Homework 0: Setting up your computer

Before we get into the substantive material of the course, we need to make sure your computer has all the software necessary for the course and show you how to use it. This homework walks you through that process. I have tried to include instructions for all the situations that might arise, but if anything isn't working, you can come to my office hours, go to tutoring hours with one of the TAs, or even ask at the help desk in ETC.

Download Python

The first thing to do is to download Python. If you have a Mac, Python 2 comes pre-installed, but this is *not* the version we will be using. You should download the latest version (currently 3.4.1) here. Make sure to pick the correct download for your operating system. Follow the instructions on that site to download and install Python 3.

Text editor

You will write your code in a text editor, and there are lots of options to pick from. Here are some good options:

Windows: Sublime Text 2, Notepad++
Mac: Sublime Text 2, TextMate 2, TextWrangler, Vim, AquaMacs, Gedit
Linux: Sublime Text 2, Vim, Emacs, Gedit

Sublime Text 2 is a great editor, but unless you pay to register it there will be a mildly annoying pop-up window from time to time asking you about it. The advantage of it is that if you're working on a windows machine at home and a Mac in lab, you can use the same editor in both places. The lab computers will also have TextWrangler, Vim, and Emacs. Vim and Emacs are great editors, but they're not as beginner-friendly as the others, so only use them if you are familiar with them already or are up for a challenge.

Once you have chosen a text editor, download it. Make sure it opens correctly. You should then configure your text editor so that hitting the tab button inserts 4 spaces, rather than a tab. (This is pretty easy to do with the recommended editors, but the process for doing it is a little different for each one, so you'll need to figure out for that editor how to do it. If you have trouble, ask a TA for help.)

Terminal

We will use terminal commands to run our programs. Mac and Linux already have a terminal included in the operating system. If you're using Windows, you should download and install GitBash, which does the same thing.

Making a folder

You should make a folder (perhaps called math121?) where all your work for this course will happen. Choose a place that's convenient for you. If you'll be bringing your laptop to labs and working on the same computer all the time, you can put it anywhere you like. If you'll be using the lab computers, I recommend buying a USB memory stick and putting the folder there. That way you can do your work from any computer without the need to spend time moving files around. (If you do this, though, you should copy the folder to your computer from time to time as a backup in case you lose the memory stick.)

Once you have this folder, create a folder inside it called homework0 (you'll do this for each homework or project). Then go to the class website and download the two files you'll need for this homework, test.py and survey.txt, into that folder.

Playing around

You should now open three things. The first is called IDLE, and it should have been installed when you installed Python. The second is the text editor you have chosen, and the third is the terminal. These are the three programs that you will use to complete all your work in this course.

We'll first look at IDLE. This lets you type individual lines of code and watch them be evaluated immediately. If you type `4+5` and press enter, it should print `9` on the next line and give you a new `>>>` prompt. Run each of the commands below and make sure that the output is correct. (The lines beginning with `>>>` are the lines you should type at the prompt. The other lines should appear automatically as output.)

```
>>> 18 % 4
2
>>> x = 7
>>> print(x)
7
```

If everything works as expected, you can close IDLE for now. We won't be using it anymore for this homework.

Running a program

We now want to run the test.py file, which contains a python program. To do this, we need to learn some Unix commands. For now, we will learn `cd` (change directory) and `ls` (list).

When you're working in the terminal, your computer keeps track of the directory/folder you are currently working in, even if it's not displayed. You should start by default in your computer's home directory. If you ever want to return directly to the home directory, you can type the `cd` command. You can display the contents of the directory you're in (both sub-directories and files) by typing the `ls` command. If the folder you're in contains the sub-directory "lower", you get to it by typing `cd lower`. If you want to move up one level into the parent folder of your current directory, you do it with the `cd ..` command.

You should use these commands to move into the homework0 folder. Once there, the `ls` command should list the two files we have put there, test.py and survey.txt. Now, run the following command in the terminal:

```
python3 test.py
```

This should run the python program, and that program should print a number into the terminal. Write this number down – you'll need it in a minute. (If this doesn't work, you can try typing `py` instead of `python3`.)

Editing files

We now want to edit a file. First, we'll edit a simple text file. Use your chosen text editor to open the survey.txt file. You'll see a bunch of survey questions meant to help me get to know you. Type your answers below the questions, then save the modified file.

Next, create a new file. Type the following python code into the file. (Do this exactly. Remember that the tabs here are really each 4 spaces.)

```
def first(a, b):
    c = 3
    if a > b:
        c = 4
    return a**c - b
```

Save the file with the above code as hw0.py. Most text editors will now know that your file is a file of python code and will color it accordingly, with specific colors assigned to functions, variables, etc.

Submitting your work

We're now ready for the final step, submitting the completed work. To do this, go to the course webpage. You will see a link to the homework submission website. Go to that website and log in with your Reed username and password. You should now see a problem set called "Homework 0". (If you don't, it means we haven't listed you in the class roster yet. This might be because you added the class. Talk to a TA to get this fixed.)

Clicking on the "attempt problems" button for the problem set, you should see two specific problems. One is the survey, and the other is hw0.py file you created in the previous section. For each problem, click on it to bring up the more detailed description. Then click "choose file" and select the relevant file (either survey.txt or hw0.py). Then submit. The system will tell you that the problem has successfully been completed.

You have now completed this assignment, and we're ready to do more interesting things!