reading R&R research

These tasks are designed to introduce you to the programming topic we will be studying in class next lesson. You **must** complete these activities prior to the lesson.

Student Declaration

By signing this declaration you are confirming that the work undertaken below is your own and that it complies with the college code of conduct.

signed	Jordan Russell		
print name		date	

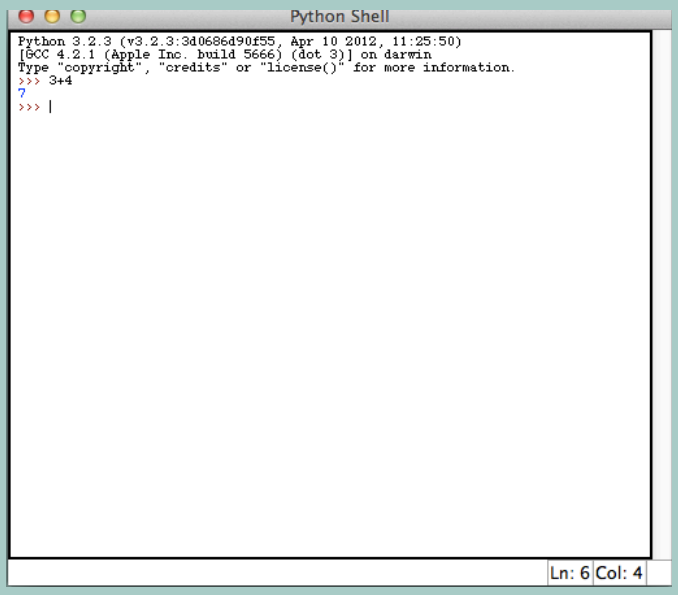
Simple Calculations

A simple task that we can perform in a programming language is returning the answer of basic calculations. We can use all of the standard mathematical **operators** in Python plus a few than look a little different.

Task One

Use the Python shell to investigate the expressions given below, describe what each symbol represents and given the answer provided by the shell.

Expression	Symbol description	Answer
3 + 4	*addition*	*7*
2 - 1	Subtraction	1
5 * 3	Multiplication	15
2**3	Exponent	8
27 / 7	Division	3.86
27 // 7	Floor division	3
27 % 7	Modulus	6



Most of Task One should have been very straightforward but you may have struggled to find a description for the last two expressions in the table..

Task Two

Use the Internet to discover the name of each of the symbols listed below and then explain in your own words the purpose of each symbol.

Symbol	Name	Purpose
//	Floor divisi	The division of operands where the result is the quotient in which the digits
%	Modulus	Divides left hand operand and right hand operand and returns the remaind

You will use all of the above symbols frequently whilst learning to program in Python so it is important to remember then. Often then are used together to calculate the result of more complex expressions.

More complex calculations

Often more than one term will be evaluated in a single expression. In Mathematics there is a rule to deal with such situations.

Task Three

Investigate the expressions below. Evaluate them by hand first before testing your answer in the Python shell.

Expression	Expected Result (Manual Calculation)	Actual Result from Python Shell
3 + 4 * 2	14	11
3 + 4 / 2	3.5	5
10 - 2 * 2	16	6
10 - 2 / 2	4	9
(3 + 4) * 2	14	14
(10 - 2) * 2	16	16

Now that you have completed the above table comment on the results in the space below. How do the results relate to your knowledge of Mathematics?

The computer did the sums backwards from the way I did, for example, 4*2 then + 3, whereas I did 3+4 then * 2. However the sums with brackets were done the same way as me, as well as the way I did the sums without brackets.

The assignment statement

One of the most important symbols in Python is the **assignment symbol** (=). Notice that we have called (=) the assignment symbol and not the equals to symbol. This is an important distinction to make, you will be introduced to the equals to symbol in the next R&R assignment.

Task Four

Use the Python shell to investigate the expressions given below, describe what each symbol represents and given the answer provided by the shell.

Expression	Describe what happens when you enter the expression into the shell
mark1 = 10	It does nothing and moves on to the next line.
mark2 = 15	It also does nothing and moves to the next line.
mark1 + mark2	It printed 25, which is 10 + 15.

In the space below attempt to explain what has happened with the above expressions:

Typing mark1 = 10 told the computer to store the variable 'mark1' as 10, and then 'mark2' as 15. These two values were sent to the memory, but nothing was output because the computer wasn't told to do anything with them. However once typing mark1 + mark2, the computer retrieved the values from the memory and displayed the result of the sum.

Variables

Task four introduced you to the concept of variables. This is a fundamental concept in programming, you must have a good understanding of variables to progress on to more complex concepts.

Task Five

Read pages 28-29 of the AS Computing textbook, which cover variables and assignment statements. Below, define what is meant by the term variable and some of the considerations you should keep in mind when naming variables.

definition	A variable is a box in which you can store a value.
consideration 1	Choose a meaningful name for the variable box which relates to the program, such as 'name' when askir
consideration 2	Some languages are case sensitive and some languages do not allow certain combinations of characters
consideration 3	Follow generally accepted naming conventions so that you and other programmers can easily understan
consideration 4	Do not use single letter or unnecessarily long identifiers for your variables, because they can be difficult t

Summary

In this R&R you have investigated **assignment statements**. You have seen how **mathematical operators** are used to construct expressions and how values can be stored in **variables**.

Please make sure you have completed this R&R fully before your next programming lesson as it will form the basis of the initial classroom discussion and starter tasks.

Task Six

Complete the following three exercises in Python:

a. Write a program that will ask the user for three integers and display the total.

b. Write a program that will ask the user for two integers and display the result of multiplying them together.

c. Ask the user for the length, width and depth of a rectangular swimming pool. Calculate the volume of water required to fill the pool and display this volume.

Python Syntax

```
print('hello world')
```
outputs the text string to the screen.

```
print('Your age is:', yourAge)
```
outputs the text string to the screen followed by the value contained in the variable.

```
yourAge = 5
```
assigns the value 5 to the variable.

```
inputAge = int(input('Please enter your age:'))
```
assigns the input from the keyboard to the variable.

Task Seven

On the back of this page there is space for you to **write** the code from each of the exercises in Task 6

Program evidence

This space has been provided for you to provide the evidence for **Task 7**.

Program code

Write a program that will ask the user for three integers and display the total.

```
firstInteger = int(input("Please input your first number: "))
secondInteger = int(input("Please input your first number: "))
thirdInteger = int(input("Please input your first number: "))
result = (firstInteger + secondInteger + thirdInteger)
print (result)
```

Program code

Write a program that will ask the user for two integers and display the result of multiplying them together.

```
firstInteger = int(input("Please input your first number: "))
secondInteger = int(input("Please input your second number: "))
result = (firstInteger * secondInteger)
print (result)
```

Program code

Ask the user for the length, width and depth of a rectangular swimming pool. Calculate the volume of water required to fill the pool and display this volume.

```
lengthOfPool = int(input("Please input the length of the swimming pool: "))
widthOfPool = int(input("Please input the width of the swimming pool: "))
depthOfPool = int(input("Please input the depth of the swimming pool: "))
volumeOfWater = (lengthOfPool * widthOfPool * depthOfPool)
print (volumeOfWater)
```