ICT1002 Programming Fundamentals

Lab 4

Topics:

1. Recursion
2. DocString

Warmup exercises:

The following lab assignment requires the use of all topics discussed so far in the module. You may wish to practice some of the concepts with simple exercises before attempting the lab assignment. You are not required to include these exercises in your submission, though you may wish to do so, to help you in the lab test.

1. Implement the recursive function fac(n) to calculate the factorial number as shown in the lecture notes. And understand the program and test the following expressions:

x = fac(4) print (x)	x=fac(5) print (x)
x = fac(10) print (x)	x = fac(0) print (x)

2. Implement another function fac_iterative(n) to calculate the factorial number. But this time, you need to use the for loop to implement it, other than recursion.

3. In this exercise, we will try to practice how to write the DocString. Please use the mymath module that you created last week, in the lab 3 task 1, and write down the proper comment in each function. And then put module file into your Python library, which is the Lib folder of the

python installation folder. In your Python IDLE, try the following commands and see whether you can get the DocString of your own mymath module.

>> import mymath

>>help(mymath)

4. If you need more exercises to understand the recursive function, you can implement the Fibonacci number and string reversal programs in the lecture notes and understand how they work.

Lab Assignment:

To help you better practice, you need to perform a set of tasks in one auto-grading system, CodeDr. CodeDr will provide you immediate feedback of your program, such that you will know the issue of your program. Below is the link for you to access the system:

http://172. 27. 54. 87/codeDr/public

PS. The codeDR system is only accessible via the ICT network. You can access it from outside via the ICT VPN. The ICT VPN account confidential should have been sent to your sit email. If you have not or have any issue using the ICT VPN, please contact ICT program professional officer: Remy Remy.Mohamed@singaporetech.edu.sg.

For your CodeDr account, please get it from your lab instructor in the lab. Please remember your user name and password for the future usage of the system. And, you are not allowed to change the password.

In this lab, you need to finish three tasks in CodeDr system, including the Lab4_Task1, Lab4_Task2 and Lab4_Task3 on_elfish (this is a bonus task).

Note: If you can conquer the Lab4_Task3 bonus task, you should be proud of yourself. Call yourself a genius! ☺

P.S. CodeDr system will provide you immediate feedback about the correctness of your program. You can view the feedback of your system by clicking the view detail beside your grade. CodeDr adopts a test cases-based approach to check your program. Your grade is depending on the number of test cases that you program can pass. Note that to train you to have a good programming practice, you

have to write your program strictly according to the requirement of the tasks, including your input and output format. If there is any difference (even one more or less space), your program will fail on the test cases. SO TRAIN YOURSELF TO BE AN EXACT THINKER!

To help you practice, you are allowed to do multiple attempts for each task. Enjoy your learning!

You can use either the Python packaged IDLE (Python GUI) or PyCharm to create the Python program. To create one new program, you can create a new file by clicking the NEW FILE under the FILE menu. See below figure.