

LAB - Part 1

1 Installation

Make sure you have installed the Anaconda distribution (v3) of Python v 2.7 in order to complete this lab.

2 Getting Started

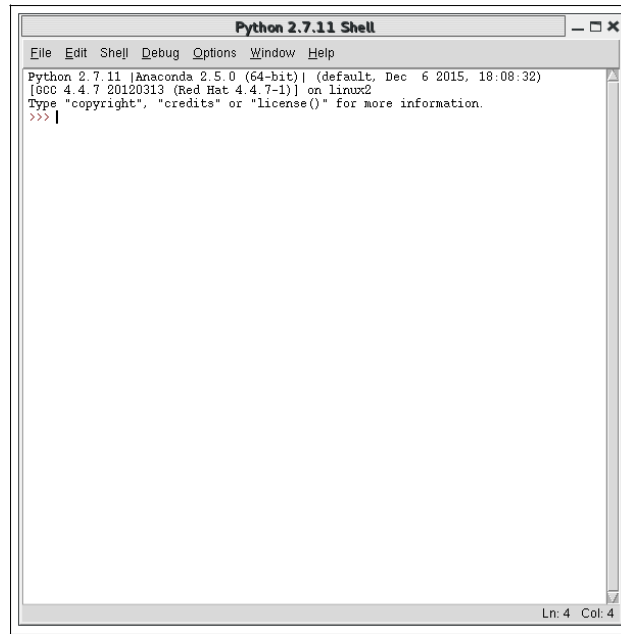
Programming a computer in Python involves:

1. writing **code** on a computer in Python;
2. **testing** that code, using the Python **interpreter**, which converts the Python commands into machine code that can be executed by your computer and then runs the code;
3. determining if your code works as you intended; and usually
4. **debugging** the code -- i.e., figuring out what went wrong and trying different ways to fix it -- which means, going back to step 1 and editing your code, downloading it, running it, debugging again, and so on...

3 Write your first program: Hello World!

1. Start up the **spyder** development environment by opening a **Terminal** window on your computer. Do this by typing Anaconda Powershell Prompt in the start menu. Then, at the Anaconda Powershell prompt in the Terminal window, type **idle**.

Then a new window should open, looking something like this:



2. Because Python is an *interpreted* language and the IDLE development environment comes with its own **shell** window, you can actually write Python code and test it directly in this shell window.

At the **prompt** (i.e., the >>> characters), type the following:

```
>>> print 'hello world'
```

as shown below, on the left (a). When you press the *return* or *enter* key, the code will *execute* and your shell should respond as shown below, on the right (b).

```
Python 2.7.11 [Anaconda 2.5.0 (64-bit)] (default, Dec 6 2015, 18:08:32)
[6CC 4.4.7 20120313 (Red Hat 4.4.7-1)] on linux2
Type "copyright", "credits" or "license()" for more information.
>>> print 'hello world'
hello world
>>>
```

Ln: 4 Col: 23

(a)

```
Python 2.7.11 [Anaconda 2.5.0 (64-bit)] (default, Dec 6 2015, 18:08:32)
[6CC 4.4.7 20120313 (Red Hat 4.4.7-1)] on linux2
Type "copyright", "credits" or "license()" for more information.
>>> print 'hello world'
hello world
>>>
```

Ln: 6 Col: 4

(b)

This is one way to execute commands in Python, however, it is more useful to create programs that contain multiple commands and save them in a text file. We'll do that next.

- From the **File** menu, select **New File**, as shown on the left (a). Your screen should look something like the window on the right (b).

```
Python 2.7.11 [Anaconda 2.5.0 (64-bit)] (default, Dec 6 2015, 18:08:32)
[6CC 4.4.7 20120313 (Red Hat 4.4.7-1)] on linux2
Type "copyright", "credits" or "license()" for more information.
>>>
```

Ln: 6 Col: 4

(a) IDLE shell window

```
Untitled
File Edit Format Run Options Window Help
```

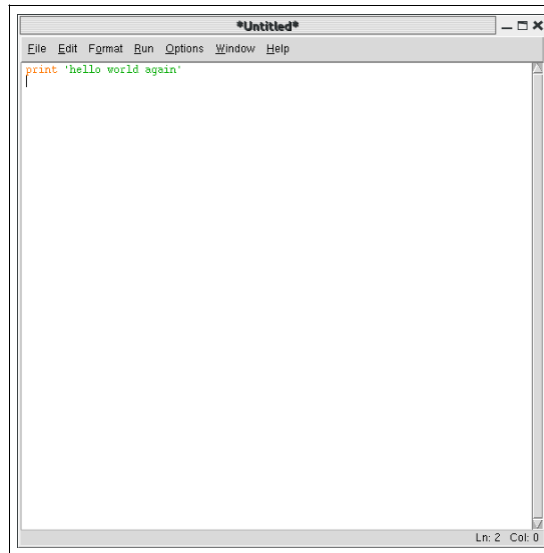
Ln: 1 Col: 0

(b) IDLE editor window

Type the code for your program into the editor window:

```
1 print 'hello world again'
```

Now your editor window should look something like this:

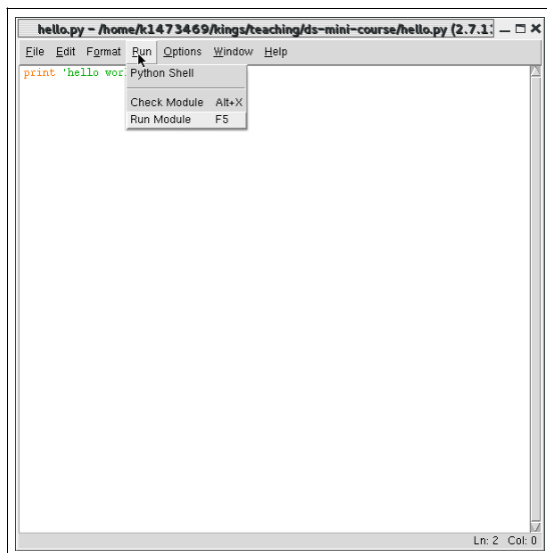


Note that the editor has a built-in feature called *syntax highlighting* that automatically displays elements of your Python code in particular colours. As you learn more about Python keywords and types of data, the different colours should become more meaningful.

4. From the **File** menu, select **Save As...**, as shown below. Enter a name for your file. Python programs typically end in the **.py** extension, so you might call your first program **hello.py**.



5. Now you can test your code. From the **Run** menu, select **Run Module**, as shown on the left (a). Your Python **shell** window should look something like the window on the right (b).



(a)



(b)

6. So, you have written your first Python program! Congratulations!

Now you can complete further lab exercises that focus on learning more about the Python language.

4 Resources

Python: <https://www.python.org/>

Python documentation:

- for Python version 2.7.12: <https://docs.python.org/2/>
- for Python version 3.5.2: <https://docs.python.org/3/>
- on the differences between Python v2.x and v3.x:

<http://stromberg.dnsalias.org/~dstromberg/Intro-to-Python/Python%20and%203.pdf>

Tutorials:

- Python version 2.x: <https://docs.python.org/2/tutorial/>
- Python version 3.x: <https://docs.python.org/3/tutorial/>
- Python in 10 minutes, for programmers: <http://www.stavros.io/tutorials/python/>