

## CS1210 Computer Science I: Fundamentals

### Lab 0: Installing Python

#### Introduction

Python is an open source programming language available for a wide range of platforms (almost any platform, really, including your cellphone). You can find lots of information about Python on their website, <https://www.python.org>, as well as instructions for downloading and installing Python on your computer (if it isn't already installed). Among the other materials on the website, you will find tutorials, programming guides, and lots and lots of Python packages that can be used to extend the language in useful and interesting ways (you'll also find a complete set of language reference documents you may want to bookmark at <https://docs.python.org/3/>).

To make matters just a little more confusing, the newer version of Python, Python 3, is not quite compatible with the Python 2 version of the language that seems to come standard on many Macintosh laptops. **In this class, we will use only Python 3; that means, if you have Python 2 on your Macintosh already, you will need to install the Python 3 version as well.** The Python language is also customizable; you can add all sorts of standard software modules and extensions that let you access and parse web pages, run web services, run parallel programs, access your machine's GPU, parse natural language, perform statistical calculations, visualize data, and so on.

In short, it's totally overwhelming! Fortunately, there are other, easy, ways to install Python on your laptop or home machine that will provide a consistent platform for our class.

#### Continuum Analytics

In this class, we'll be using a distribution of Python packaged by Continuum Analytics (<https://www.continuum.io/>). Continuum Analytics' data science platform ("Anaconda") is based on Python that integrates many of those standard extensions and packages (over 720 of them) that you would otherwise have to install one by one in a "regular" Python installation (like the one that comes standard on your Macintosh, for example). This software is available free of charge, and includes all those extensions for parallel computing, visualizing data, statistical computing, and so on.

You are welcome to install Anaconda if you like, but it is pretty large (requiring about 3GB of free disk space), so the smaller, lighter-weight, Miniconda version of the Anaconda distribution is more than sufficient for this class.

#### Miniconda

Like Anaconda, Miniconda is available for Windows, Mac and Linux, in both Python 2 and Python 3 versions for both 32-bit and 64-bit systems. Remember, we want the Python 3 version, not Python 2! And as for whether you need the 32-bit or 64-bit version, that depends on your hardware (typically, newer machines are all 64-bit).

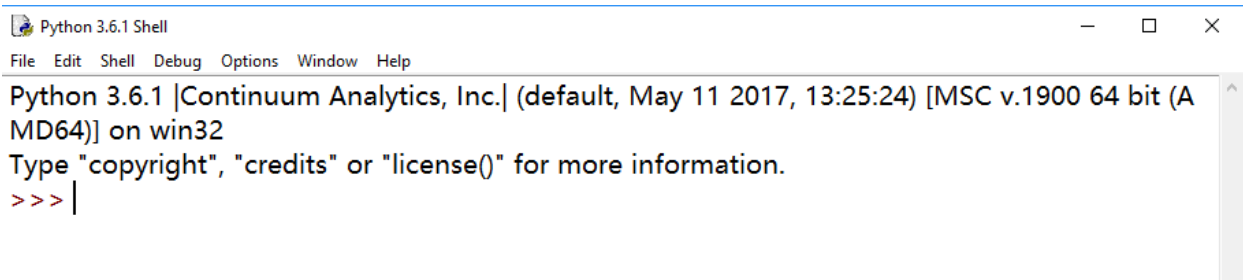
Visit <https://conda.io/miniconda.html> to download the appropriate Python 3.6 version for your machine (Windows, Mac or Linux; 32-bit or — more likely — 64-bit system). **Make sure you are downloading the Python 3.6 version of the software.**

Your TA will show you how to do a sample installation in your discussion section this week. Once you get home, follow the same steps taken by your TA on your own machine. For Windows, you may opt to install the software for "all users" (requires administrative permissions) or "just for you" (does not require administrative permissions). The only effective difference is where the software ends up living on your disk.

If you get stuck, you can refer to <http://conda.io/docs/user-guide/install/index.html> for the appropriate quick install instructions directly from the Miniconda website.

## Testing

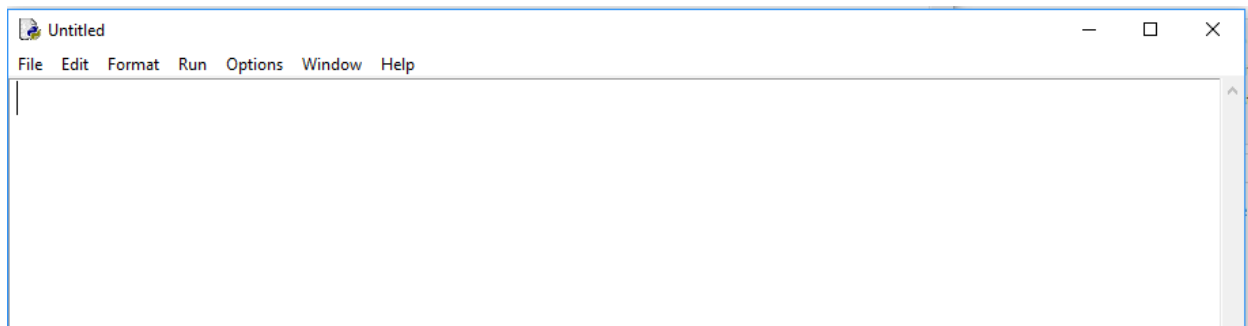
Once the software is installed, click on the IDLE icon (Windows or Mac) or launch the IDLE executable (Linux) from the files you just installed. If you have a Windows machine, the IDLE icon you want will be found in the Miniconda\Scripts folder, and will be of type "application." A new window containing a "Python shell" that looks something like:



