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TP PBO MOD 09

CLASS SHAPE

```java
package valdez.tpmod9;

/**
 *
 * @author valde
 */
public abstract class Shape {
    public Shape(){}
    public abstract double getArea();
}
```

CLASS RECTANGLE

```java
public class Rectangle extends Shape {
    protected double length;
    protected double width;

    public Rectangle(double length, double width){
        this.length = length;
        this.width = width;
    }
    @Override
    public double getArea(){
        return length*width;
    }
}
```

CLASS CIRCLE

```java
public class Circle extends Shape {
    protected double radius;
    public Circle(double radius){
        this.radius = radius;
    }
    @Override
    public double getArea(){
        return Math.PI*radius*radius;
    }

}
```

INTERFACE HASVOLUME

```java
public interface HasVolume {
    public double getVolume();
}
```

CLASS TUBE

```java
public class Tube extends Circle implements HasVolume{
    private double height;

    public Tube(double radius, double height){
        super(radius);
        this.height = height;
    }

    @Override
    public double getArea(){
        return 2 * Math.PI * radius * (radius + height);
    }
    @Override
    public double getVolume(){
        return Math.PI * radius * radius * height;
    }
}
```

CLASS SQUARE

```java
*/
public class Square extends Rectangle{
    public Square(double side){
        super(side,side);
    }
}
```

CLASS CUBE

```java
*/
public class Cube extends Square implements HasVolume {
    public Cube(double side){
        super(side);
    }
    @Override
    public double getArea(){
        return 6*super.length*super.length;
    }
    @Override
    public double getVolume(){
        return super.length*super.length*super.length;
    }
}
```

MAIN

```java
public class TPMOD9 {

    public static void displayShapeInfo(Shape shape){
        System.out.println("Luas: " + shape.getArea());
        if (shape instanceof HasVolume){
            HasVolume volumeShape = (HasVolume) shape;
            System.out.println("Volume:" + volumeShape.getVolume());
        }
        System.out.println("--------------------------------");
    }
    public static void main(String[] args) {
        ArrayList<Shape> shapes = new ArrayList<>();

        shapes.add(new Rectangle(2.25, 4.0));
        shapes.add(new Rectangle(4.0,4.0));
        shapes.add(new Circle(10.0));
        shapes.add(new Cube(5.0));
        shapes.add(new Tube(10.0,5.0));

        for (Shape shape : shapes){
            displayShapeInfo(shape);
        }

    }
}
```

OUTPUT

```
--- exec:3.1.0:exec (default-cli) @ TPMOD9 ---
Luas: 9.0
--------------------------------
Luas: 16.0
--------------------------------
Luas: 314.1592653589793
--------------------------------
Luas: 150.0
Volume:125.0
--------------------------------
Luas: 942.4777960769379
Volume:1570.7963267948967
--------------------------------
-----------------------------------------------------------
BUILD SUCCESS
```