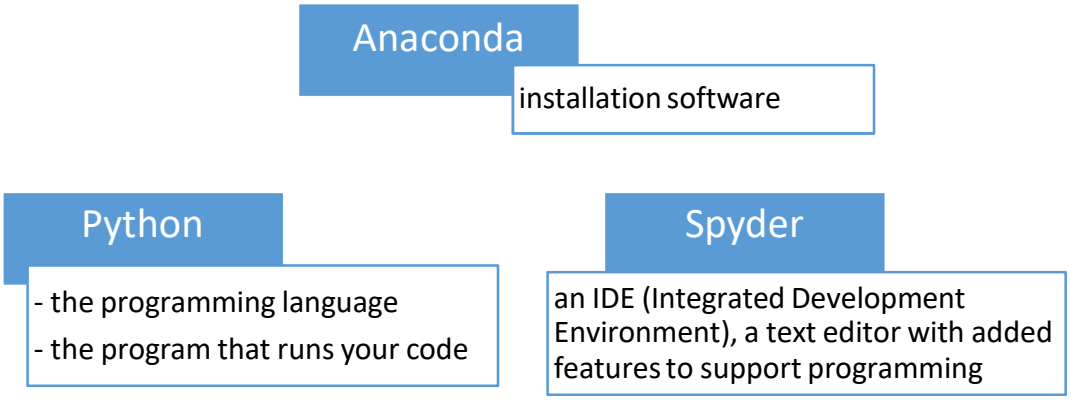
GETTING STARTED WITH PYTHON USING MACINTOSH

March 3, 2017

Python is a programming language, and you'll be writing your Python code in the programming environment called Spyder. The Anaconda distribution simplifies the installation process by including Python, Spyder, and other packages and tools in one installation file.



Installing Anaconda

1. Go to http://continuum.io/downloads
2. Scroll down to find your operating system and click on Python 3.5 (or the latest version) to download the graphical installer.

   a. If your mac OS is prior to 10.7, see the FAQ. _____

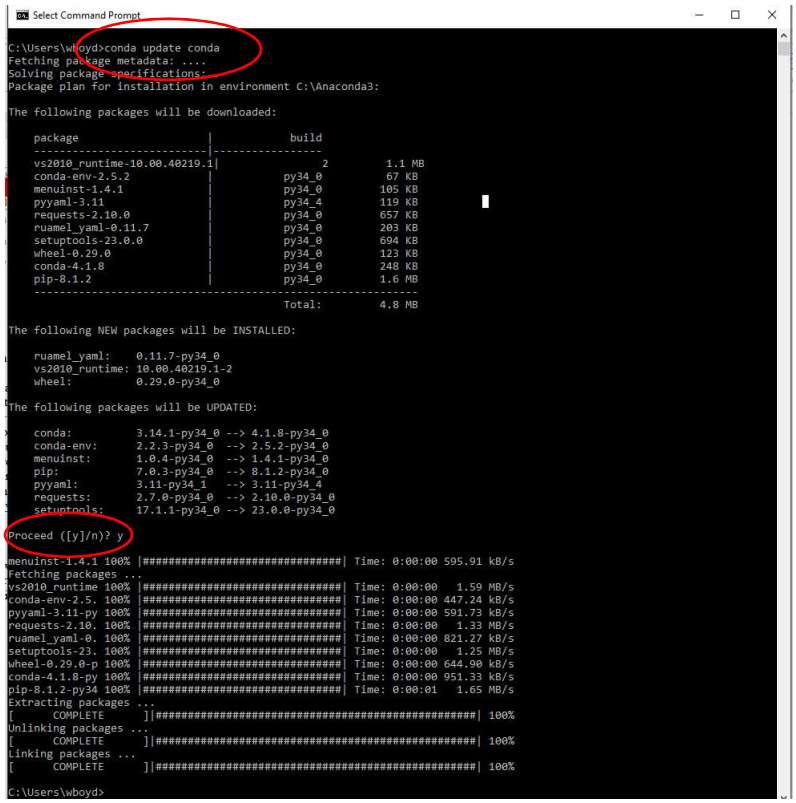
3. Save the file to your computer.
4. Double click on the downloaded file to open it.
5. Follow the on-screen installation instructions, leaving options as they are currently set. This finishes the installation process.
6. (OPTIONAL) Next, check for any updates using Conda. Conda is one of the extras that is installed through the distribution Anaconda. It handles things like updates, set-up, and package installation through a command line interface. If there are many updates this can take 10 minutes or more. It is rare that you will have to use it

   a. Open Terminal, which you can find by using Spotlight.

b. Type `conda update conda` at the command prompt in the terminal, typing `y` for Yes and then pressing enter when it asks if you want to proceed. Your installation may identify different packages that need updating (see Windows image at right for the text shown in the terminal window).

c. After that completes, type `conda update anaconda` at the command prompt. If it prompts you to proceed with installation or updating, type `y` for Yes and press enter.

d. After that completes, you can then close the command prompt window.



