2807/7001ICT Programming Principles (I), Trimester 3, 2019
Workshop 5

School of Information and Communication Technology
Griffith University

October 29, 2019

Module	2
When	Day 5
Goals	In this workshop we create programs that use and/or define functions.
Marks	5
Due	Pre-workshop questions at the start of the workshop; problems by the *beginning* of the next workshop.

1 Preparation

Before your workshop class:

- Read all of this document.
- Review the lecture notes sections 1 to 16.
- Bring some paper (a print-out of this document is best) and writing implements.
- Bring a storage device, such as a portable hard drive and cable, or a USB drive.

2 Pre-workshop questions (1 mark)

Complete these questions in writing *before* the start of the workshop. They will be marked early in the workshop.

1. What is the important difference between a definite loop and an indefinite loop?

2. Python's definite loop statement is the _____ loop.

3. Python's indefinite loop statement is the _____ loop.

4. Which kind of loop (definite or indefinite) would be appropriate in these situations:

   (a) counting the number of user inputs until they quit? _____

   (b) printing the names of all the players in a Netball team? _____

   (c) summing the numbers from 1 to 100? _____

5. In these code snippets, how many times will the print statement execute? Work it out or, run the program and count them. :-)

   (a)
   ```
   for i in range(1000):
       print('tweet')
   ```

   (b)
   ```
   for i in range(1, 1000):
       print('tweet')
   ```

   (c)
   ```
   for i in range(1000):
       for j in range(1000):
           print('tweet')
   ```

   (d)
   ```
   for i in range(1, 101):
       for j in range(1, i + 1):
           print('tweet')
   ```

6. Use the lecture notes, the Python standard library documentation, or Professor Google to find:

   (a) the function that returns the length of a string _____

   (b) the method that returns `True` if and only if every character in a string is a decimal digit

   _____

   (c) the method that returns a copy of a string with leading and trailing whitespace removed

   _____

3 Workshop activities

3.1 Marking last workshop's problems

If you have problems that still need marking from the previous workshop, get them marked at the *start* of this one.

3.2 Problem 1 (1 mark)

Problem: Write a program that prompts for and reads strings until an empty string is entered, then prints the longest string that was entered. The output must match the punctuation in this example exactly (with quote marks).

```
Enter a string: Mrs Jaypher said, 'It's safer
Enter a string: If you've lemons in your head;
Enter a string: First to eat, a pound of meat,
Enter a string: And then to go at once to bed.
Enter a string: Eating meat is half the battle,
Enter a string: Till you hear the Lemons rattle!
Enter a string: If you don't, you'll always moan,
Enter a string: In a Lemoncolly tone;
Enter a string: For there's nothing half so dreadful,
Enter a string: as Lemons in your head.
Enter a string:
Longest was: 'For there's nothing half so dreadful,'
```

Hint: use the sentinel pattern.

3.3 Problem 2 (1 mark)

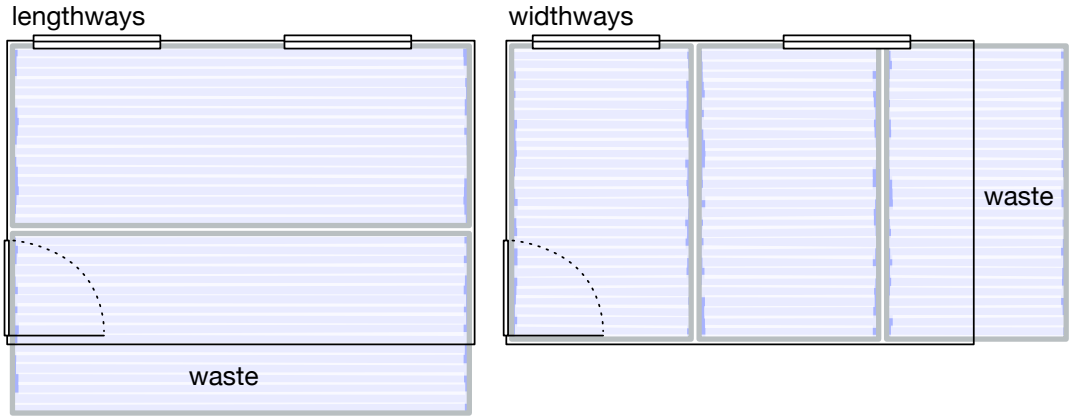
Problem: Write a *function* that returns `True` if and only if its string argument contains no digits. Your program should allow the user to test the function over and over in a loop, like this:

```
Enter a string: sdsdffd
Has no digits: True
Enter a string: fff5ggg
Has no digits: False
Enter a string:
```

Hint: make good use of standard library functions and methods.

3.4 Problem 3 (2 marks)

Problem: Roll carpet comes in rolls 3.66 meters wide. Carpet is paid for by the total number of whole metres that need to be cut from the roll. It may be laid in a rectangular room lengthways or widthways. Either way there might be some wastage. The length of a room is always its longer dimension and its width is always its shorter dimension.



Write a program that repeatedly asks the user for room dimensions until either dimension entered is zero or less. For each room print the length and width (to the nearest millimetre), and the total length of carpet required in whole metres, both lengthwise and widthwise. For example:

```
Enter room dimension 1 (m): 2.5
Enter room dimension 2 (m): 5.5
Length = 5.500 m
Width = 2.500 m
Total length required lengthways = 6 m
Total length required widthways = 5 m
Enter room dimension 1 (m): 5.5
Enter room dimension 2 (m): 2.5
Length = 5.500 m
Width = 2.500 m
Total length required lengthways = 6 m
Total length required widthways = 5 m
Enter room dimension 1 (m): 0
Enter room dimension 2 (m): 0
```

Hints: use the sentinel pattern; make good use of standard library functions; and simplify your program by writing a function to compute the total length required given two dimensions, and call it twice with the dimensions in both orders.

4 After the workshop

- You have created programs that might be useful to refer back to in future workshops. Make sure that you will have that work in the future. One copy is not enough for at IT professional. You should have at least 2 copies:

1. on your Griffith network storage drive; and
2. on your portable storage device.