

Worksheet 03

CTEC 22043 Object Oriented Programming

Student No: CT/2021/002



**Faculty of Computing and Technology
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Worksheet 03

Q-01+02:

Code:

Main:

```
package Q_01;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        //Q_01
        Scanner temp1 = new Scanner(System.in);
        DecimalFormat df = new DecimalFormat("#.###");

        System.out.println("Enter the Celsius Value: ");
        double celsius = temp1.nextDouble();

        Temperature t1= new Temperature();
        t1.setCelsius(celsius);
        System.out.println("The celsius value in fahrenheit is:
"+df.format(t1.toFahrenheit()));

        //Q_02
        Scanner temp2 = new Scanner(System.in);

        System.out.println("Enter fahrenheit Value: ");
        double fahrenheit = temp2.nextDouble();

        Temperature t2 = new Temperature();
        t2.setFahrenheit(fahrenheit);
        System.out.println("The fahrenheit value in celsius is:
"+df.format(t2.toCelsius()));
    }
}
```

Temperature:

```
package Q_01;

public class Temperature {
    private double celsius;

    public Temperature(){
        this.celsius = 0;
    }

    public Temperature(double celsius) {
        this.celsius = celsius;
    }

    public double toCelsius() {
        return celsius;
    }
}
```

```

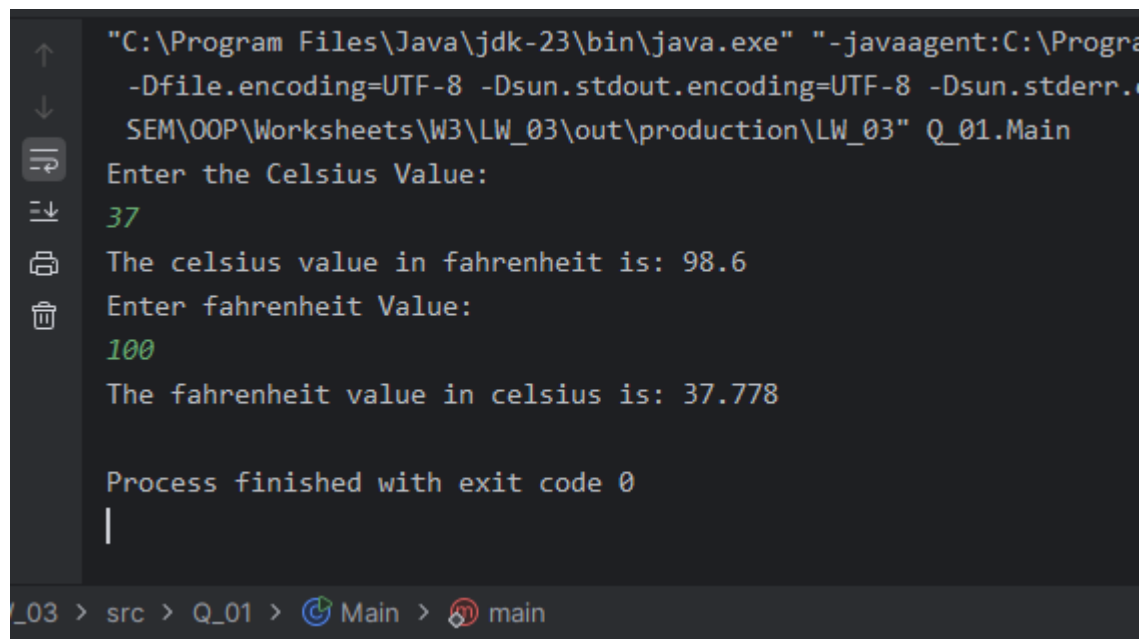
    public void setCelsius(double celsius) {
        this.celsius = celsius;
    }

    public double toFahrenheit(){
        return (celsius * (double) 9 / 5 + 32);
    }

    public void setFahrenheit(double fahrenheit){
        this.celsius = (fahrenheit - 32) * (double) 5 / 9;
    }
}

```

Output:



```

"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Progra
-Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.
SEM\OOP\Worksheets\W3\LW_03\out\production\LW_03" Q_01.Main
Enter the Celsius Value:
37
The celsius value in fahrenheit is: 98.6
Enter fahrenheit Value:
100
The fahrenheit value in celsius is: 37.778

Process finished with exit code 0
|

```

_03 > src > Q_01 > Main > main

Q-03:

Code:

Main:

```
package Q_03;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner inn = new Scanner(System.in);
        Scanner out = new Scanner(System.in);
        DecimalFormat df = new DecimalFormat("#.##");

        System.out.println("Enter the radius of inner circle: ");
        double innerRadius = inn.nextDouble();
        System.out.println("Enter the radius of outer circle: ");
        double outerRadius = out.nextDouble();

        Circle innerCircle = new Circle(innerRadius);
        Circle outerCircle = new Circle(outerRadius);

        double area = (outerCircle.computeArea() -
innerCircle.computeArea());
        System.out.println("The area is: "+ df.format(area));

        double circInn = innerCircle.computeCircumference();
        double circOut = outerCircle.computeCircumference();

        System.out.println("The circumference of the Inner circle: "+
df.format(circInn));
        System.out.println("The circumference of the Outer circle: "+
df.format(circOut));
    }
}
```

Circle:

```
package Q_03;

public class Circle {
    private double radius;

    public Circle(double radius){
        this.radius = radius;
    }

    public double getRadius() {
        return radius;
    }

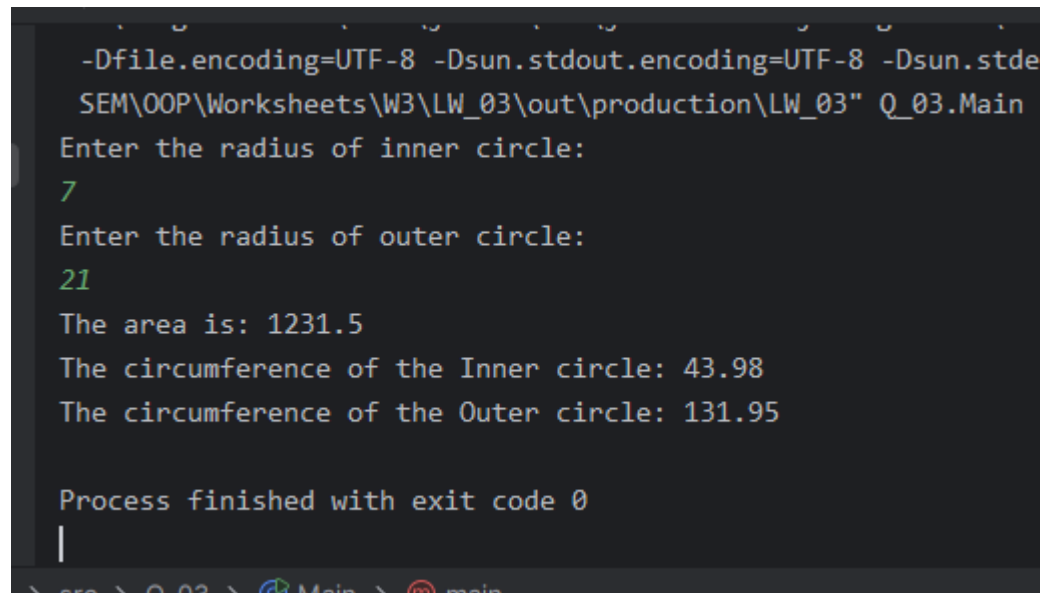
    public void setRadius(double radius) {
        this.radius = radius;
    }

    public double computeArea(){
```

```
        return (Math.PI * radius * radius);
    }

    public double computeCircumference(){
        return (2 * Math.PI * radius);
    }
}
```

