

Tugas 6 : Abstract Class Constructor
Pemrograman Berorientasi Objek



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Kelas : 2B JTK

PROGRAM STUDI DIII TEKNIK INFORMATIKA
POLITEKNIK NEGERI BANDUNG

Hasil Akhir Program

Exercise 1 :

- Main Program (TestCylinder.java)

```

8 public class TestCylinder {
9
10     public static void main(String[] args) {
11
12         Cylinder c1 = new Cylinder();
13         System.out.println("Cylinder:"
14         + " radius =" + c1.getRadius()
15         + " height =" + c1.getHeight()
16         + " base area =" + c1.getArea()
17         + " volume =" + c1.getVolume()
18         + c1.toString());
19
20         Cylinder c2 = new Cylinder(height:10.0);
21         System.out.println("Cylinder:"
22         + " radius=" + c2.getRadius()
23         + " height=" + c2.getHeight()
24         + " base area=" + c2.getArea()
25         + " volume=" + c2.getVolume()
26         + c2.toString());
27
28         Cylinder c3 = new Cylinder(radius:2.0, height:10.0);
29         System.out.println("Cylinder:"
30         + " radius=" + c3.getRadius()
31         + " height=" + c3.getHeight()
32         + " base area=" + c3.getArea()
33         + " volume=" + c3.getVolume()
34         + c3.toString());
35     }
36 }

```

- Circle.java

```

5 package com.mycompany.testcylinder;
6 //Agista Diva Briliani 221511038
7
8 public class Circle {
9     private double radius;
10    private String color;
11
12    public Circle() {
13        radius = 1.0;
14        color = "red";
15    }
16
17    public Circle(double r) {
18        radius = r;
19        color = "red";
20    }
21
22    public Circle(double r, String color) {
23        radius = r;
24        color = color;
25    }
26
27    public String getColor() {
28        return color;
29    }
30
31    public void setColor(String color) {
32        this.color = color;
33    }
34
35    public double getRadius() {
36        return radius;
37    }
38
39    public double getArea() {
40        return radius*radius*Math.PI;
41    }
42
43    public String toString() {
44        return "Circle[radius=" + radius + " color=" + color + "]\n";
45    }
46 }

```

Keterangan

Output :

```

--- maven-compiler-plugin:3.1:compile (default-compile) @ TestCylinder ---
Changes detected - recompiling the module!
Compiling 3 source files to C:\Users\agist\OneDrive\Documents\NetBeansProjects\TestCylinder\target\classes
--- exec-maven-plugin:3.0.0:exec (default-cli) @ TestCylinder ---
Cylinder: radius =1.0 height =1.0 base area =12.566370614359172 volume =12.566370614359172Cylinder: subclass of Circle[radius=1.0 color=red] Height= 1.0
Cylinder: radius=1.0 height=10.0 base area=69.11503837897544Cylinder: subclass of Circle[radius=1.0 color=red] Height= 10.0
Cylinder: radius=2.0 height=10.0 base area=150.79644737231007 volume=1507.9644737231006Cylinder: subclass of Circle[radius=2.0 color=red] Height= 10.0
BUILD SUCCESS
-----
Total time: 3.597 s
Finished at: 2023-10-07T22:15:12+07:00

```

- Cylinder.java

```

Source History
5 package com.mycompany.testcylinder;
6 //Agista Diva Brilian 221511038
7 public class Cylinder extends Circle {
8     private double height;
9
10    public Cylinder() {
11        super();
12        height = 1.0;
13    }
14
15    public Cylinder(double height) {
16        super();
17        this.height = height;
18    }
19
20    public Cylinder(double radius, double height) {
21        super(radius);
22        this.height = height;
23    }
24
25    public double getHeight() {
26        return height;
27    }
28
29    public double getVolume() {
30        return getArea() * height;
31    }
32
33    public double getArea() {
34        return (2 * Math.PI * getRadius() * getHeight()) + (2 * super.getArea());
35    }
36
37    @Override
38    public String toString() {
39        return "Cylinder: subclass of " + super.toString() + " Height= " + height;
40    }
41 }

```

Task 1.1 Modify Circle Class :

```

21 public Circle(double r, String color) {
22     radius = r;
23     color = "red";
24 }
25
26 public String getColor() {
27     return color;
28 }
29
30 public void setColor(String color) {
31     this.color = color;
32 }

```

Task 1.2 Overriding GetArea

```

34 public double getArea() {
35     return (2 * Math.PI * getRadius() * getHeight()) + (2 * super.getArea());
36 }

```

Task 1.3 Provide toString() method

```

39 public String toString() {
40     return "Cylinder: subclass of " + super.toString() + " Height= " + height;
41 }
42 }

```

Exercise 2 :

