COMP 10280
Programming I (Conversion)
Practical Sheet 9
Tuesday, 2 October 2018

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. Write a program that prompts the user for a positive integer and uses a `while` loop to calculate the sum of the integers up to and including that number.

   Save this program as `p9p1.py`.

2. Write a program that prompts the user for a series of positive integers and, for each of the numbers entered, uses a `for` loop to calculate the sum of the integers up to and including that number. The program should stop when a non-positive number is entered.

   Save this program as `p9p2.py`.

3. Write a program that prompts the user for a positive integer and uses a `for` loop to calculate the factorial of that number.

   Save this program as `p9p3.py`.

4. Write a program that prompts the user for a series of positive integers and, for each of the numbers entered, uses a `while` loop to calculate the factorial of that number. The program should stop when a negative number is entered.

   Save this program as `p9p4.py`.

5. On any given day, a pizza company offers the choice of a certain number of toppings for its pizzas. Depending on the day, it provides a fixed number of toppings with its standard pizzas. Write a program that prompts the user (the manager) for the number of possible toppings and the number of toppings offered on the standard pizza and calculates the total number of different combinations of toppings. Recall that the number of combinations of k items from n possibilities is given by the formula ${}^nC_k = \frac{n!}{k!(n-k)!}$.

   Save this program as `p9p5.py`.

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

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