

CSC120H L0101 - Lab 0

1. Objectives

- 1.1 Set up Python 3 on your laptop
- 1.2 Log into the lab computers (also known as the “CDF machines”)
- 1.3 Get started with Python:
 - 1.3.1 do some math in Python3's interpreter
 - 1.3.2 move some Turtles around

2. Marking

Every lab will be marked out of 1.5. Each lab will contain items marked **TO DO**. Unlike the other labs, however, this one will not be marked for completing each TO DO item.

3. Set up Anaconda on your laptop

Note: if you do not have your own laptop, do Section 8 first and then continue with Section 6.

Anaconda is a bundle of Python packages that allows you to install everything you will need this term in one step.

1. Go to this URL: <https://www.continuum.io/downloads>
2. Download Anaconda
3. When prompted, select “PYTHON 3.5”
4. Follow the instructions provided

Once Anaconda is installed, you will want to launch Spyder, the Scientific PYthon Development EnviRonment, a free interactive development environment (IDE) included with Anaconda.

Note: it can take a while to install Anaconda. While you wait, you can do Section 4.

- On Windows, look for the “*Anaconda Launcher*” in your Start Menu. Find the spyder-app and launch that.
- For Mac users, to get to the Anaconda Launcher, double click Launcher.app in your */anaconda* directory. Then launch the spyder-app from that like on Windows.
- For Linux users, open a terminal and navigate to your anaconda directory. The spyder executable is in the *bin* folder.

TO DO: Once you have Anaconda installed, open up the launcher and launch Spyder. Call your TA over so they can check you have completed this step.

4. Piazza setup

Log into Piazza at <https://piazza.com/utoronto.ca/winter2016/csc120/home> using your U of T email account.

You may want to set your preferences on Piazza so that you receive digest emails rather than an email for every post on the discussion forum. To do so, press the gear icon in the upper right hand corner on Piazza, and select “Account/Email Settings” from the menu that will then pop up. Scroll down to the entry for CSC 120, and click on “Edit Email Notifications”.

Note: The university requires you to read email sent to your utoronto.ca address. Make sure you know how to check your University of Toronto email.

TODO: Show your TA that you have logged into Piazza.

5. Time to Partner Up!

Throughout the term, we will use the terms driver and navigator. Here are the definitions of the two roles:

driver: The person typing at the keyboard.

navigator: The person watching for mistakes, and thinking ahead.

The driver's role is to work with the computer, and the navigator's is to think about language issues and upcoming issues related to the problem being solved. The navigator must not touch the keyboard or mouse. (If the navigator interferes with the driver, the group may lose its view of what is coming up and the problem may become harder to solve. Also, the driver might find it harder to learn the material.)

In every lab handout, we will call you two s1 and s2 (s1 will be the first driver).

6. Calculations in the Console

Once you have Anaconda installed and Spyder open, find a partner to do this activity with. Assign roles: s1 drives and s2 navigates.

The lower right-hand part of Spyder is called the "Console". It is also known as the "shell". The two words will be used interchangeably in this class, but technically, the shell is the program that runs inside the console window.

Python has many calculator-like features. Try evaluating a few expressions in the console:

- $34 + 8$ (hit enter once you type the expression)
- $29 / 3$
- $29 // 3$
- $18 - 2.9$
- $24 \% 5$
- $5.5 * 4.0$
- $28 / 3.0$
- $28 // 3.0$
- $14 * 3 + 2$
- $14 * (3 + 2)$
- $11 \% 2$
- $11 \% 3$
- $11 \% 4$

□

Explain the values calculated, watching out for decimal points and what comes after them. Check that your answers agree with your mental arithmetic.

7. Turtle

Switch roles: s2 drives and s1 navigates.

Python can do a lot more than calculate. To foreshadow what we'll be doing later this term, let's have a look at the turtle module. In the Python shell/console, type:

```
import turtle
```

Then:

```
turtle.Screen()
```

A screen will then pop up. Now type:

```
turtle.Turtle()
```

An arrow will appear on the Screen. This arrow represents a little turtle that you can move around on the canvas. Now try this:

```
turtle.forward(50)
```

The turtle will then move ahead by 50 units. Try moving the turtle forward 10 units, then -25.

Try pressing the up-arrow key. What happens?

You can also turn the turtle by a specified amount (in degrees). Try these:

```
turtle.left(90)
turtle.right(45)
```

Once you have a sense of how to move you turtle around, let's get back to thinking about triangles. Start afresh.

TODO: Create a new Turtle on a new Screen. Use this Turtle to draw a triangle. (Make sure that the shortest side of the triangle is at least 40 units long.)

8. Log in to the lab computer and change your password

1. Log in: enter your user ID and password. If you don't know your CDF username, you can look it up: <http://www.cdf.toronto.edu/cgi-bin/webfinger>.
2. Your initial password is your student number. The first time you log in you will be asked to change it to something more secure. Make the change and log out. It can take a few minutes for the change to take effect, so instead of logging back in immediately, let your partner have their turn.

Once you've changed your password, log out and then log in again to make sure you remember your new password. Remember that there may be a delay before the change takes effect. Please be patient.