**Q1:**

package Q\_01;  
import java.util.Scanner;  
  
// Define the Temperature class  
class Temperature {  
 private double celsius;  
  
 // No-Arg Constructor  
 public Temperature() {  
 this.celsius = 0.0;  
 }  
  
 // Parameterized Constructor  
 public Temperature(double celsius) {  
 this.celsius = celsius;  
 }  
  
 // Method to convert Celsius to Fahrenheit  
 public double toFahrenheit() {  
 return (celsius \* 9 / 5) + 32;  
 }  
  
 // Method to get temperature in Celsius  
 public double toCelsius() {  
 return celsius;  
 }  
  
 // Method to set temperature in Celsius  
 public void setCelsius(double celsius) {  
 this.celsius = celsius;  
 }  
  
 // Method to set temperature in Fahrenheit  
 public void setFahrenheit(double fahrenheit) {  
 this.celsius = (fahrenheit - 32) \* 5 / 9;  
 }  
}

// Main class to test the Temperature class  
public class Q\_01 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 // Accept input from user  
 System.*out*.print("Enter temperature in Celsius: ");  
 double celsiusInput = scanner.nextDouble();  
  
 // Create an instance of Temperature class  
 Temperature temp = new Temperature(celsiusInput);  
  
 // Convert and display the temperature in Fahrenheit  
 System.*out*.println("Equivalent temperature in Fahrenheit: " + temp.toFahrenheit());  
  
 scanner.close();  
 }  
}

A screen shot of a computer

AI-generated content may be incorrect.**Output:**

**Q2:**

package Q\_02;  
import java.util.Scanner;  
  
// Define the Temperature class  
class Temperature {  
 private double celsius;  
  
 // No-Arg Constructor  
 public Temperature() {  
 this.celsius = 0.0;  
 }  
  
 // Parameterized Constructor  
 public Temperature(double celsius) {  
 this.celsius = celsius;  
 }  
  
 // Method to convert Celsius to Fahrenheit  
 public double toFahrenheit() {  
 return (celsius \* 9 / 5) + 32;  
 }  
  
 // Method to get temperature in Celsius  
 public double toCelsius() {  
 return celsius;  
 }  
  
 // Method to set temperature in Celsius  
 public void setCelsius(double celsius) {  
 this.celsius = celsius;  
 }  
  
 // Method to set temperature in Fahrenheit  
 public void setFahrenheit(double fahrenheit) {  
 this.celsius = (fahrenheit - 32) \* 5 / 9;  
 }  
}  
  
// Main class to test the Temperature class  
public class Q\_02 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 // Accept input from user  
 System.*out*.print("Enter temperature in Fahrenheit: ");  
 double fahrenheitInput = scanner.nextDouble();  
  
 // Create an instance of Temperature class  
 Temperature temp = new Temperature();  
 temp.setFahrenheit(fahrenheitInput);  
  
 // Convert and display the temperature in Celsius  
 System.*out*.println("Equivalent temperature in Celsius: " + temp.toCelsius());  
  
 scanner.close();  
 }  
}

**Output:**

**A screen shot of a computer

AI-generated content may be incorrect.**

**Q3:**

package Q\_03;  
import java.util.Scanner;  
  
class Circle {  
 private double radius;  
  
 // Constructor  
 public Circle(double radius) {  
 this.radius = radius;  
 }  
  
 // Setter method for radius  
 public void setRadius(double radius) {  
 this.radius = radius;  
 }  
  
 // Getter method for radius  
 public double getRadius() {  
 return radius;  
 }  
  
 // Method to compute the area of the circle  
 public double computeArea() {  
 return Math.*PI* \* radius \* radius;  
 }  
  
 // Method to compute the circumference of the circle  
 public double computeCircumference() {  
 return 2 \* Math.*PI* \* radius;  
 }  
}  
  
public class Q\_03 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 // Get inner and outer radii from the user  
 System.*out*.print("Enter the radius of the inner circle (ri): ");  
 double ri = scanner.nextDouble();  
  
 System.*out*.print("Enter the radius of the outer circle (ro): ");  
 double ro = scanner.nextDouble();  
  
 // Create Circle objects for inner and outer circles  
 Circle innerCircle = new Circle(ri);  
 Circle outerCircle = new Circle(ro);  
  
 // Compute the area of the shaded region  
 double shadedArea = outerCircle.computeArea() - innerCircle.computeArea();  
  
 // Display the results  
 System.*out*.println("\nResults:");  
 System.*out*.printf("Inner Circle Area: %.2f%n", innerCircle.computeArea());  
 System.*out*.printf("Outer Circle Area: %.2f%n", outerCircle.computeArea());  
 System.*out*.printf("Shaded Region Area: %.2f%n", shadedArea);  
  
 scanner.close();  
 }  
}

**Output:**

**A computer screen shot of a code

AI-generated content may be incorrect.**

**Q4:**

package Q\_04;  
// Owner class to store owner details  
class Owner {  
 private String ownerName;  
 private String phoneNo;  
  
 // Default constructor  
 public Owner() {  
 this.ownerName = "Unknown";  
 this.phoneNo = "Not Available";  
 }  
  