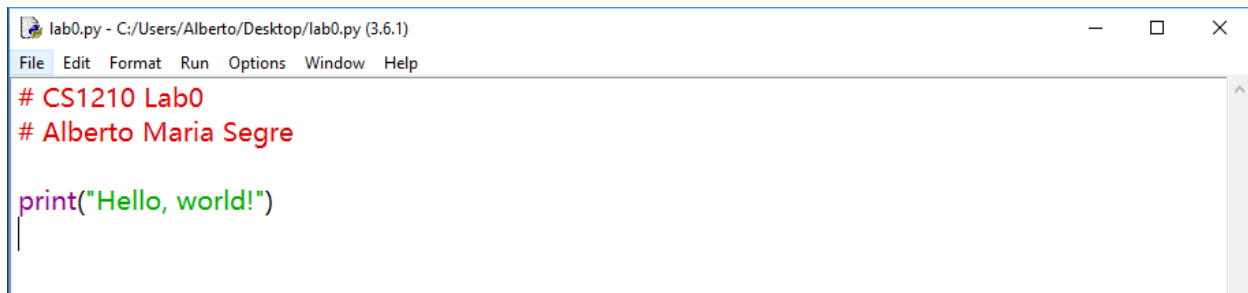
should pop up.

Check to make sure the banner reads "Python 3.6.x" (where x is some small integer, depending on the build version) and "Continuum Analytics". If it says something else, you are starting a different version of Python that was probably already installed on your machine; this will likely get you into trouble at some point when you least expect it. Be sure you are using the Continuum Analytics Python 3 distribution!

Click on the File menu item and select New File. This should open up a separate window for you to edit your Python code:



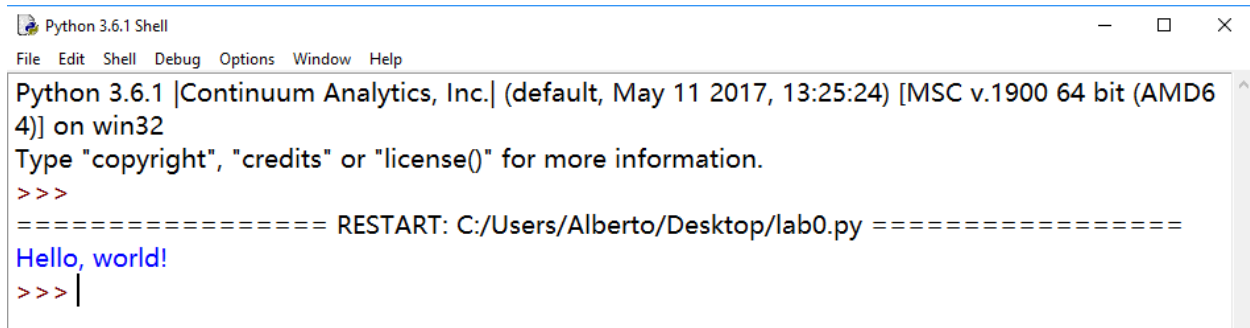
Type your first program exactly as shown (substituting your own name for mine, obviously):



Note that the colors are provided by the IDLE Python editor, and are used to highlight how Python will interpret your program. Red denotes a *comment*, which is not actually part of your program but is

provided for human consumption, while green denotes a *string* and purple denotes a *function*.

Click on the Run menu item and select Run Module (you will be asked to save the file first; go ahead and name it "lab0" — with Windows, the ".py" extension will be added automatically; Mac and Linux users should ensure the filename reads "lab0.py"). You should see something that looks like:

A screenshot of a Python 3.6.1 Shell window. The title bar reads "Python 3.6.1 Shell". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The main text area shows the following output:

```
Python 3.6.1 [Continuum Analytics, Inc.] (default, May 11 2017, 13:25:24) [MSC v.1900 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/Alberto/Desktop/lab0.py =====
Hello, world!
>>> |
```

Congratulations! You've just written your first Python program! Go to ICON and submit your lab0.py file (there's no credit for this assignment, but you may as well practice the submission process).