**LAPORAN PRAKTIKUM**

**Inheritance, Abstract Class and Interface**



**Disusun Oleh:**

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**TASK 1: The Circle and Cylinder Classes**

**Task 1.1: Modify class Circle**

Kode Circle.java (Modified):

/\*\*

 \* The Circle class models a circle with a radius and color.

 \*/

public class Circle { // Save as "Circle.java"

    // private instance variable, not accessible from outside this class

    private double radius;

    private String color;

    // Constructors (overloaded)

    /\*\*

     \* Constructs a Circle instance with default value for radius and color

     \*/

    public Circle() { // 1st (default) constructor

        radius = 1.0;

        color = "red";

    }

    /\*\*

     \* Constructs a Circle instance with the given radius and default color

     \*/

    public Circle(double r) { // 2nd constructor

        radius = r;

        color = "red";

    }

    // constructor with given radius and color

    public Circle(double radius, String color) { // 3rd constructor

        this.radius = radius;

        this.color = color;

    }

    // retunr color

    public String getColor() {

        return color;

    }

    /\*\*

     \* Returns the radius

     \*/

    public double getRadius() {

        return radius;

    }

    /\*\*

     \* Returns the area of this Circle instance

     \*/

    public double getArea() {

        return radius \* radius \* Math.PI;

    }

    //setter

    public void setColor(String color) {

        this.color = color;

    }

    public void setRadius(double radius) {

        this.radius = radius;

    }

    /\*\*

     \* Return a self-descriptive string of this instance in the form of

     \* Circle[radius=?,color=?]

     \*/

    @Override

    public String toString() {

        return "Circle[radius=" + radius + " color=" + color + "]";

    }

}

Kode Cylinder.java (Modified):

public class Cylinder extends Circle { // Save as "Cylinder.java"

    private double height; // private variable

    // Constructor with default color, radius and height

    public Cylinder()

    {

        super(); // call superclass no-arg constructor Circle()

        height = 1.0;

    }

    // Constructor with default radius, color but given height

    public Cylinder(double height) {

        super(); // call superclass no-arg constructor Circle()

        this.height = height;

    }

    // Constructor with default color, but given radius, height

    public Cylinder(double radius, double height) {

        super(radius); // call superclass constructor Circle(r)

        this.height = height;

    }

    // A public method for retrieving the height

    public double getHeight() {

        return height;

    }

    // Override the getArea() method of Circle

    // to return the surface area of this cylinder

    @Override

    public double getArea() {

        return 2 \* Math.PI \* getRadius() \* (getRadius() + height);

    }

    // A public method for computing the volume of cylinder

    // use superclass method getArea() to get the base area

    public double getVolume() {

        return getArea() \* height;

    }

}