Lab Assignment 4

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CPSC1150 - Section 1

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Exercise Title: Calculate Surface Area of a Object

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**Program Quadratic Formula**

File Name: Lab04.java

Purpose: To first select a shape, then calculate the surface area of it.

Input: First shape, then parameters based on the shape chosen.

Output: The surface area of the object.

Technical Information:

Compiler: Java SDK 1.7

Computer: Intel Celeron 2955U 1.4GHz, 2.00 GB of RAM

Language: Java

Source Code:

Attached

Program Logic (Pseudocode)

(definitions)

shape = triangle or circle

line = triangle with all points along a single line.

userinput = (1 or 2 corresponding to square or circle)

START

1. shape = userInput
2. surfaceArea = 0
3. if shape = circle

surfaceArea = call calculateCircle

1. if shape = triangle

surfaceArea = call calculateTriangle

1. print shape, initial parameters and surface area

END

calculateCircle

START

1. radius = input
2. if radius <= 0

exit program

1. surfaceArea = 2\*pi\*radius

calculateTriangle

(definitions)

points = 3 sets of x/y coordinates

START

1. points = input
2. if points are linear

surfaceArea = sqrt(min(p1x, p2x, p3x)^2 + max(p1y, p2y, p3y)^2)

else

surfaceArea += sqrt(x^2+y^2) for each set of points

1. END

**Test Cases:**

Find the surface area of certain objects.

Test Case 1:

Input: circle radius 5

Returns: Circle 31.4159

Test Case 2:

Input: circle radius -5

Returns: “Radius must be greater than 0!”

Test Case 3:

Input: triangle (1,2) (3,4) (5,6)

Returns: Triangle 2.828427

Test Case 4:

Input: triangle (1,1) (5,1) (10,1)

Returns: Line 9

Test Case 5:

Input: triangle (10, 10) (100, 100) (1000, 1000)

Returns: Line 1400.07

Test Case 6:

Input triangle (1,1), (50,50), (-10, -10)

Returns: Triangle 84.8528