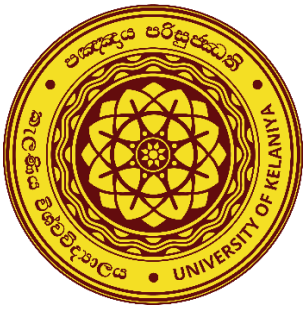
Worksheet 03

CTEC 22043
Object Oriented Programming

Student No: CT/2021/002



Faculty of Computing and Technology
University of Kelaniya
Sri Lanka

Worksheet 03

Q-01+02:

Code:

Main:

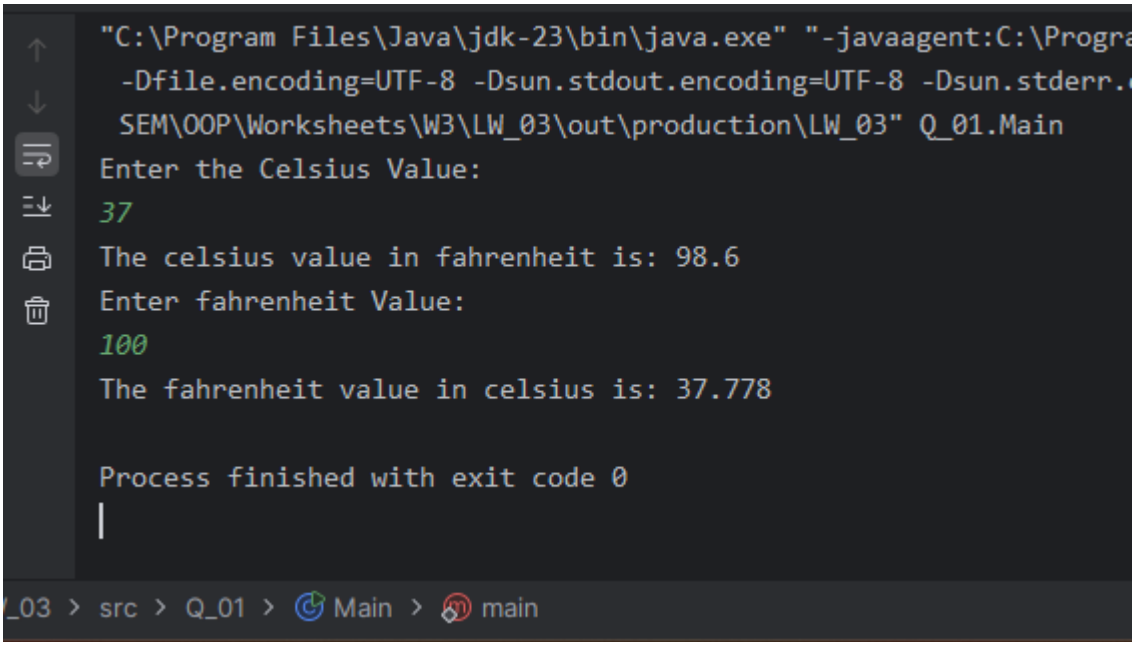
```
package Q_01;

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:



Q-03:

Code:

Main:

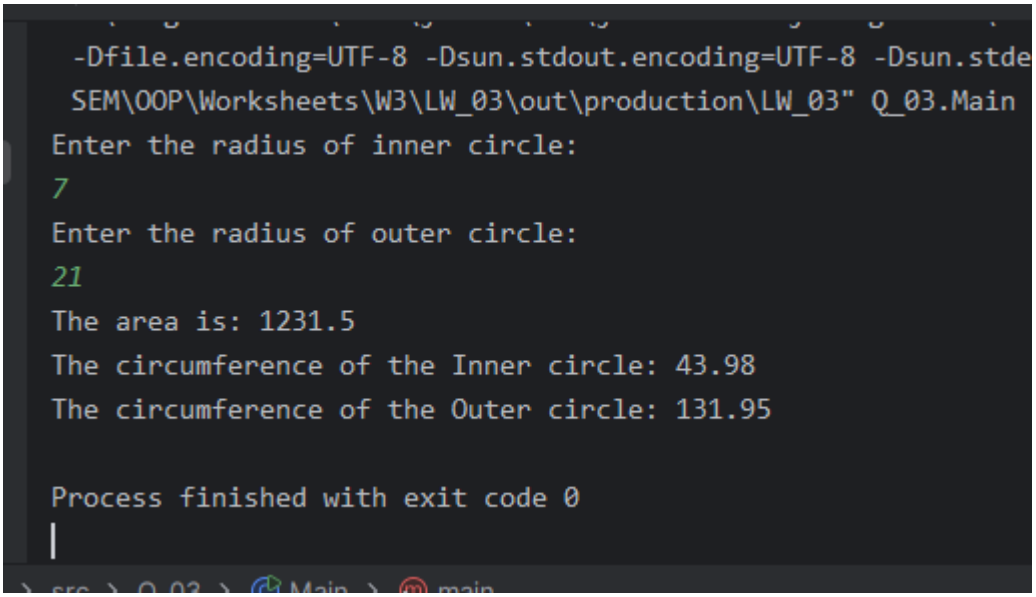
```
package Q_03;

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:



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:

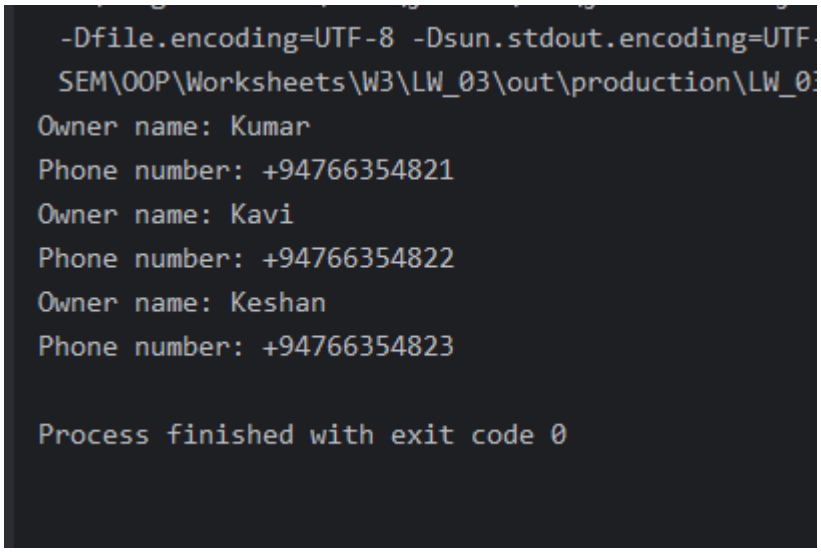
```
package Q_04;

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:



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;
        }
    }
```

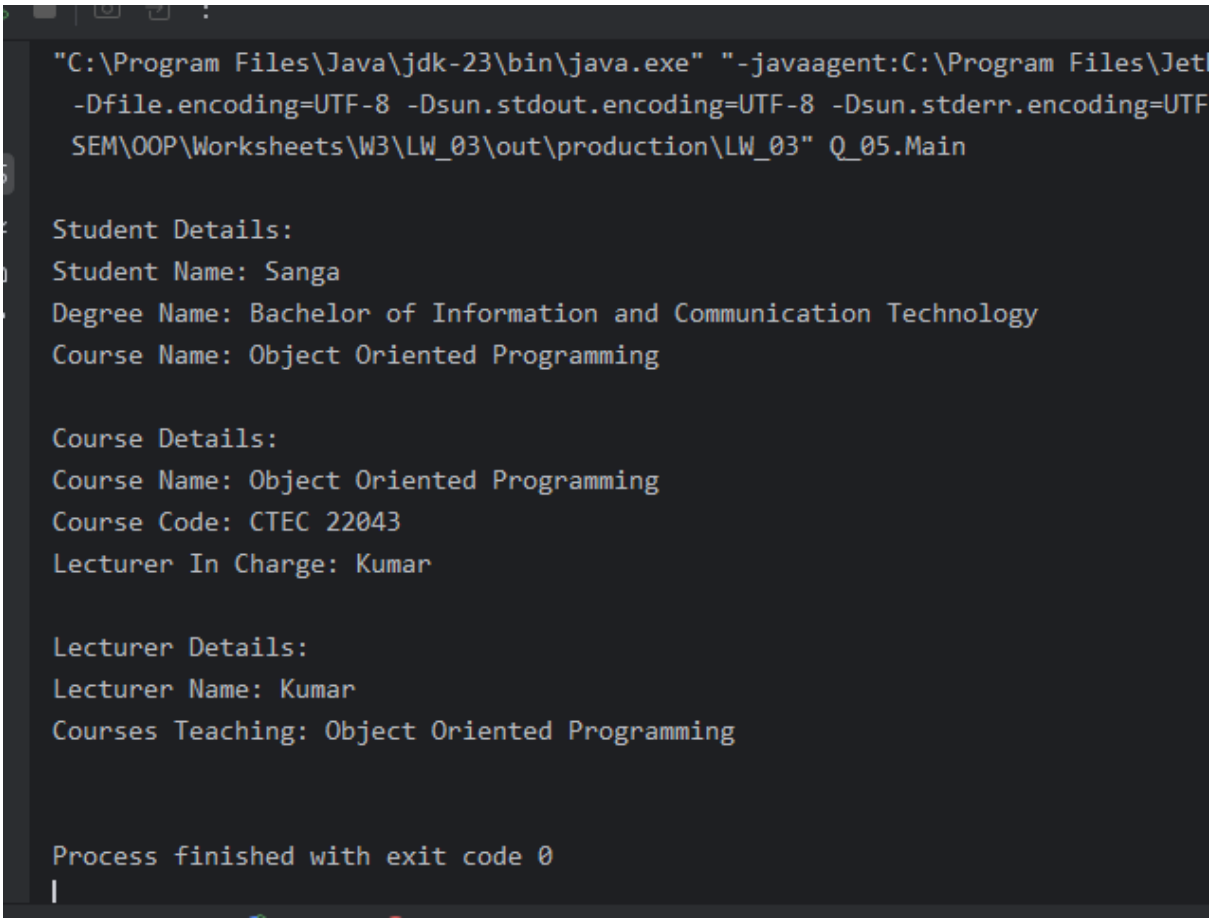
Lecturer:

```
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