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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()

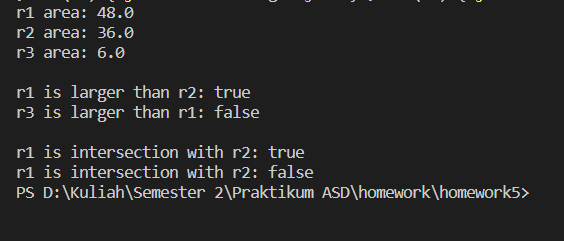
        System.out.println("r1 is intersection with r2: "+r1.isIntersectingWith(r2));

        System.out.println("r1 is intersection with r2: "+r1.isIntersectingWith(r3));

    }

}

Hasil:



Cube.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:

