TU Dublin- Tallaght Campus
Department of Computing

Software Development 1

Worksheet/Laboratory

Create a New Project, called week3, and add a New File (Python) week3exercises to the project. All solutions should be in the week3exercises file. To move on to the next exercise, comment out the previous exercise after completing and running it.

Instructions: Upload the week3exercises.py file.

Take time to design your solutions before coding.

Exercise 1. Converting a given algorithm to a Python program

Write a program to convert 35 degrees Fahrenheit to degrees Celsius.
(Formula you need to convert: celsius = (5/9) * (fahrenheit - 32))

Pseudo-Code

- **Data**
  Inputs:
  fahrenheit : floating point - temperature in degrees fahrenheit
  Outputs:
  celsius: floating point - temperature in degrees celcius
  Constants:
  BASE = 32
  CONVERSION_FACTOR = 5/9

- We now design the algorithm
  1. fahrenheit = 35
  2. Convert the degrees to Celsius by:
     celsius = CONVERSION_FACTOR * (fahrenheit - BASE)

  3. Output the degrees in Fahrenheit and Celsius, round the Celsius temperature to 2 decimal places.

Make sure you check your results.

Exercise 2.
Design and write a program that creates and assigns values to two floating point numbers and calculates and prints their sum, difference, and the product(i.e. multiplication).

Exercise 3.
Design and write a program that converts 60 miles to kilometres. One mile equals 1.60935 kilometres. Store the miles, kilometre per mile and resulting kilometres in your program.
Take time to design your solution before coding.

Exercise 4.
Fix the last line so that it outputs the sum of 1 and 2. Do **not** change the first two lines. Only the last one.

```
1.          a = "1"
2.          b = 2
3.          print(a + b)
```

Expected output: 3

Exercise 5.

Design and write a program to solve the following problem. If a group of four pirates finds a chest full of 107 gold coins and they divide the spoils evenly, how many whole gold coins does each pirate get? How many coins are left over?

Use variables to store the number of coins, the number of pirates, calculate the number of whole coins each pirate gets and the number left over and print all the information to the screen after the calculations.(hint – see jar of coins example in this week's notes)

Exercise 6.
Design and write a program that assigns the length and width of a rectangular yard and the length and width of a rectangular house situated in the yard.
Your program should compute the time required to cut the grass in the yard at the rate of 2 square meters per second.
Display the result rounded to 2 decimal places.