Week 2 - Assessed Exercises

Data Programming with Python

In this week's lecture you learnt about data structure, condition statements, loops and functions. The assessed exercises for this week deal with creating loops, if statements and functions, as well as debugging code.

1. Write a for loop to compute the sum of x^2 for x from 0 to 8. What is the value of this sum?

2. Define a function (`addition`) that returns the sum of two numbers x and y. Use the function to calculate 2.09 + 8.73

3. Find the 3 errors in the code below. The function `sin_estimate` should calculate an estimate of the sine function at the value x, with an error tolerance of tol. After finding the 3 errors and fixing the code, the variable y should equal 0.09983341666666667

4. A bakery sells cupcakes, cookies and pastries, for €1.50, €1.00 and €0.80 respectively. However, the bakery offers discounts if you buy multiple items:

   - If you buy 4-8 cupcakes they cost €1.20 each, and if you buy more then 8 they are €1.00 each.
   - If you buy 5 or more cookies they are €0.80.
   - If you buy more than 3 pastries they are reduced to €0.65 each, and reduced further to €0.50 if you buy 10 or more.

   Create a set of nested `if/elif/else` statements to determine the price of each item based on the amount the customer requests and then computes the total cost of the order.
   Pay attention to the phrasing "more than n", "n or more" one includes the value 'n' and the other does not.
   Use your code to determine the total cost of 8 cupcakes, 4 cookies and 12 pastries.

Answers, along with all of your code, should be written into the *.py* template. Save your filled *.py* file with the following name structure *SurnameFirstname_Week2.py* (where *Surname* and *Firstname* should be replaced with your name) and upload it to Brightspace. Additionally, you must upload a PDF of your code. Create a PDF from Canopy by selecting *File* → *Print*, and print to PDF.