LAPORAN PRAKTIKUM

PEMOGRAMAN BERBASIS OBJECT

“Pertemuan ke-9”

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Latihan 1 (Painting Shape)

1. Membuat class Shape.java dengan properties
   - Variabel instance shapeName dengan tipe data String
   - Method abstract area()
   - Metode toString yang mengembalikan nama bentuk

Sphere.java | Paint.java | PaintThings.java | Shape.java

```
1
2  abstract class Shape {
3      String shapeName;
4
5      public Shape (String shapeName) {
6          this.shapeName = shapeName;
7      }
8
9      abstract public double area();
10
11     public String toString()
12     {
13         return " Shape " + shapeName;
14     }
15 }
```

2. Membuat class Rectangle dan Cylinder yang merupakan turunan dari class Shape. Class Rectangle ditentukan luasnya dengan **panjang * lebar** , class cylinder ditentukan luasnya dengan **PI*radius^2*tinggi**.

Rectangle.java

Rectangle.java | Sphere.java | Paint.java | PaintThings.java | Shape.java | Cylind

```
1  public class Rectangle extends Shape{
2      private double length;
3      private double width;
4
5      public Rectangle (double length, double width)
6      {
7          super ("Rectangle");
8          this.length = length;
9          this.width = width;
10     }
11
12     public double area()
13     {
14         return length * width;
15     }
16
17     public String toString()
18     {
19         return super.toString() + " of length " + length + "and width " + width;
20     }
21 }
```

Cylinder.java

Cylinder.java | Rectangle.java | Sphere.java | Paint.java | PaintThings.java | Shape.java

```java

public class Cylinder extends Shape{
    private double radius;
    private double height;

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

    public double area()
    {
        return Math.PI * radius * radius * height;
    }

    public String toString()
    {
        return super.toString() + " of radius " + radius + " and height " + height;
    }
}
```

3. Perbaiki return nilai di class Paint.java

Paint.java | Cylinder.java | Rectangle.java | Sphere.java | Pai

```java

public class Paint {
    private double coverage;

    public Paint (double c)
    {
        coverage = c;
    }

    public double amount (Shape s)
    {
        System.out.println("Computing amount for" + s);
        return s.area()/coverage;
    }
}
```

4. Menambahkan tiga objek yaitu deck menjadi Rectangle berukuran 20 kali 35 kaki, bigBall menjadi Sphare berjari-jari 15, dan tank menjadi Cylinder dengan jari-jari 10 dan tinggi 30. Buat pemanggilan metode yang sesuai untuk menetapkan nilai yang benar ke tiga variabel

PaintThings.java | Paint.java | Cylinder.java | Rectangle.java | Sphere.java

```
2
3  public class PaintThings {
4      public static void main (String[] args)
5      {
6          final double COVERAGE = 350;
7          Paint paint = new Paint (COVERAGE);
8
9          Rectangle deck;
10         Sphere bigBall;
11         Cylinder tank;
12
13         deck = new Rectangle (20, 35);
14         bigBall = new Sphere (15);
15         tank = new Cylinder (10, 30);
16
17         double deckAmt, ballAmt, tankAmt;
18
19         deckAmt = paint.amount(deck);
20         ballAmt = paint.amount(bigBall);
21         tankAmt = paint.amount(tank);
22
23
24         DecimalFormat fmt = new DecimalFormat("0.#");
25         System.out.println ("\nNumber of gallons of paint needed...");
26         System.out.println ("Deck " + fmt.format(deckAmt));
27         System.out.println ("Big Ball " + fmt.format(ballAmt));
28         System.out.println ("Tank " + fmt.format(tankAmt));
29     }
30 }
31
```

Output akhir :

Problems | Javadoc | Declaration | Console

```
<terminated> PaintThings [Java Application] C:\Program Files\Java\jdk-11.0.12\bin\javaw.exe (Nc
Computing amount for Shape Rectangle of length 20.0and width 35.0
Computing amount for Shape Sphere of radius 15.0
Computing amount for Shape Cylinder of radius 10.0 and height 30.0

Number of gallons of paint needed...
Deck 2
Big Ball 8.1
Tank 26.9
```

Latihan 9.2

Membuat program sesuai dengan class diagram yang disediakan.

- Power.java

Power.java | FlyingDutchm... | LaserEye.java

```
1
2  public interface Power {
3      public abstract void doPower();
4  }
```

- Flying.java

Power.java | Flying.java | LaserEye.java | Strength.java | ManRay.java | Dirt

```
1
2  public class Flying implements Power{
3
4      @Override
5      public void doPower()
6      {
7          System.out.println("EAT DIRT MORTAL, BEHOLD THE POWER OF FLIGHT!");
8      }
9
10 }
```

- LaserEye.java

Power.java | Flying.java | LaserEye.java | Strength.java | Manl

```
1
2  public class LaserEye implements Power {
3
4      @Override
5      public void doPower()
6      {
7          System.out.println("SUPERIOR SIGHT, BEHOLD LASER EYE!");
8      }
9  }
```

- Strength.java

Power.java | Flying.java | LaserEye.java | Strength.java | ManRay.java

```
1
2  public class Strength implements Power {
3
4      @Override
5      public void doPower()
6      {
7          System.out.println("DIGUST ME, BEHOLD SUPER STRENGTH!");
8      }
9  }
```

- SuperHero.java

SuperHero.java | Power.java | Flying.java | LaserEye.java

```java
import java.util.ArrayList;
import java.util.List;

public abstract class SuperHero {
    private int powerLevel;
    private String name;
    private List<Power> powerList;

    public SuperHero (int lvl, String name) {
        this.powerLevel = lvl;
        this.name = name;
        this.powerList = new ArrayList<Power>();
    }

    public int getPowerLevel() {
        return powerLevel;
    }

    public String getName() {
        return name;
    }

    public void addPower (Power power)
    {
        powerList.add(power);
    }

    public void showPowers() {
        System.out.println("TIME TO SHOW YOU MY POWERS");
        for  (Power power : powerList)
        {
            power.doPower();
        }
    }
}
```

- FlyingDutchman.java

FlyingDutchm... | SuperHero.java | Power.java | Flying.java | LaserEye.java | Strengt

```java

public class FlyingDutchman extends SuperHero {

    public FlyingDutchman(int lvl, String name)
    {
        super(lvl, name);
        Power fly = new Flying();
        Power laser = new LaserEye();
        super.addPower(laser);
        super.addPower(fly);
    }

    @Override
    public void identity() {
        System.out.println("It's " + super.getName() + ", the FlyingDutchMan!" +
                           "It has the power level of " + super.getPowerLevel());
        System.out.println(".....HEED ME.....");
        System.out.println("FOR MY NAAAAAAAME IS " + super.getName().toUpperCase());
    }
}
```

- ManRay.java

ManRay.java | FlyingDutchm... | SuperHero.java | Power.java | Flying.java | LaserEy

```java

public class ManRay extends SuperHero {
    public ManRay(int lvl, String name)
    {
        super(lvl, name);
        Power strength = new Strength();
        Power laser = new LaserEye();
        super.addPower(strength);
        super.addPower(laser);
    }

    @Override
    public void identity() {
        System.out.println("It's " + super.getName() + ", the Manray!" +
                           "It has the power level of " + super.getPowerLevel());
        System.out.println(".....HEED ME.....");
        System.out.println("FOR MY NAAAAAAAME IS " + super.getName().toUpperCase());
    }
}
```

- DirtyBubble.java

DirtyBubble.... | ManRay.java | FlyingDutchm... | SuperHero.java | Flying.java | Las

```
1
2  public class DirtyBubble extends SuperHero {
3      public DirtyBubble(int lvl, String name)
4      {
5          super(lvl, name);
6          Power strength = new Strength();
7          Power flying = new Flying();
8          super.addPower(strength);
9          super.addPower(flying);
10     }
11
12     @Override
13     public void identity() {
14         System.out.println("It's " + super.getName() + ", the DirtyBubble!" +
15                            "It has the power level of " + super.getPowerLevel());
16         System.out.println(".....HEED ME.....");
17         System.out.println("FOR MY NAAAAAAAME IS " + super.getName().toUpperCase());
18     }
19 }
```

- AvengedSimulator.java

AvengedSimul... | DirtyBubble.... | ManRay.java | FlyingDutchm... | SuperHero.java | LaserB

