

COMP 10280

Programming I (Conversion)

Practical Sheet 12

Dé Máirt, 12 Deireadh Fómhair 2023

For each of the following questions, write an algorithm in pseudocode first before writing a Python program. Submit your algorithms in pseudocode 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 Wednesday
evening.**

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