Ahmad Siddiq Priaji (22/496854/PA/21370)

Homework 5

Rectangle.java

```
public class Rectangle {
    // deklarasi fields
    double width;
    double height;
    double x0;
    double y0;

    // constructor dengan parameterr width dan height
    Rectangle(double width, double height){
        this.width = width;
        this.height = height;
    }

    // constructor dengan parameter size
    Rectangle(double size){
        this.width = size;
        this.height = size;
    }

    // method getArea
    double getArea(){
        return this.width*this.height;
    }

    // method isLargerThan
    boolean isLargerThan(Rectangle r){
        return this.getArea() > r.getArea();
    }

    // method isIntersectingWith
    boolean isIntersectingWith(Rectangle r){
        if ((this.x0 <= r.x0 && this.x0+this.width > r.x0 && this.y0 <= r.y0 &&
this.y0+this.height > r.y0) || //intersecting di sisi kanan atas r1
        (this.x0 <= r.x0 && this.x0+this.width > r.x0 && this.y0 >= r.y0 &&
this.y0 < r.y0+r.height) || //intersecting di sisi kanan bawah r1
        (this.x0 >= r.x0 && this.x0 < r.x0+r.width && this.y0 <= r.y0 &&
this.y0+this.height > r.y0) || //intersecting di sisi kiri atas r1
        (this.x0 >= r.x0 && this.x0 < r.x0+r.width && this.y0 >= r.y0 && this.y0
< r.y0+r.height) ){ //intersecting di sisi kiri bawah r1
            return true;
```

```
        }
        else {
            return false;
        }
    }
}
```

TestRectangle.java

```
public class TestRectangle {
    public static void main(String[] args) {
        // objek r1, r2, r3
        Rectangle r1 = new Rectangle(8, 6);
        Rectangle r2 = new Rectangle(6);
        Rectangle r3 = new Rectangle(2, 3);

        // titik (x0, y0) pada r1, r2 , r3
        r1.x0 = -5;
        r1.y0 = -3;

        r2.x0 = 2.8989;
        r2.y0 = 0;

        r3.x0 = -7;
        r3.y0 = -3;

        // output method getArea()
        System.out.println("r1 area: " + r1.getArea());
        System.out.println("r2 area: " + r2.getArea());
        System.out.println("r3 area: " + r3.getArea());
        System.out.println();
        // output method isLargerThan()
        System.out.println("r1 is larger than r2: "+r1.isLargerThan(r2));
        System.out.println("r3 is larger than r1: "+r3.isLargerThan(r1));
        System.out.println();
        // output isIntersectingWith()
        System.out.println("r1 is intersection with r2:
"+r1.isIntersectingWith(r2));
        System.out.println("r1 is intersection with r2:
"+r1.isIntersectingWith(r3));
    }
}
```

Hasil:

```
r1 area: 48.0
r2 area: 36.0
r3 area: 6.0

r1 is larger than r2: true
r3 is larger than r1: false

r1 is intersection with r2: true
r1 is intersection with r2: false
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework5>
```