Getting to Know Spyder

You will write your programs and run them inside the Spyder IDE (Scientific Python Development Environment):

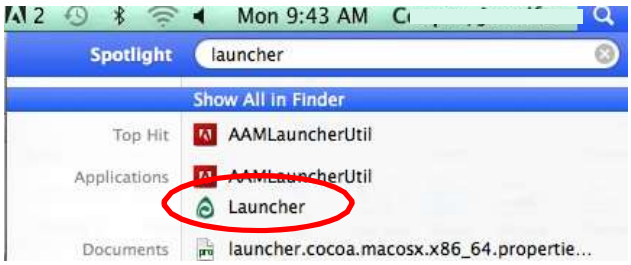
Spyder 

Start spyder by going to Spotlight, typing spyder, then clicking on it when it comes up. Other options are below.

There is an old way of running Spyder and a newer one for the latest installs. We'll go through the **older** way first using **Launcher**. However, you are likely to have the **new** version that uses **Anaconda-Navigator** and should skip down below to that. Anaconda changed to the new version in November 2016. Use whichever version your installation provides.

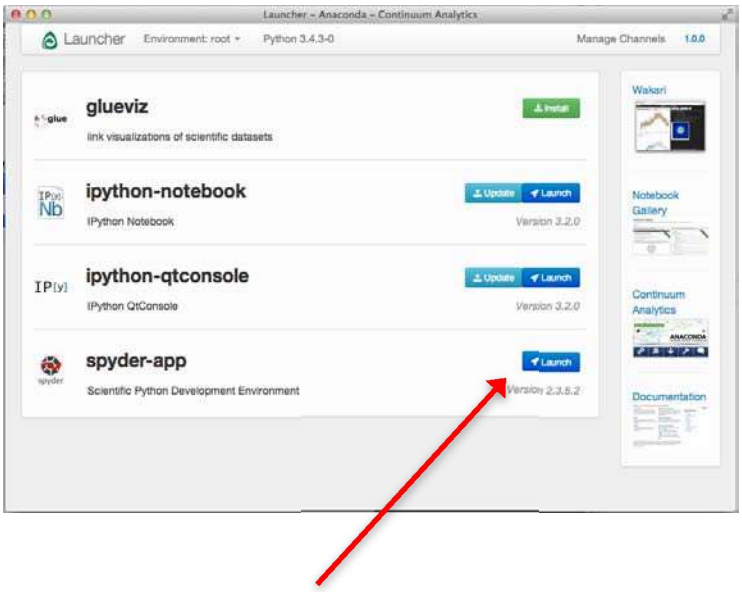
Older way of starting Spyder on a Mac using Launcher.

Use Spotlight to find the program **Launcher**. It has a green tear-drop shaped icon associated with it. If you don't find Launcher, then skip to the newer way below using Anaconda-Navigator.



Running Launcher opens the following window, in which you will click Launch, on the last line for **spyder-app**.

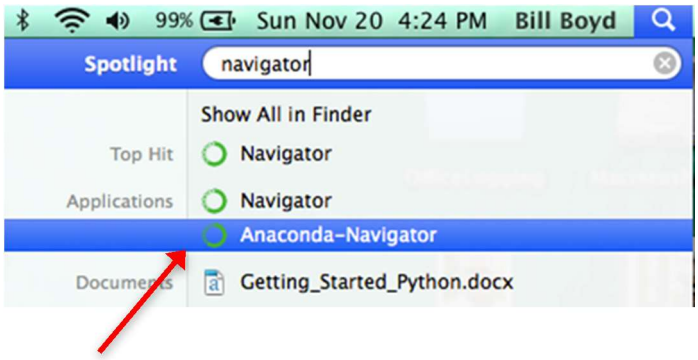
FYI: The icon for Python that goes in the OS X dock, once Spyder has started, is generic, and keeping it on the dock will not work.



New way of starting Spyder on a Mac using Anaconda-Navigator.

