

# Python Setup

## MATH1900: Machine Learning

Location: [http://people.sc.fsu.edu/~jburkardt/classes/ml\\_2019/python\\_setup/python\\_setup.pdf](http://people.sc.fsu.edu/~jburkardt/classes/ml_2019/python_setup/python_setup.pdf)



*A screen you may see when setting up Python*

### Python Setup

- *getting a terminal window*
- *check whether Python is already available on your machine;*
- *install Python on your machine;*
- *check the version of Python;*
- *check that Python is working;*
- *create Python scripts, run them, and save them;*

## 1 Getting a terminal window

We will want to use the Python language inside a terminal window, that is, a window into which we can type text commands, and see the responses. Getting a terminal window depends on your operating system:

- on Linux, you may click your mouse in a blank area of the screen, to see a menu that includes the words **Open Terminal**;
- On MacOS, there is a **Terminal** application, which may be hidden in the Utilities folder of your Application directory. Clicking on the icon will start the program;
- On Windows, the latest version includes **Windows Terminal**;

## 2 Is Python3 already installed?

To see if you have any version of Python installed on your computer, issue the following command in your terminal window:

```
1 which python
```

If the response is a blank line, you have no version installed at all. Otherwise, you will be given the location of a program. On my system, the response is

```
1 /usr/bin/python
```

Now that I know `python` is a legal command, I can ask for the version:

```
1 python -V
```

When I run this, I see

```
1 Python 2.7.15+
```

which means that my computer has at least one version of Python, and that if I type `python` without specifying a version number, I will get a version of Python2. To guarantee that I get version 3, I will want to use the command `python3`. So I can use the command `which python3` to check if it's there, and if so, the command `python3 -V` to get the complete version information.

#### Exercise:

1. Is the `python` command available on your computer?
2. If so, what version of Python does it use?
3. If `python` gets version 2, then is the `python3` command also available?

## 3 Installing Python3 if you don't already have it

The website <https://realpython.com/> has numerous tutorials on Python. In particular a useful step-by-step guide, *Installing Python on Windows, macOS, and Linux*, is available at <https://realpython.com/installing-python/>

Briefly, to download Python3, go to <https://www.python.org/downloads/> and look for the latest release, which will be Python 3.7.4 or later.

Note that, when you download Python3, you automatically have access to `idle`, a handy editor for creating, correcting, and running Python scripts. From the command line, you can type `idle`, or to create or modify a specific Python file, `idle myprog.py`.

The `pip` program can be used to install and update Python packages. On Windows and macOS, this will be available automatically as part of your Python3 installation. On a Linux machine, you may need to install this program yourself - note that on Linux the program name is `pip3`. The necessary command on Ubuntu Linux is:

```
1 sudo apt-get install python3-pip
```

Along with Python3, you will need the following additional packages now:

- `numpy`, a numerical library;
- `scipy`, a scientific programming library;
- `matplotlib`, a graphics library;

Eventually, we will also want:

- `tensorflow`, needed for the keras package;
- `keras`, a neural network package we will need eventually, at <https://keras.io>;
- `cvxopt`, an optimization package at <https://cvxopt.org/>;

## 4 Try a tutorial

If you are unfamiliar with Python, find a book or online resource, and learn enough so that you think you understand how to create and run a simple Python script.

For example, you can go to [www.python.org](http://www.python.org) and look at the *Get Started* item. Under the section called “Learning” is a pointer to many online tutorials.

Whatever resource you choose, concentrate on finding the simple “Hello, world!” example, and an example of a `for` loop that runs from 1 to 10. Read enough so that you think you, too, could write and run such an example.

## 5 Computing assignment #0

Now see if you have learned enough to write and run a Python script which you should store in a file called *hw0.py*. Your script should

1. Print *Hello, world!* ;
2. Print the numbers 1 through 10;

Email a copy of your script to Dr Schneier at [mhs64@pitt.edu](mailto:mhs64@pitt.edu) before Friday 6 September.