CSE 101 – F20 Computer Science Principles

Quiz 1 14 September 2020 25 points

You have 55 minutes to solve the problems and 5 additional minutes to upload answers of this quiz on Blackboard.

Instructions

- Please answer each question in a separate file named Quiz1Answer1.txt, Quiz1Answer2.py, and Quiz1Answer3.py that corresponds to each question.
- Include your name and student ID at the top of each file in a comment.
- Before the time is up, submit your programs for Quiz 1 on Blackboard.
- You can receive partial credit, so please attempt each problem.

Problem 1: (8 points)

Answer these questions about programming in Python in a text file.

a. Explain in your own words what the difference is between a void function and fruitful function.

b. What is the difference between two values: "123" and 123?

c. Write the code to convert "123" to 123.

d. Write the code to convert 123 to "123"?

e. Given `a = 80`, what is the result of the expression: `a > 75`?

f. Write a Boolean expression to compare whether the value of variable `a` is in the range of 70 to 100 (including both 70 and 100).

g. Write a print statement to format and print the value 34.65234 as 34.652. You must use a Python feature to format it, do not just `print("34.652")`.

h. (Write True or False) In Python you can call a function before you define the function.

Problem 2 (points)

Define a function named **`determineArea`** that takes one parameter called **`a`**, which represents the length of a side of a triangle as shown in the Figure 1. The function should calculate the area of circle without the triangle, i.e., only the shaded area. Use the format function or round function to round the output to 2 digits after the decimal point.

You can determine the area of an equilateral triangle by the equation:

Area = $a^2 * \sqrt{3}/4$ where *a* is the length of a side of the triangle.

You can determine the area of a circle with:

Area = πr^2 where *r (radius)* = $a/\sqrt{3}$

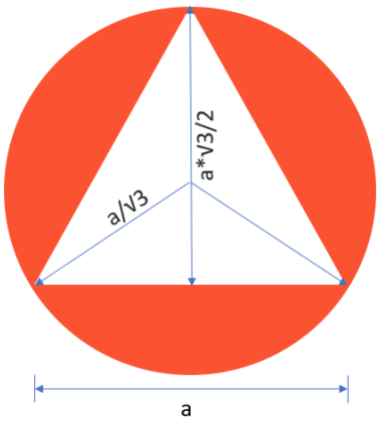

Figure 1: An equilateral triangle enclosed in a circle

Test your function using test cases given below. Include these test cases in your answer.

```
>>>print(determineArea(5))
15.35
>>>print(determineArea(10))
61.42
```

Problem 3 (9 points)

For this problem, modify the hiring.py file we studied in Chapter 2 to follow the modified requirements below.

A hiring manager is trying to decide which candidates to hire. Each potential hire is evaluated based on GPA, interview performance, and an aptitude exam.

- A GPA of at least 3 (out of 4) is worth of 1 point, at least 3.5 is worth of 2 points and at least 3.8 is worth of 3 points.
- An interview score of at least 7 (out of 10) is worth of 1 point; a score of 8 is worth of 2 points and a score of 9 or 10 is worth of 3 points.
- An aptitude test score of at least 75 (out of 100) is worth of 1 point; a test score of at least 85 is worth of 2 points and a score of 95 or higher is worth of 3 points.
- A fourth parameter is added: candidates are asked how many years they have previously worked (as an integer number). If they worked under 1 year, they get 0 points. 1 to 2 years gets 1 point, and more than 2 years gets 2 points.
- Hiring decisions are then based on point totals:
  a. 5 or less points: not hired
  b. 6 to 8 points: hired as a Junior Salesperson
  c. 9 or more points: hired as a Manager-in-Training

Modify the `decision` function to takes as input the parameters for gpa, interview, test score, and number of years worked and returns a hiring decision.

Test your function using test cases given below. Include these test cases as part of your answer.

Test cases: [Note the 4th argument is the number of years worked]:

```
>>>print(decision(4.0, 10, 100, 0))
Manager-in-Training
>>>print(decision(3.0, 6, 70, 1))
Not hired
>>>print(decision(3.5, 9, 90, 2))
Junior Salesperson
```