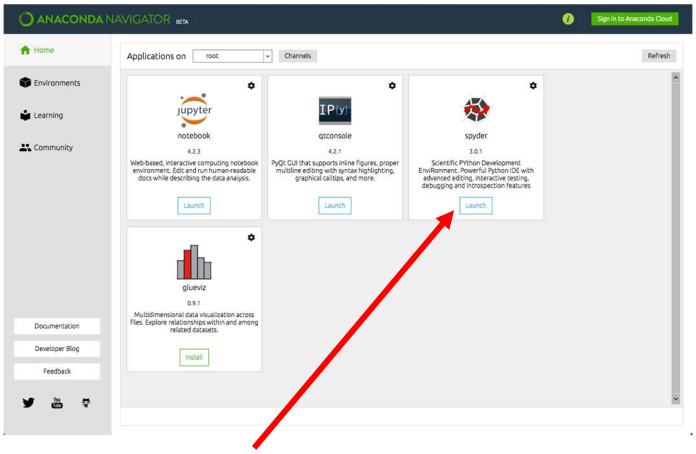
Use Spotlight to find the program **Anaconda-Navigator**. It has a green circular-shaped icon associated with it.

FYI: The icon for Python that goes in the OS X dock, once Spyder has started, is generic, and keeping it on the dock will not work

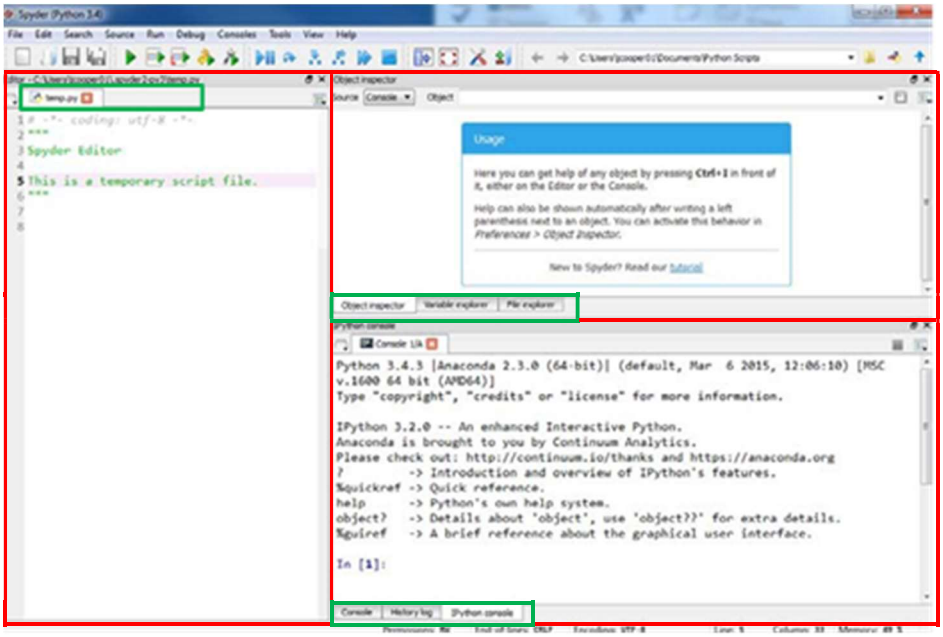


Running Anaconda-Naviagor opens the following window in which you will click Launch on the block below the Spyder icon.

FYI: The icon for Python that goes in the OS X dock, once Spyder has started, is generic, and keeping it on the dock will not work



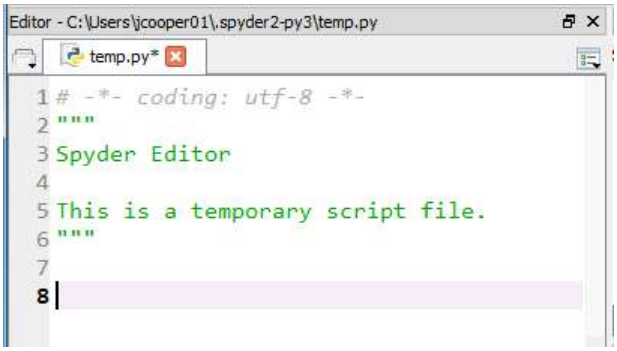
After Spyder has launched, you should see an interface that is organized into multiple windows (marked with red rectangles below) each of which has or could have multiple tabs (marked with green rectangles below).



The default starting screen has three windows visible: Editor, Object Inspector (now called Help), and Console.

If you accidentally close a window or change the layout, you can revert to the default by clicking "View" on the menu bar and then clicking "Reset Window Layout".