 // Parameterized constructor  
 public Owner(String name, String num) {  
 this.ownerName = name;  
 this.phoneNo = num;  
 }  
  
 // Getter and setter methods  
 public String getOwnerName() {  
 return ownerName;  
 }  
  
 public void setOwnerName(String name) {  
 this.ownerName = name;  
 }  
  
 public String getPhoneNo() {  
 return phoneNo;  
 }  
  
 public void setPhoneNo(String num) {  
 this.phoneNo = num;  
 }  
}  
  
// Modified Bicycle class  
class Bicycle {  
 // Data Member: Instead of separate fields, we use an Owner object  
 private Owner owner;  
  
 // Default Constructor  
 public Bicycle() {  
 this.owner = new Owner(); // Assigns default owner  
 }  
  
 // Parameterized Constructor  
 public Bicycle(String name, String num) {  
 this.owner = new Owner(name, num);  
 }  
  
 // Getters and Setters for owner details  
 public String getOwnerName() {  
 return owner.getOwnerName();  
 }  
  
 public void setOwnerName(String name) {  
 owner.setOwnerName(name);  
 }  
  
 public String getPhoneNo() {  
 return owner.getPhoneNo();  
 }  
  
 public void setPhoneNo(String num) {  
 owner.setPhoneNo(num);  
 }  
  
 // Method to get Owner object  
 public Owner getOwner() {  
 return owner;  
 }  
  
 // Method to set Owner object  
 public void setOwner(Owner owner) {  
 this.owner = owner;  
 }  
}  
  
public class Q\_04 {  
 public static void main(String[] args) {  
// Creating a Bicycle with default owner  
 Bicycle bike1 = new Bicycle();  
 System.*out*.println("Bike 1 Owner: " + bike1.getOwnerName());  
 System.*out*.println("Bike 1 Phone: " + bike1.getPhoneNo());  
  
 // Creating a Bicycle with a specific owner  
 Bicycle bike2 = new Bicycle("Alice", "123-456-7890");  
 System.*out*.println("\nBike 2 Owner: " + bike2.getOwnerName());  
 System.*out*.println("Bike 2 Phone: " + bike2.getPhoneNo());  
  
 // Changing the owner details using the setter methods  
 bike2.setOwnerName("Bob");  
 bike2.setPhoneNo("987-654-3210");  
 System.*out*.println("\nAfter Updating Bike 2 Owner:");  
 System.*out*.println("Bike 2 Owner: " + bike2.getOwnerName());  
 System.*out*.println("Bike 2 Phone: " + bike2.getPhoneNo());  
 }  
}

**Output:**

A computer screen with white text

AI-generated content may be incorrect.

**Q5:**

package Q\_05;  
// Lecturer class  
class Lecturer {  
 private String lecturerName;  
 private String courseTeaching;  
  
 // Constructor  
 public Lecturer(String lecturerName, String courseTeaching) {  
 this.lecturerName = lecturerName;  
 this.courseTeaching = courseTeaching;  
 }  
  
 // Getters and Setters  
 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;  
 }  
}  
  
// Course class  
class Course {  
 private String courseName;  
 private String courseCode;  
 private Lecturer lecturer; // Lecturer Object  
  
 // Constructor  
 public Course(String courseName, String courseCode, Lecturer lecturer) {  
 this.courseName = courseName;  
 this.courseCode = courseCode;  
 this.lecturer = lecturer;  
 }  
  
 // Getters and Setters  
 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;  
 }  
}  
  
// Student class  
class Student {  
 private String studentName;  
 private String degreeName;  
 private String courseFollowing;  
  
 // Constructor  
 public Student(String studentName, String degreeName, String courseFollowing) {  
 this.studentName = studentName;  
 this.degreeName = degreeName;  
 this.courseFollowing = courseFollowing;  
 }  
  
 // Getters and Setters  
 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;  
 }  
}  
  
// Main class  
public class Q\_05 {  
 public static void main(String[] args) {  
// Creating a Lecturer object  
 Lecturer lecturer = new Lecturer("Dr. John Smith", "Object-Oriented Programming");  
  
 // Creating a Course object and assigning the lecturer  
 Course course = new Course("Object-Oriented Programming", "CS202", lecturer);  
  
 // Creating a Student object  
 Student student = new Student("Alice Johnson", "Bachelor of Information Technology", course.getCourseName());  
  
 // Displaying Information  
 System.*out*.println("Course Registration System");  
 System.*out*.println("--------------------------");  
 System.*out*.println("Course Name: " + course.getCourseName());  
 System.*out*.println("Course Code: " + course.getCourseCode());  
 System.*out*.println("Lecturer Name: " + course.getLecturer().getLecturerName());  
 System.*out*.println("Course Taught by Lecturer: " + course.getLecturer().getCourseTeaching());  
  
 System.*out*.println("\nStudent Information:");  
 System.*out*.println("Student Name: " + student.getStudentName());  
 System.*out*.println("Degree Program: " + student.getDegreeName());  
 System.*out*.println("Course Following: " + student.getCourseFollowing());  
 }  
}

**A screen shot of a computer

AI-generated content may be incorrect.Output:**