

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

Workshop 3

School of Information and Communication Technology
Griffith University

October 28, 2019

<i>Module</i>	1
<i>When</i>	Day 3
<i>Goals</i>	In this workshop we create interactive scripts that make decisions.
<i>Marks</i>	5
<i>Due</i>	Pre-workshop questions at the start of the workshop; problems by the <i>beginning</i> of the next workshop.

1 Preparation

Before your workshop class:

- Read all of this document.
- Review the lecture notes sections 1 to 11.
- 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 (2 marks)

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

1. Which Python type would be appropriate for:

(a) the number of students in the class? _____

(b) a person's weight in kilograms? _____

(c) a person's height in metres? _____

(d) a person's height in centimetres? _____

(e) the number of children in a family? _____

(f) the average number of of children in all Australian families? _____

2. Some operators are *binary* and some are *unary*. What do these words mean in this context?

3. What is the important difference between types `int` and `float`?

4. Describe the difference between a *compiler* and an *interpreter*?

5. Which of these are valid variable names? Answer “yes” or “no”. If “no” say why.

(a) `x` _____ ; _____

(b) `x2` _____ ; _____

(c) `2x` _____ ; _____

(d) `SHOUT` _____ ; _____

(e) `robin` _____ ; _____

(f) `yellow robin` _____ ; _____

(g) `yellowRobin` _____ ; _____

(h) `YELLOW_ROBIN` _____ ; _____

(i) `epsilon` _____ ; _____

(j) `lambda` _____ ; _____

6. Complete this table, if the following statements have already been executed.

```
i = 7
j = 2
x = 2.2
```

<i>expression</i>	<i>type</i>	<i>value</i>
<code>3</code>	<code>int</code>	<code>3</code>
<code>x</code>		
<code>i + x</code>		
<code>i % j</code>		
<code>j % i</code>		
<code>'x'</code>		
<code>'x' + 'i'</code>		

3 Workshop activities

These problems are deliberately wordy (like problems in the real world).

Consider:

- What is the required output?
- What are the inputs?
- Work through the problem by hand, so you know what the outputs should be for some inputs.

You may choose any tools you like, so long as the program is written in Python 3. At any stage, when you are stuck, *ask your tutor!*

3.1 Problem 1 (1 mark)

Problem: The grades at Koala University are awarded based on the number of marks awarded for the course out of 100. Marks of 90 or above receive the grade of “gum leaf cluster”. Marks less than that but of 60 or above receive the grade of “leafy twig”. Marks less than that but of 45 or above receive the grade of “gum leaf”. Anything less gets the grade of “dead twig”. Write a program that asks the user for a number of marks, and prints the grade awarded.

3.2 Problem 2 (1 mark)

Problem: A rugby team has 15 players. A bus company has only big buses that can carry 38 passengers. Write a program that the tournament organiser can use to calculate the number of big buses that should be hired.

3.3 Problem 3 (1 mark)

Problem: A salesperson in a camera shop earns a base wage of \$30.25 per hour up to their normal work week of 37 hours. Only whole hours are counted. If they work more hours than that (overtime) they get paid at 1.5 times their normal rate for the overtime. If they sell more than \$3000.00 worth of camera gear in the week, they get a bonus of 3% of the sales over the \$3000.00 minimum. Write program to calculate the wages plus bonus for a salesperson in a week.

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 an IT professional. You should have at least 2 copies:
 1. on your Griffith network storage drive; and
 2. on your portable storage device.