Main Program (TestShape.java)

```

6 package com.mycompany.testshape;
7 //Agista Diva Brilian 221511038
8 public class TestShape {
9
10    public static void main(String[] args) {
11
12        Shape shape1 = new Shape();
13        Shape shape2 = new Shape(color:"Red", filled:true);
14
15        System.out.println(x:shape1.toString());
16        System.out.println(x:shape2.toString());
17
18        Circle circle1 = new Circle();
19        System.out.println(x:circle1.toString());
20
21        Rectangle rect1 = new Rectangle();
22        System.out.println(x:rect1.toString());
23
24        Square square1 = new Square(side:5);
25        System.out.println(x:square1.toString());
26    }
27 }
28
29

```

Circle.java

```

Source History
5 package com.mycompany.testshape;
6 //Agista Diva Brilian 221511038
7 public class Circle extends Shape {
8     private double radius;
9
10    public Circle() {
11
12        super();
13        this.radius = 1.0;
14    }
15
16    public Circle(double r) {
17
18        super();
19        this.radius = r;
20    }
21
22    public Circle(double r, String color, boolean filled) {
23
24        super(color, filled);
25        this.radius = r;
26    }

```

Output :

```

-----< com.mycompany.TestShape >-----
Building TestShape 1.0-SNAPSHOT
-----[ jar ]-----
--- exec-maven-plugin:3.0.0:exec (default-cli) @ TestShape ---
A shape with color of redand Filled
A shape with color of Redand Filled
A Circle with radius = 1.0 witch is subclass of class
A shape with color of redand Filled
A shape with side = 0.0 and which is a subclass of A shape with color of redand Filled

BUILD SUCCESS

Total time: 1.328 s
Finished at: 2023-10-07T22:18:36+07:00

```

Rectangle.java

```
Source History
5 package com.mycompany.testshape;
6 //Agista Diva Brillianti 221511038
7
8 public class Rectangle extends Shape {
9     private double width;
10    private double length;
11
12    public Rectangle() {
13        super();
14        this.width = 1.0;
15        this.length = 1.0;
16    }
17
18    public Rectangle(double width, double length) {
19        super();
20        this.width = width;
21        this.length = length;
22    }
23
24    public Rectangle(double width, double length, String color, boolean filled) {
25        super(color, filled);
26        this.width = width;
27        this.length = length;
28    }
29
30    public double getWidth() {
31        return width;
32    }
33
34
35
36
37    public void setWidth(double width) {
38        this.width = width;
39    }
40
41    public double getLength() {
42        return length;
43    }
44
45    public void setLength(double length) {
46        this.length = length;
47    }
48
49    public double getArea() {
50        return getLength() * getWidth();
51    }
52
53    public double getPerimeter() {
54        return width;
55    }
56 }
```

Shape.java

```
Source History
8 public class Shape {
9     private String color;
10    private boolean filled;
11
12    public Shape() {
13        this.setColor("red");
14        this.setFilled(filled:true);
15    }
16
17    public Shape(String color, boolean filled) {
18        this.setColor(color);
19        this.setFilled(filled);
20    }
21
22
23    public String getColor() {
24        return color;
25    }
26
27    public void setColor(String color) {
28        this.color = color;
29    }
30
31    public boolean isFilled() {
32        return filled;
33    }
34
35    public void setFilled(boolean filled) {
36        this.filled = filled;
37    }
38
39    public String toString() {
40        return "A shape with color of " + color + "and " + (filled ? "Filled" : "Not Filled");
41    }
42
43 }
```

Terdiri dari :

- Class Shape
- Class Circle Extends Shape
- Class Rectangle Extends Shape
- Class Square Extends Rectangle

Square.java

```
Source History
5 package com.mycompany.testshape;
6 //Agista Diva Briliani 221511038
7 public class Square extends Rectangle {
8     private double side;
9
10    public Square() {
11        super();
12    }
13
14    public Square(double side) {
15        super(width: side, length: side);
16    }
17
18    public Square(double side, String color, boolean filled) {
19        super(width: side, length: side, color, filled);
20    }
21
22    public double getSide() {
23        return side;
24    }
25
26    public void setSide(double side) {
27        super.setWidth(width: side);
28        super.setLength(length: side);
29    }
30
31    public void setLength(double side) {
32        setSide(side);
33    }
34
35    public void setWidth(double side) {
36        setSide(side);
37    }
38
39    @Override
40    public String toString() {
41        return "A Square with side = " + side + " and " + " which is a subclass of " + super.toString();
42    }
43
44    @Override
45    public double getPerimeter() {
46        return 4*getSide();
47    }
48
49    }
50
51
52
53
54
55 }
```

Teman yang membantu :

- Mahesya Setia Nugraha

Source Code : <https://github.com/agistadivab/PBO.git>