CLASS AND OBJECT

Exercise:

```
package SDP;
class Student {
	 int id;
	public String name;
	int marks;
	char residential;
	int year;
	void setStudentID(int ID) {
		id = ID;
	}
	public int getStudentID() {
		return id;
	}
	public void setStudentName(String Name) {
		name = Name;
	}
	public String getStudentName() {
		return name;
	}
	public void setStudentMarks(int Marks) {
		marks = Marks;
	}
	public int getStudentMarks() {
		return marks;
	}
	public void setStudentResidential(char Residential) {
		residential = Residential;
	}
	public char getStudentResidential() {
		return residential;
	}
	public void setStudentYear(int Year) {
		year = Year;
	}
	public int getStudentYear() {
		return year;
	}
}
public class StudentTester{

  public static void main(String[] args){
		Student s1 = new Student();
		s1.setStudentID(1001);
		s1.setStudentMarks(80);
		s1.setStudentName("Jacob");
		s1.setStudentResidential('H');
```

```
            s1.setStudentYear(3);
            System.out.println("Student Id: "+s1.getStudentID());
            System.out.println("Student Marks: "+s1.getStudentMarks());
            System.out.println("Student Name: "+s1.getStudentName());
            System.out.println("Residential Status:
"+s1.getStudentResidential());
            System.out.println("Year of Engineering: "+s1.getStudentYear());
        }
}
```

Output:

```
Student Id: 1001
Student Marks: 80
Student Name: Jacob
Residential Status: H
Year of Engineering: 3
```

DATA TYPES

Exercise 1:

```
public class Rectangle {
    int length;
    int breadth;
    // Setter methods
    public void setLength(int len) {
        this.length = len;
    }
    public void setBreadth(int bread) {
        this.breadth = bread;
    }
    public int getLength() {
        return length;
    }
    public int getBreadth() {
      return breadth;
    }
    // Additional methods for the Rectangle class can be added as needed
    public static void main(String[] args) {
        // Create an instance of the Rectangle class
        Rectangle myRectangle = new Rectangle();
        // Set the length and breadth using the setter methods
        myRectangle.setLength(10);
        myRectangle.setBreadth(5);
        // Display the rectangle's dimensions
        System.out.println("Rectangle Dimensions:");
        System.out.println("Length: " + myRectangle.getLength());
        System.out.println("Breadth: " + myRectangle.getBreadth());
```

```
    }
```

Output:

```
Rectangle Dimensions:
Length: 10
Breadth: 5
```

Exercise 2:

```
public class Rectangle {
    private int length;
    private int breadth;
    // Constructors
    public Rectangle(int length, int breadth) {
        this.length = length;
        this.breadth = breadth;
    }
    // Getter and Setter methods (same as before)
    // Method to calculate perimeter
    public void calculatePerimeter() {
        int perimeter = 2 * (length + breadth);
        System.out.println("Perimeter of the rectangle: " + perimeter);
    }
//public class PerimeterCalculator {
    public static void main(String[] args) {
        // Create an instance of the Rectangle class
        Rectangle myRectangle = new Rectangle(5, 8);
        // Invoke the calculatePerimeter method
        myRectangle.calculatePerimeter();
    }
}
```

Output:

```
Perimeter of the rectangle: 26
```

OPERATORS

Exercise:

TYPE CASTING

Exercise:

```
class RetailStore {
    public static void main(String[] args) {
        // Input values
        int billId = 1001;
        int customerId = 101;
        int discount = 5; // Percentage
        double billAmount = 150.0;
```

```
        // Calculate discounted bill amount
        double discountedBillAmount =
calculateDiscountedBillAmount(billAmount, discount);
        // Print the results
        System.out.println("Bill ID: " + billId);
        System.out.println("Customer ID: " + customerId);
        System.out.println("Discounted Bill Amount: $" +
formatDecimal(discountedBillAmount));
    }
    // Method to calculate discounted bill amount
    private static double calculateDiscountedBillAmount(double billAmount, int
discount) {
        return billAmount - (billAmount * (discount / 100.0));
    }
    // Method to format decimal values for display
    private static String formatDecimal(double value) {
        return String.format("%.2f", value);
    }
}
```

Output:

```
Bill ID: 1001
Customer ID: 101
Discounted Bill Amount: $142.50
```