|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Circle2D | | | | |
| -x: double |  |  |  |  |
| -y: double |  |  |  |  |
| -radius: double | |  |  |  |
|  |  |  |  |  |
| +Circle2D() | |  |  |  |
| +Circle2D(x: double, y: double, radius: double) | | | |  |
| +getX(): double | |  |  |  |
| +getY(): double | |  |  |  |
| +getRadius(): double | |  |  |  |
| +getArea(): double | |  |  |  |
| +getPerimeter(): double | | |  |  |
| +contains(x: double, y: double): boolean | | | |  |
| +contains(circle: Circle2D): boolean | | | |  |
| +overlaps(circle: Circle2D): boolean | | | |  |

elijahkorneffel@Elijahs-MacBook-Pro  ~/Git/CS2261-JAVA/Project3   project3\_03\_20\_19 ●  Script Circle2DOutput

Script started, output file is Circle2DOutput

elijahkorneffel@Elijahs-MacBook-Pro  ~/Git/CS2261-JAVA/Project3   project3\_03\_20\_19 ●  cat Circle2D.java

//Class: CS2261-JAVA

//Due Date: 03/20/19

//Author: Elijah Korneffel

//Description: This script contains the Circle2D class

import java.lang.Math;

import java.util.Scanner;

import java.util.Arrays;

public class Circle2D

{

double x;

double y;

double radius;

/\* Default constructor \*/

public Circle2D()

{

x = 0;

y = 0;

radius = 1;

}

/\* Constructor with x, y, radius inputs \*/

public Circle2D(double x, double y, double radius)

{

this.x = x;

this.y = y;

this.radius = radius;

}

//This method returns x value

public double getX()

{

return x;

}

//This method returns y value

public double getY()

{

return y;

}

//This method returns radius value

public double getRadius()

{

return radius;

}

//This method returns area of circle.

public double getArea()

{

double area = Math.PI \* Math.pow(radius, 2);

return area;

}

//This method returns perimeter.

public double getPerimeter()

{

double perimeter = 2 \* Math.PI \* radius;

return perimeter;

}

//This method returns true if specefied (x, y) point is inside this circle.

public boolean contains(double x, double y)

{

double distance;

distance = Math.sqrt(Math.pow(this.x - x, 2) + Math.pow(this.y - y, 2));

//Checks if point is INSIDE circle - not on, so < vs <= is used.

if(distance < this.radius)

{

return true;

}

else

{

return false;

}

}

//This method returns true if specefied circle is inside this circle.

public boolean contains(Circle2D otherCircle)

{

double distance;

distance = Math.sqrt(Math.pow(this.x - otherCircle.x, 2) + Math.pow(this.y - otherCircle.y, 2));

//Check that the otherCircle is contained in this circle.

if(this.radius > (distance + otherCircle.radius))

{

return true;

}

else

{

return false;

}

}

//This method returns true if specefied circle and this circle overlap.

public boolean overlaps(Circle2D otherCircle)

{

double distance;

distance = Math.sqrt(Math.pow(this.x - otherCircle.x, 2) + Math.pow(this.y - otherCircle.y, 2));

//Checks if otherCircle and this circle overlap.

if(distance < (this.radius + otherCircle.radius))

{

return true;

}

else

{

return false;

}

}

//Tests out class

public static void main(String[] args)

{

Scanner input = new Scanner(System.in);

Circle2D c1 = new Circle2D(2, 2, 5.5);

System.out.printf("Circle c1 perimeter: %f\n", c1.getPerimeter());

System.out.printf("Circle c1 area: %f", c1.getArea());

if(c1.contains(3, 3))

{

System.out.println("\nCircle c1 contains point (3, 3)");

}

else

{

System.out.println("Circle c1 does not contain point (3, 3)");

}

if(c1.contains(new Circle2D(4, 5, 10.5)))

{

System.out.println("Circle c1 contains given Circle2D(2, 2, 5.5)");

}

else

{

System.out.println("Circle c1 does not contain given Circle2D(2, 2, 5.5)");

}

if(c1.overlaps(new Circle2D(3, 5, 2.3)))

{

System.out.println("Circle c1 overlaps given Circle2D(3, 5, 2.3)");

}

else

{

System.out.println("Circle c1 does not overlap given Circle2D(3, 5, 2.3)");

}

}

}

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Circle c1 perimeter: 34.557519

Circle c1 area: 95.033178

Circle c1 contains point (3, 3)

Circle c1 does not contain given Circle2D(2, 2, 5.5)

Circle c1 overlaps given Circle2D(3, 5, 2.3)

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Script done, output file is Circle2DOutput