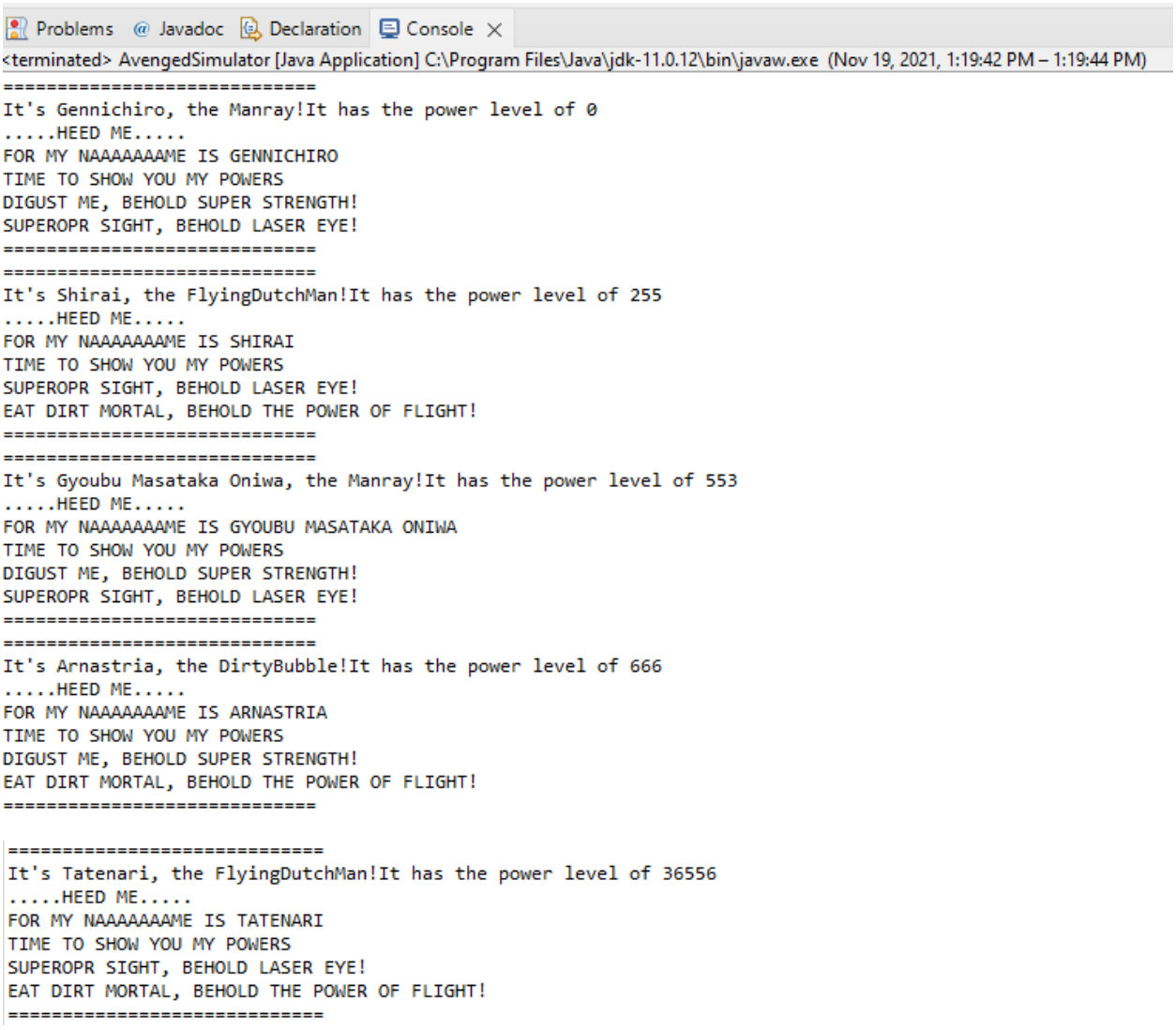
```java
import java.util.List;
import java.util.ArrayList;

public class AvengedSimulator {

    public static void addHero(List<SuperHero> hero, int lvl, String name, String type){
        SuperHero sh = null;
        if(type.equals("ManRay")) {
            sh = new ManRay(lvl, name);
        }else if (type.equals("FlyingDutchMan")) {
            sh = new FlyingDutchman (lvl, name);
        }else if (type.equals("DirtyBubble")) {
            sh = new DirtyBubble (lvl, name);
        }
        hero.add(sh);
    }

    public static void main(String[] args) {
        List<SuperHero> superhero = new ArrayList<SuperHero>();
        addHero(superhero, 0, "Gennichiro", "ManRay");
        addHero(superhero, 255, "Shirai", "FlyingDutchMan");
        addHero(superhero, 553, "Gyoubu Masataka Oniwa", "ManRay");
        addHero(superhero, 666, "Arnastria", "DirtyBubble");
        addHero(superhero, 36556, "Tatenari", "FlyingDutchMan");
        for (SuperHero sh : superhero) {
            System.out.println("============================");
            sh.identity();
            sh.showPowers();
            System.out.println("============================");
        }
    }
}
```

Output :



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