COMP 10280
Programming I (Conversion)
Practical Sheet 12
Tuesday, 20 October 2020

For each of the following questions, write an algorithm in pseudocode first before writing a Python program. Submit your algorithms in psuedocode as well as your Python programs.

1. (a) Write a function that takes as its single argument a non-negative integer and returns the factorial of the number.

   (b) Write a program that prompts the user for an integer and checks that the number entered is non-negative. If it is, it calls the function defined in part (a) and prints out the result; if not, it prints out an appropriate error message.

   Save this program as `p12p1.py`.

2. (a) Write a function that takes as its argument a non-negative integer and prints out that number of terms of the Fibonacci Series. This function should not return an explicit value.

   (b) Write a program that prompts the user for an integer and checks that the number entered is non-negative. If it is, it calls the function defined in part (a); if not, it prints out an appropriate error message.

   Save this program as `p12p2.py`.

3. (a) Write a function that takes as its two arguments a number and a tolerance and, using the technique exposed in lectures, returns an approximation of the square root of the number that is within the tolerance.

   (b) Write a program that prompts the user for a floating-point number and checks that the number entered is non-negative. If it is, it calls the function defined in part (a) with the number and a tolerance defined in the program and prints out the square root of the number; if not, it prints out an appropriate error message.

   Save this program as `p12p3.py`.

Please upload your work to the Brightspace site before Sunday evening.

You should keep a copy of your programs for your portfolio.