Cube.java

```java
public class Cube extends Rectangle {
    // deklarasi fields tambahan lengthdan titik sumbu z0
    double length;
    double z0;

    // modifikasi constructor
    Cube(double width, double height, double length){
        super(width, height);
        this.length = length;
    }
    Cube(double size){
        super(size);
        this.length = size;
    }

    // method getArea (luas permukaan)
    double getArea(){
        return 2 * (this.width*this.length +
        this.width*this.height +
        this.length*this.height);
    }

    // method getVolume
    double getVolume(){
        return this.width*this.length*this.height;
    }
```

```
    // method isLargerThan
    boolean isLargerThan(Cube r){
        return this.getVolume() > r.getVolume();
    }

    // method isIntersectingWith
    boolean isIntersectingWith(Cube r){
        if ((this.x0 <= r.x0 && this.y0 <= r.y0 && this.z0 <= r.x0 && //mengecek
apakah titik r1 berada di kiri, bawah, belakang r
        this.x0+this.width > r.x0 && this.y0+this.height > r.y0 &&
this.z0+this.length > r.z0) || //mengecek itersecting
        (this.x0 <= r.x0 && this.y0 <= r.y0 && this.z0 >= r.z0 && //mengecek
apakah titik r1 berada di kiri, bawah, depan r
        this.x0+this.width > r.x0 && this.y0+this.height > r.y0 && this.z0 <
r.z0+r.length) || //mengecek itersecting
        (this.x0 <= r.x0 && this.y0 >= r.y0 && this.z0 <= r.x0 && //mengecek
apakah titik r1 berada di kiri, atas, belakang r
        this.x0+this.width > r.x0 &&  this.y0 < r.y0+r.height &&
this.z0+this.length > r.z0) || //mengecek itersecting
        (this.x0 <= r.x0 && this.y0 >= r.y0 && this.z0 >= r.z0 && //mengecek
apakah titik r1 berada di kiri, atas, depan r
        this.x0+this.width > r.x0 && this.y0 < r.y0+r.height && this.z0 <
r.z0+r.length) || //mengecek itersecting
        (this.x0 >= r.x0 && this.y0 <= r.y0 && this.z0 <= r.x0 && //mengecek
apakah titik r1 berada di kanan, bawah, belakang r
        this.x0 < r.x0+r.width && this.y0+this.height > r.y0 &&
this.z0+this.length > r.z0) || //mengecek itersecting
        (this.x0 >= r.x0 && this.y0 <= r.y0 && this.z0 >= r.z0 && //mengecek
apakah titik r1 berada di kanan, bawah, depan r
        this.x0 < r.x0+r.width && this.y0+this.height > r.y0 &&  this.z0 <
r.z0+r.length) || //mengecek itersecting
        (this.x0 >= r.x0 && this.y0 >= r.y0 && this.z0 <= r.x0 && //mengecek
apakah titik r1 berada di kanan, atas, belakang r
        this.x0 < r.x0+r.width && this.y0 < r.y0+r.height && this.z0+this.length
> r.z0) || //mengecek itersecting
        (this.x0 >= r.x0 && this.y0 >= r.y0 && this.z0 >= r.z0 && //mengecek
apakah titik r1 berada di kanan, atas, depan r
        this.x0 < r.x0+r.width && this.y0 < r.y0+r.height &&  this.z0 <
r.z0+r.length) ){
            return true;
        }
        else {
            return false;
        }
```

```
    }
}
```

TestCube.java

```
public class TestCube {
    public static void main(String[] args) {
        // objek r1, r2, r3
        Cube r1 = new Cube(8, 6, 7);
        Cube r2 = new Cube(6);
        Cube r3 = new Cube(2, 3, 5);

        // titik (x0, y0, z0) pada r1, r2 , r3
        r1.x0 = -5;
        r1.y0 = -3;
        r1.z0 = 2;

        r2.x0 = 2.8989;
        r2.y0 = 0;
        r2.z0 = 1;

        r3.x0 = -7;
        r3.y0 = -3;
        r3.z0 = -4;

        // output method getArea()
        System.out.println("r1 area: " + r1.getArea());
        System.out.println("r2 area: " + r2.getArea());
        System.out.println("r3 area: " + r3.getArea());
        System.out.println();
        // output method getVolume()
        System.out.println("r1 volume: " + r1.getVolume());
        System.out.println("r2 volume: " + r2.getVolume());
        System.out.println("r3 volume: " + r3.getVolume());
        System.out.println();
        // output method isLargerThan()
        System.out.println("r1 is larger than r2: "+r1.isLargerThan(r2));
        System.out.println("r3 is larger than r1: "+r3.isLargerThan(r1));
        System.out.println();
        // output isIntersectingWith()
        System.out.println("r1 is intersection with r2:
"+r1.isIntersectingWith(r2));
        System.out.println("r1 is intersection with r3:
"+r1.isIntersectingWith(r3));
```

```
    }
}
```

Hasil:

```
r1 area: 292.0
r2 area: 216.0
r3 area: 62.0

r1 volume: 336.0
r2 volume: 216.0
r3 volume: 30.0

r1 is larger than r2: true
r3 is larger than r1: false

r1 is intersection with r2: true
r1 is intersection with r3: false
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework5>
```