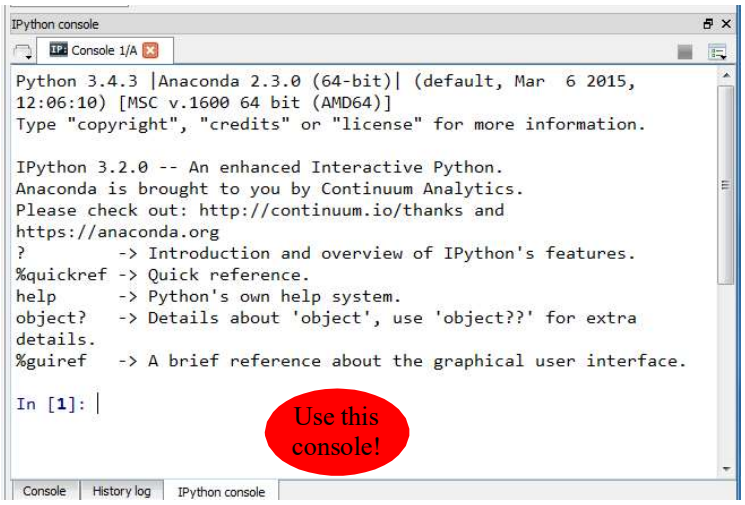
- **Editor** – where you can write and save sequences of commands – where you will write your program.



In the sample script that shows up in the editor, anything after # is a comment, meaning that Python will ignore that text. Three double quotation marks are a special type of comment that spans multiple lines.

Here, you would actually begin writing your syntax on line 8 after the comments that say what your file does.

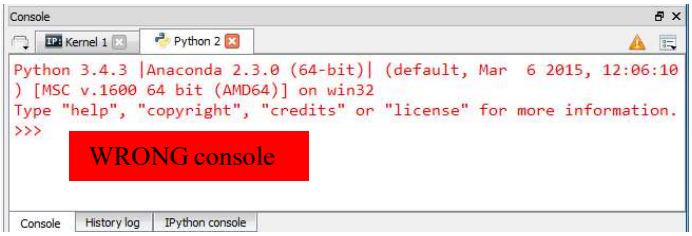
- **IPython Console or IP Console** – where Python runs your code.



Spyder offers two choices for a console – a basic one and an IPython (Interactive Python) console. It is the IPython console we want to use. We will often refer to it, however, as just the console. The prompt (where you can type in a command) for an IPython console is

```
In [1]:
```

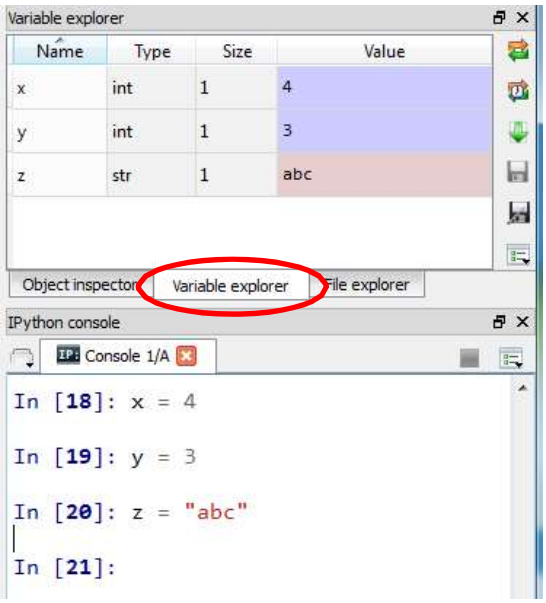
Caution: If your console looks like the one shown to the right, where the prompt is `>>>` then you are in the *wrong* type of console and need to click on the tab for the IPython console



- **Object Inspector (**aka **Help) –** Going to Help menu and choosing Spyder Tutorial will bring up a tutorial on Spyder in this window. The rest of the time, this window will continue to give you information.

  The **Object Inspector** gives you more information about a function – it gives you the documentation from the help files and tells you what parameters (or input) the function takes. **Note**: In the latest version of Spyder this is called **Help**.

  The **Variable Explorer** shows you the value and type of any variables you have created. In the image to the right, we created three variables in the console, and those three variables showed up in the Variable Explorer. This is useful when you are trying to debug your code.



Frequently Asked Questions about Installation

- I already use Python 2.7 or I would rather use Python 2.7. Will that work for this course or do I need to install Python 3.x?
    - No. Python 2.7 will not work. The programs are auto-graded using a Python 3 system and it will not be able to compile Python 2.7 programs, because Python 2.7 is not compatible with Python 3.x. Yes, this is unusual. But the developers of Python decided to change certain features when going to Python 3 that made it impossible for them to maintain complete compatibility with Python 2. However, should you wish to shift to Python 2, later, you will be able to adapt at the expense of very little time and effort. Various websites, including https://wiki.python.org/moin/Python2orPython3, outline some of the syntactic differences.

- I have a different IDE that I like to use. Will that work for this course?
    - You could, but it will take more effort than it is worth. One big benefit of the Anaconda installation is that it includes IPython and IPython notebooks. These allow us to keep a whole lesson in one file, separated into cells. We can easily execute the code in a single cell, so that we don't have to write complete programs to run and test our code. After you finish the course, you can change to a different IDE with little effort, however. Most IDEs are similar to Spyder, but don't include the teaching convenience of the cells.