School of ICT

KIT100 Programming Preparation

Tutorial 2

Aims:

- to become familiar with the IDLE environment;
- to write a first Python program; and
- to gain experience debugging basic programs.

1. Log in to the computer

You will need to use your UTAS username and password. If you have not synchronised your ICT username/password please refer to the details in Tutorial 1 or visit http://kiosk.cis.utas.edu.au. Your tutor can also assist.

2. Open IDLE

Follow the instructions from Tutorial 1 to open IDLE. Take some time to explore the different menus, become familiar with the IDLE environment.

3. Executing statements in the Python Shell Command Line

You can directly type basic statements into the command line in the IDLE environment.

- Type directly into the command line:

```
print ("Hello world!")
```

Does this Python statement provide an output that you expected?

4. Create your first Python program

Entering Python statements at the command prompt (>>>) is convenient, but the statements are not saved. To save statements we will need to create a source file (our lines of code).

- Type in the following program, remembering to save it (remember Python files are named with the extension .py on the end of the filename):

```
''' KIT001 Tutorial 1
    Program by <<your name>>
'''

print ("Hello world!")
print ("Nudge Nudge Say no More!")
```

Remember that `'''` (triple-quote) at the start of a line creates comments that run over multiple lines (with the last line ending the comment with another `'''`), and the hash character `#` is for one line comments.

- Experiment by using different commenting formats – what happens if you type the following before your first `print` statement (remember what our statements are from Lecture 2):

```
# This will print 'Hello world!'
```

This table will help you remember what the different symbols mean when we are writing our source code (our application).

Character	Name	Description
()	Opening and closing parentheses	Used with functions (we'll see these later)
#	Pound (Hash) sign	Precedes a comment line
' ' or " "	Opening and closing (single or double) quotation marks	Enclosing a string (i.e., sequence of characters)
''' '''	Triple opening and closing single quotation marks	Enclosing a paragraph comment

5. Compile and execute your program

Running a Python program from a source or script file is what we call Python running in script mode. Typing a statement in at the command prompt and executing it is called running Python in interactive mode.

- Compile and run the code by choosing **Run Module** from the **Run** menu.

Does your program run?

6. Experiment with the compiler

Introduce some errors and re-compile the program. Try each of the following one at a time — i.e. introduce the error, save the program, and try to compile it. Fix the error so that the program will compile and then try the next one.

- Suggested errors:
  - delete the closing double-quote **"** after the world! string at the end of the statement;
  - change the case of "**print**" to "**PRINT**"
  - misspell "**Hello**" as "**hullo**";
  - delete one of the quotes (') in the comment triple quote;
  - add a "**;**" to the end of the line.

Some of these are errors and some of them are not.

It is important to become familiar with the error messages (some are not very helpful) so that you can practise deducing the likely cause of mistakes. Note that the error is often identified at the wrong location, or causes a different error to be indicated. You need to think about what the compiler is telling you and some interpretation may be required.

7. Using Python to Perform Mathematical Computations

Python programs can perform all sorts of mathematical computations and display the result. By still using the **print** function you can get the computer to work through some maths for you.

- See if you can work out how to get Python to add two numbers together. Instead of placing "Hello World" inside the print function, you will need to replace that with a math expression. See what other equations you can get the computer to perform for you using the **print** function.

7. Additional work if you have time

- Write a program that displays "Hello World!" five times.

- Write a program that displays the following pattern:

```
FFFFFFF      U         U      NN      NN
FF           U         U      NNN     NN
FFFFF        U         U      NN  N   NN
FF             U     U        NN    NNN
FF               UUU           NN    NNN
```

- Write a program that displays the result of:

$$\frac{9.5 \times 4.5 - 2.5 \times 3}{45.5 - 3.5}$$