Output:



```
-Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stde
SEM\OOP\Worksheets\W3\LW_03\out\production\LW_03" Q_03.Main
Enter the radius of inner circle:
7
Enter the radius of outer circle:
21
The area is: 1231.5
The circumference of the Inner circle: 43.98
The circumference of the Outer circle: 131.95

Process finished with exit code 0
|
```

Q-04:

Code:

Main:

```
package Q_04;

public class Main {
    public static void main(String[] args) {
        Owner kumar = new Owner("Kumar", "+94766354821");
        Owner kavi = new Owner("Kavi", "+94766354822");
        Owner keshan = new Owner("Keshan", "+94766354823");

        BicycleNew bicycle1 = new BicycleNew(kumar);
        BicycleNew bicycle2 = new BicycleNew(kavi);
        BicycleNew bicycle3 = new BicycleNew(keshan);

        System.out.println("Owner name:
"+bicycle1.getBicycleOwner().getOwnerName()+"\nPhone number:
"+bicycle1.getBicycleOwner().getPhoneNo());
        System.out.println("Owner name:
"+bicycle2.getBicycleOwner().getOwnerName()+"\nPhone number:
"+bicycle2.getBicycleOwner().getPhoneNo());
        System.out.println("Owner name:
"+bicycle3.getBicycleOwner().getOwnerName()+"\nPhone number:
"+bicycle3.getBicycleOwner().getPhoneNo());
    }
}
```

Bicycle:

```
package Q_04;

class Bicycle {

    // Data Member
    private String ownerName;
    private String phoneNo;

    //Constructor: Initializes the data member
    public Bicycle() {
        ownerName = "Unknown";
    }

    public Bicycle(String name, String num) {
        ownerName = name;
        phoneNo = num;
    }

    //Returns the name of this bicycle's owner
    public String getOwnerName() {
        return ownerName;
    }

    //Assigns the name of this bicycle's owner
    public void setOwnerName(String name) {
        ownerName = name;
    }
}
```

```

//Returns the phone number of this bicycle's owner
public String getPhoneNo() {
    return phoneNo;
}

//Assigns the name of this bicycle's owner
public void setPhoneNo(String num) {
    phoneNo = num;
}
}

```

BicycleNew:

```

package Q_04;

public class BicycleNew {
    Owner bicycleOwner;

    public BicycleNew (Owner bicycleOwner) {
        this.bicycleOwner = bicycleOwner;
    }

    public Owner getBicycleOwner() {
        return bicycleOwner;
    }

    public void setBicycleOwner(Owner bicycleOwner) {
        this.bicycleOwner = bicycleOwner;
    }
}

```

Owner:

```

package Q_04;

public class Owner {
    // Data Member
    private String ownerName;
    private String phoneNo;

    public Owner(String ownerName, String phoneNo) {
        this.ownerName = ownerName;
        this.phoneNo = phoneNo;
    }

    //Returns the name of this bicycle's owner
    public String getOwnerName() {
        return ownerName;
    }

    //Assigns the name of this bicycle's owner
    public void setOwnerName(String name) {
        ownerName = name;
    }

    //Returns the phone number of this bicycle's owner
    public String getPhoneNo() {

```

```
        return phoneNo;
    }

    //Assigns the name of this bicycle's owner
    public void setPhoneNo(String num) {
        phoneNo = num;
    }
}
```

Output:

```
-Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8
SEM\OOP\Worksheets\W3\LW_03\out\production\LW_03
Owner name: Kumar
Phone number: +94766354821
Owner name: Kavi
Phone number: +94766354822
Owner name: Keshan
Phone number: +94766354823

Process finished with exit code 0
```


Q-05:

Code:

Main:

```
package Q_05;

public class Main {
    public static void main(String[] args) {
        Course oop = new Course();
        oop.setCourseName("Object Oriented Programming");
        oop.setCourseCode("CTEC 22043");

        Lecturer kumar = new Lecturer();
        kumar.setLecturerName("Kumar");
        kumar.setCourseTeaching("Object Oriented Programming");

        Student sanga = new Student();
        sanga.setStudentName("Sanga");
        sanga.setDegreeName("Bachelor of Information and Communication
Technology");
        sanga.setCourseFollowing("Object Oriented Programming");

        oop.setLecturerInCharge(kumar);

        System.out.println("Student Details: ");
        System.out.println("Student Name: "+sanga.getStudentName());
        System.out.println("Degree Name: "+sanga.getDegreeName());
        System.out.println("Course Name: "+sanga.getCourseFollowing()+"\n");

        System.out.println("Course Details: ");
        System.out.println("Course Name: "+oop.getCourseName());
        System.out.println("Course Code: "+oop.getCourseCode());
        System.out.println("Lecturer In Charge:
"+oop.getLecturerInCharge().getLecturerName()+"\n");

        System.out.println("Lecturer Details: ");
        System.out.println("Lecturer Name: "+kumar.getLecturerName());
        System.out.println("Courses Teaching: "+kumar.getCourseTeaching()+"\n");
    }
}
```

Course:

```
package Q_05;

public class Course {
    //Data Members
    private String courseName;
    private String courseCode;
    private Lecturer lecturerInCharge;

    //Getter for courseName
    public String getCourseName() {
        return courseName;
    }
}
```

```

    }

    //Setter for courseName
    public void setCourseName(String courseName) {
        this.courseName = courseName;
    }

    //Getter for courseCode
    public String getCourseCode() {
        return courseCode;
    }

    //Setter For courseCode
    public void setCourseCode(String courseCode) {
        this.courseCode = courseCode;
    }

    //Getter for LecturerInCharge
    public Lecturer getLecturerInCharge() {
        return lecturerInCharge;
    }

    //Setter for LecturerInCharge
    public void setLecturerInCharge(Lecturer lecturerInCharge) {
        this.lecturerInCharge = lecturerInCharge;
    }
}

```

Lecturer:

```

package Q_05;

public class Lecturer {
    //Data Members
    private String lecturerName;
    private String courseTeaching;

    //Getter for lecturerName
    public String getLecturerName() {
        return lecturerName;
    }

    //Setter for lecturerName
    public void setLecturerName(String lecturerName) {
        this.lecturerName = lecturerName;
    }

    //Getter for courseTeaching
    public String getCourseTeaching() {
        return courseTeaching;
    }

    //Setter for courseTeaching
    public void setCourseTeaching(String courseTeaching) {
        this.courseTeaching = courseTeaching;
    }
}

```

Student:

```
package Q_05;

public class Student {
    //Data Members
    private String studentName;
    private String degreeName;
    private String courseFollowing;

    //Getter for studentName
    public String getStudentName() {
        return studentName;
    }

    //Setter for studentName
    public void setStudentName(String studentName) {
        this.studentName = studentName;
    }

    //Getter for degreeName
    public String getDegreeName() {
        return degreeName;
    }

    //Setter for degreeName
    public void setDegreeName(String degreeName) {
        this.degreeName = degreeName;
    }

    //Getter for courseFollowing
    public String getCourseFollowing() {
        return courseFollowing;
    }

    //Setter for courseFollowing
    public void setCourseFollowing(String courseFollowing) {
        this.courseFollowing = courseFollowing;
    }
}
```

Output:

```
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Program Files\Jet
-Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF
SEM\OOP\Worksheets\W3\LW_03\out\production\LW_03" Q_05.Main

Student Details:
Student Name: Sanga
Degree Name: Bachelor of Information and Communication Technology
Course Name: Object Oriented Programming

Course Details:
Course Name: Object Oriented Programming
Course Code: CTEC 22043
Lecturer In Charge: Kumar

Lecturer Details:
Lecturer Name: Kumar
Courses Teaching: Object Oriented Programming

Process finished with exit code 0
|
```