Assignment 0

CIS 2168 (Section 001)

Fall 2023

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Objective

Quick overview of Java Object Oriented Programming(OOP) basics such as class, inheritance, interface, user I/O, and so on.

Problem Statement

We want to process some standard geometric shapes. Each figure object will be one of following standard shapes:

[1]. Rectangle
[2]. Circle
[3]. Right triangle
[4]. Parallelogram
[5]. Equilateral Triangle
[6]. Square

We want to do standard computations, such as finding the area and perimeter, for any of these shapes.

The area and perimeter computation of rectangle, circle, and right triangle are completed during the class lecture.

Details:

Compute the area and perimeter of Parallelogram, Equilateral Triangle, and Square. To do that, complete Parallelogram.java, EQTriangle.java, and Square.java given in the source code. Since this is a OOP in Java review, source code is being provided. Don't alter the existing structure of the code. Fill up the methods in Parallelogram.java, EQTriangle.java, and Square.java where you see "YOUR CODE HERE".

***Details about Shape Class Hierarchy can be found in the class lecture slide ch01.pptx.*

Sample Input Output

Area and perimeter of Right Triangle

```
Enter C for Circle
Enter R for Rectangle
Enter T for Right Triangle
Enter P for Parallelogram
Enter E for Equilateral Triangle
Enter S for Square
T
Enter the base of the Right Triangle
5
Enter the height of the Right Triangle
4
The area is 10.00
The perimeter is 15.40
```

Area and perimeter of Equilateral Triangle

```
Enter C for Circle
Enter R for Rectangle
Enter T for Right Triangle
Enter P for Parallelogram
Enter E for Equilateral Triangle
Enter S for Square
E
Enter the side of the Equilateral Triangle
6
The area is 15.59
The perimeter is 18.00
```

Area and perimeter of Parallelogram

Enter C for Circle
Enter R for Rectangle
Enter T for Right Triangle
Enter P for Parallelogram
Enter E for Equilateral Triangle
Enter S for Square
P
Enter the one side of the Parallelogram
6
Enter the other side of the Parallelogram
4
Enter the angle between sides a and b in degrees
45
The area is 16.97
The perimeter is 20.00

Area and perimeter of Square

Enter C for Circle
Enter R for Rectangle
Enter T for Right Triangle
Enter P for Parallelogram
Enter E for Equilateral Triangle
Enter S for Square
S
Enter the side length of the Square
8
The area is 64.00
The perimeter is 32.00

Evaluation Policy

In order to receive points, you must do the demonstration of your submitted code during the lab hour to TA. Although the source code is provided, make sure that you understand the source code pretty clearly, and are able to answer any questions about the source code. Take help from TA and the instructor if you have any

questions about the source code or assignment before the due date of the assignment.

Submission Instruction

The assignment should be submitted through the available link on course Canvas shell. The assignment rubric is as follows:

1. Source code and demonstration [90 points]:
   Provide the source code in zip file. Each file should have proper comments (e.g., explanations for methods, class and so on). It will be graded based on accuracy (e.g., program execution), clarity of the necessary comments, and short demonstration as instructed in the evaluation policy.
2. Status.txt [10 points]: In this text file, you need to report:
   - The status of your program (completed or not; partial credit will be given even the program is not completed).
   - The design of your program (what and how the objectives have been accomplished.
   - Support and advice (if any) you get from TA and/or your classmates.
   - Comments and suggestions to improve this assignment.
   - If you are doing late submission, you should mention the number of days you are late since the due date. According to our policy, for N days of late submission, you get a deduction of Nx3 points per day even if your submission completes all the requirements. That said, if you are late for 5 days, your maximum point can be up to 85 out of 100.

Please have the source codes and status files zipped into a single file DSAssign0-LastnameFirstname.zip and upload the file on Canvas.