**CTEC 22043 - Object Oriented Programming (2022/2023)**

Lab worksheet 3: Defining Classes

CT – 2021 – 036

1.

package Q\_01;  
  
import java.util.Scanner;  
  
class Temperature {  
 private double celsius;  
  
 public Temperature() {  
 this.celsius = 0.0;  
 }  
  
 public Temperature(double celsius) {  
 this.celsius = celsius;  
 }  
  
 public double toCelsius() {  
 return celsius;  
 }  
  
 public double toFahrenheit() {  
 return celsius \* 9 / 5 + 32;  
 }  
  
 public void setCelsius(double celsius) {  
 this.celsius = celsius;  
 }  
  
 public void setFahrenheit(double fahrenheit) {  
 this.celsius = (fahrenheit - 32) \* 5 / 9;  
 }  
}  
  
public class TemperatureConverter {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 System.*out*.print("Enter temperature in Celsius: ");  
 double celsiusInput = scanner.nextDouble();  
  
 Temperature temp = new Temperature(celsiusInput);  
  
 System.*out*.println(celsiusInput + " degrees Celsius is equivalent to " +  
 temp.toFahrenheit() + " degrees Fahrenheit");  
  
 scanner.close();  
 }  
}

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2.

package Q\_02;  
  
import java.util.Scanner;  
  
class Temperature {  
 private double celsius;  
  
 public Temperature() {  
 this.celsius = 0.0;  
 }  
  
 public Temperature(double celsius) {  
 this.celsius = celsius;  
 }  
  
 public double toCelsius() {  
 return celsius;  
 }  
  
 public double toFahrenheit() {  
 return celsius \* 9 / 5 + 32;  
 }  
  
 public void setCelsius(double celsius) {  
 this.celsius = celsius;  
 }  
  
 public void setFahrenheit(double fahrenheit) {  
 this.celsius = (fahrenheit - 32) \* 5 / 9;  
 }  
}  
  
public class FahrenheitToCelsius {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 System.*out*.print("Enter temperature in Fahrenheit: ");  
 double fahrenheitInput = scanner.nextDouble();  
  
 Temperature temp = new Temperature();  
 temp.setFahrenheit(fahrenheitInput);  
  
 System.*out*.println(fahrenheitInput + " degrees Fahrenheit is equivalent to " +  
 temp.toCelsius() + " degrees Celsius");  
  
 scanner.close();  
 }  
}

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3.

