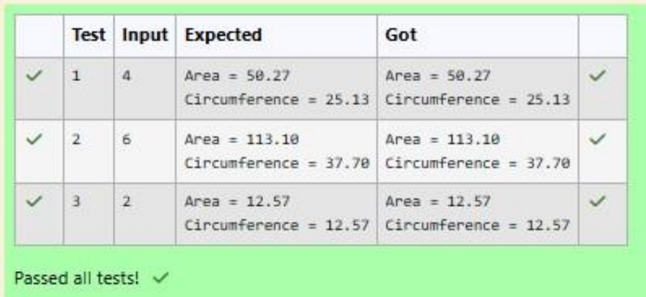
```
{
   private double radius;     public
Circle(double radius){         // set the
instance variable radius
this.radius=radius;
   }
   public void setRadius(double radius){
      // set the radius
this.radius=radius;


   }
   public double getRadius()    {
// return the radius         return
this.radius;


   }
   public double calculateArea()  { // complete the below statement
return Math.PI*radius*radius;

   }
   public double calculateCircumference()    {
      // complete the statement
return  2*Math.PI*radius;
   }
}
class prog{
   public static void main(String[] args)  {
int r;
```

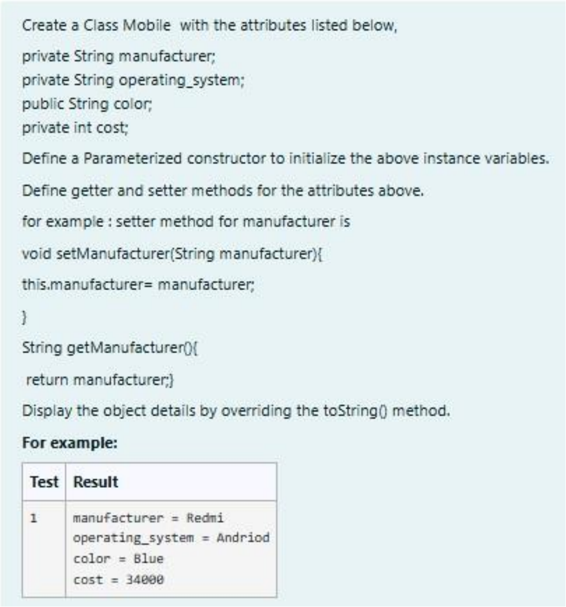
```
        Scanner sc= new Scanner(System.in);
r=sc.nextInt();
        Circle c= new Circle(r);
        System.out.println("Area = "+String.format("%.2f", c.calculateArea()));
        System.out.println("Circumference = "+String.format("%.2f",c.calculateCircumference()));
// invoke the calculatecircumference method;
    }
}
```



|  | Test | Input | Expected | Got |  |
|---|---|---|---|---|---|
| ✓ | 1 | 4 | Area = 50.27<br>Circumference = 25.13 | Area = 50.27<br>Circumference = 25.13 | ✓ |
| ✓ | 2 | 6 | Area = 113.10<br>Circumference = 37.70 | Area = 113.10<br>Circumference = 37.70 | ✓ |
| ✓ | 3 | 2 | Area = 12.57<br>Circumference = 12.57 | Area = 12.57<br>Circumference = 12.57 | ✓ |

Passed all tests! ✓

3)



Create a Class Mobile with the attributes listed below,

private String manufacturer;
private String operating_system;
public String color;
private int cost;

Define a Parameterized constructor to initialize the above instance variables.

Define getter and setter methods for the attributes above.

for example : setter method for manufacturer is

void setManufacturer(String manufacturer){

this.manufacturer= manufacturer;

}

String getManufacturer(){

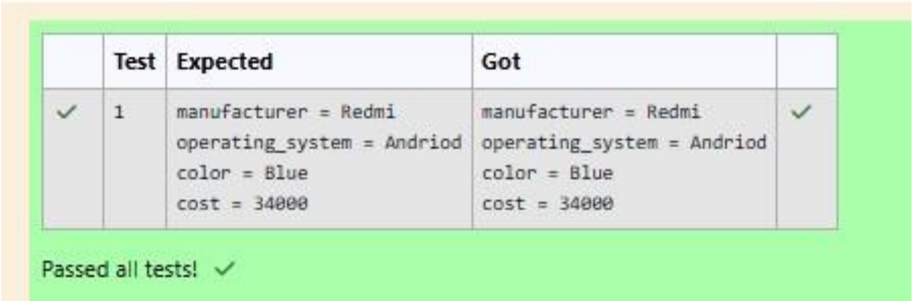
return manufacturer;}

Display the object details by overriding the toString() method.

**For example:**

| Test | Result |
|---|---|
| 1 | manufacturer = Redmi<br>operating_system = Andriod<br>color = Blue<br>cost = 34000 |

```
class prog{
    public static void main(String[] args){
        System.out.println("manufacturer = Redmi");
        System.out.println("operating_system = Andriod");
        System.out.println("color = Blue");
        System.out.println("cost = 34000");
    }
}
```



| | Test | Expected | Got | |
|---|---|---|---|---|
| ✓ | 1 | manufacturer = Redmi<br>operating_system = Andriod<br>color = Blue<br>cost = 34000 | manufacturer = Redmi<br>operating_system = Andriod<br>color = Blue<br>cost = 34000 | ✓ |

Passed all tests! ✓