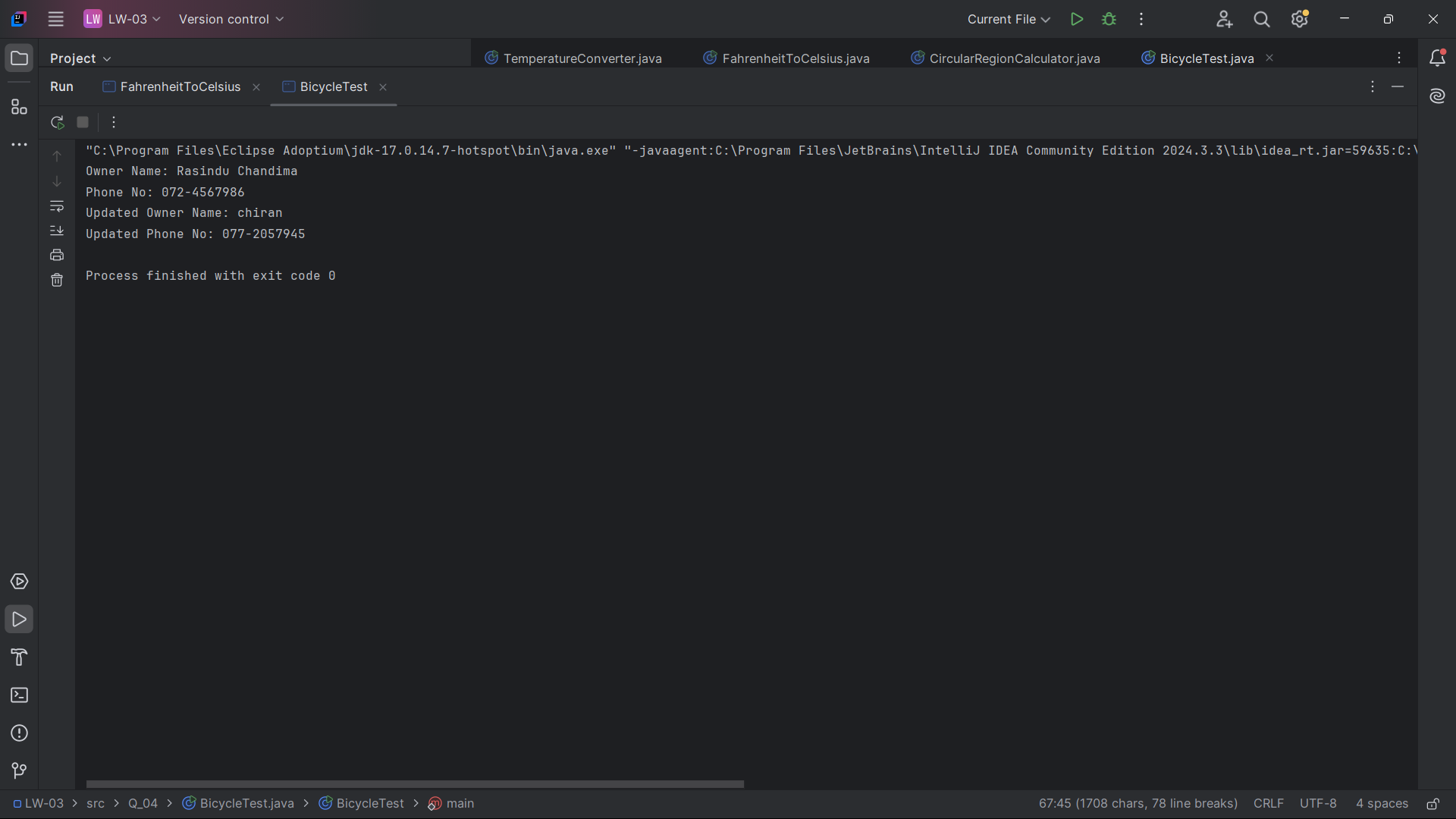
package Q\_03;  
  
import java.util.Scanner;  
  
class Circle {  
 private double radius;  
  
 public Circle() {  
 this.radius = 0.0;  
 }  
  
 public Circle(double radius) {  
 this.radius = radius;  
 }  
  
 public void setRadius(double radius) {  
 this.radius = radius;  
 }  
  
 public double getRadius() {  
 return radius;  
 }  
  
 public double computeArea() {  
 return Math.*PI* \* radius \* radius;  
 }  
  
 public double computeCircumference() {  
 return 2 \* Math.*PI* \* radius;  
 }  
}  
  
public class CircularRegionCalculator {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 System.*out*.print("Enter the radius of the inner circle (ri): ");  
 double innerRadius = scanner.nextDouble();  
  
 System.*out*.print("Enter the radius of the outer circle (ro): ");  
 double outerRadius = scanner.nextDouble();  
  
 Circle innerCircle = new Circle(innerRadius);  
 Circle outerCircle = new Circle(outerRadius);  
  
 double innerArea = innerCircle.computeArea();  
 double outerArea = outerCircle.computeArea();  
 double ringArea = outerArea - innerArea;  
  
 System.*out*.println("\nResults:");  
 System.*out*.printf("Inner circle radius: %.2f%n", innerRadius);  
 System.*out*.printf("Inner circle area: %.2f%n", innerArea);  
 System.*out*.printf("Outer circle radius: %.2f%n", outerRadius);  
 System.*out*.printf("Outer circle area: %.2f%n", outerArea);  
 System.*out*.printf("Area of the circular region (ring): %.2f%n", ringArea);  
 System.*out*.printf("Inner circle circumference: %.2f%n", innerCircle.computeCircumference());  
 System.*out*.printf("Outer circle circumference: %.2f%n", outerCircle.computeCircumference());  
  
 scanner.close();  
 }  
}

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4.

package Q\_04;  
  
class Owner {  
 private String ownerName;  
 private String phoneNo;  
  
 public Owner(String ownerName, String phoneNo) {  
 this.ownerName = ownerName;  
 this.phoneNo = phoneNo;  
 }  
  
 public String getOwnerName() {  
 return ownerName;  
 }  
  
 public void setOwnerName(String ownerName) {  
 this.ownerName = ownerName;  
 }  
  
 public String getPhoneNo() {  
 return phoneNo;  
 }  
  
 public void setPhoneNo(String phoneNo) {  
 this.phoneNo = phoneNo;  
 }  
}  
  
class Bicycle {  
 private Owner owner;  
  
 public Bicycle() {  
 this.owner = new Owner("Unknown", "0000000000");  
 }  
  
 public Bicycle(String name, String num) {  
 this.owner = new Owner(name, num);  
 }  
  
 public Owner getOwner() {  
 return owner;  
 }  
  
 public void setOwner(Owner owner) {  
 this.owner = owner;  
 }  
  
 public String getOwnerName() {  
 return owner.getOwnerName();  
 }  
  
 public String getPhoneNo() {  
 return owner.getPhoneNo();  
 }  
  
 public void setOwnerName(String name) {  
 owner.setOwnerName(name);  
 }  
  
 public void setPhoneNo(String num) {  
 owner.setPhoneNo(num);  
 }  
}  
  
public class BicycleTest {  
 public static void main(String[] args) {  
 Bicycle bike = new Bicycle("Rasindu Chandima", "072-4567986");  
  
 System.*out*.println("Owner Name: " + bike.getOwnerName());  
 System.*out*.println("Phone No: " + bike.getPhoneNo());  
  
 bike.setOwnerName("chiran");  
 bike.setPhoneNo("077-2057945");  
  
 System.*out*.println("Updated Owner Name: " + bike.getOwnerName());  
 System.*out*.println("Updated Phone No: " + bike.getPhoneNo());  
 }  
}



5.

package Q\_05;  
  
class Course {  
 private String courseName;  
 private String courseCode;  
 private Lecturer lecturer;  
  
 public String getCourseName() {  
 return courseName;  
 }  
  
 public void setCourseName(String courseName) {  
 this.courseName = courseName;  
 }  
  
 public String getCourseCode() {  
 return courseCode;  
 }  
  
 public void setCourseCode(String courseCode) {  
 this.courseCode = courseCode;  
 }  
  
 public Lecturer getLecturer() {  
 return lecturer;  
 }  
  
 public void setLecturer(Lecturer lecturer) {  
 this.lecturer = lecturer;  
 }  
}  
  
class Lecturer {  
 private String lecturerName;  
 private String courseTeaching;  
  
 public String getLecturerName() {  
 return lecturerName;  
 }  
  
 public void setLecturerName(String lecturerName) {  
 this.lecturerName = lecturerName;  
 }  
  
 public String getCourseTeaching() {  
 return courseTeaching;  
 }  
  
 public void setCourseTeaching(String courseTeaching) {  
 this.courseTeaching = courseTeaching;  
 }  
}  
  
class Student {  
 private String studentName;  
 private String degreeName;  
 private String courseFollowing;  
  
 public String getStudentName() {  
 return studentName;  
 }  
  
 public void setStudentName(String studentName) {  
 this.studentName = studentName;  
 }  
  
 public String getDegreeName() {  
 return degreeName;  
 }  
  
 public void setDegreeName(String degreeName) {  
 this.degreeName = degreeName;  
 }  
  
 public String getCourseFollowing() {  
 return courseFollowing;  
 }  
  
 public void setCourseFollowing(String courseFollowing) {  
 this.courseFollowing = courseFollowing;  
 }  
}  
  
public class Registration {  
 public static void main(String[] args) {  
 Lecturer lecturer = new Lecturer();  
 lecturer.setLecturerName("Dr. kesavan");  
 lecturer.setCourseTeaching("Programming");  
  
 Course course = new Course();  
 course.setCourseName("Object-Oriented Programming");  
 course.setCourseCode("CTEC 22043 ");  
 course.setLecturer(lecturer);  
  
 Student student = new Student();  
 student.setStudentName("Rasindu Chandima");  
 student.setDegreeName("Bachelor of Information Communication Technology");  
 student.setCourseFollowing(course.getCourseName());  
  
 System.*out*.println("Student Name: " + student.getStudentName());  
 System.*out*.println("Degree: " + student.getDegreeName());  
 System.*out*.println("Course Following: " + student.getCourseFollowing());  
 System.*out*.println("Course Name: " + course.getCourseName());  
 System.*out*.println("Course Code: " + course.getCourseCode());  
 System.*out*.println("Lecturer: " + course.getLecturer().getLecturerName());  
 System.*out*.println("Course Taught By: " + course.getLecturer().getCourseTeaching());  
 }  
}

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