In [28]:
```
%%bash
sort -k 1 alpha.dat
```

```
sort: cannot read: alpha.dat: No such file or directory
```

Opening a Jupyter notebook

This will work whether you are on an astrolab machine or remotely logged in from your personal computer (see instructions below).

1. In your terminal type the following command:
   `bash`
   `notebook`
   (Note, I have created a shortcut for you that allows this to work. On an astrolab machine, you can type `jupyter notebook`, but that won't work when you are logged in remotely.)
2. You will see a lot of output but some of it should look like this:

```
[I 09:48:21.554 NotebookApp] [nb_conda_kernels] enabled, 5 ke
rnels found
[I 09:48:21.560 NotebookApp] Writing notebook server cookie s
ecret to /run/user/703148/jupyter/notebook_cookie_secret
[I 09:48:26.941 NotebookApp] [nb_anacondacloud] enabled
[I 09:48:26.985 NotebookApp] [nb_conda] enabled
[I 09:48:28.316 NotebookApp] ✓ nbpresent HTML export ENABLED
[W 09:48:28.316 NotebookApp] ✗ nbpresent PDF export DISABLED:
 No module named 'nbbrowserpdf'
[I 09:48:28.328 NotebookApp] Serving notebooks from local dir
ectory: /astro/users/mlazz
[I 09:48:28.328 NotebookApp] 0 active kernels
[I 09:48:28.329 NotebookApp] The Jupyter Notebook is running
 at: https://[all ip addresses on your system]:8888/
```

3. The line you care about is the one that starts with `The JupyterNotebook is running at:...`
4. Where it says `all ip addresses on your system` means the ipaddress of the astrolab machine you're either working on or logged into. That address is `astrolabXX.astro.washington.edu` where you fill in `XX` with the two digit number of the machine you're working on.
5. Open a web browser and type in the following address to open Jupyter Notebook: https://astrolabXX.astro.washington.edu:8888/ (https://astrolabXX.astro.washington.edu:8888/) (make sure that the final number, 8888 in this case, matches the one output on your terminal).
6. When doing this for the first time, you will be prompted to make a password for security purposes. PLEASE WRITE THIS PASSWORD DOWN as you will not be able to reset it. You may be asked to enter it when you open the notebook in future sessions (it kind of depends on how well the system "remembers" you).
7. You will see a screen that will allow you to click through your computer's file structure. Any file that ends with the extension ".ipynb" is a Jupyter Notebook file, which means you can

open it and code directly in it.
8. Note, when you open a notebook, it may ask you to select a kernal. Make sure to choose Python 3 if you are given an option. If you don't see this pop up, don't worry!
9. If you want to make a new notebook file (which you will do for the coding assignments), from the Jupyter notebook home screen, click the button towards the top right that says "New" and select "Python 3".

Logging onto machines from home

There are even more Unix commands (not covered here) that are listed on the Unix Cheat Sheet that you have. This includes things like how to download a file from the internet (given a web address of the file), how to create a tarball, how to copy things between machines, etc. Now that we've gone over these basic commands today I'll show you one last thing, which is how to remotely log into your machines. This command is also covered on the Unix Cheat Sheet, but requires a little set-up.

Download HuskyOnNet (aka BIG-IP Edge Client or f5): https://itconnect.uw.edu/connect/uw-networks/about-husky-onnet/ (https://itconnect.uw.edu/connect/uw-networks/about-husky-onnet/) for your operating sysetm. This makes logging in remotely easier because it makes your computer think that you are on the UW campus, which makes it easier to get through the UW network security.

Once you have HuskyOnNet installed, open it up and log in using your UW net ID and password.

Mac Users

Once you have HuskyOnNet running, you can just use the command "ssh" to log in to one of the astro lab computers. Try to remember the astro lab computer number you are using in class, or you can just choose a random one. To log into any of the astrolab machines using your UW NET ID, you would type the following (filling in your net ID and the astrolab computer number, of course):

```
ssh -XY netID@astrolabXX.astro.washington.edu
```

You might see some information output and you might be asked if you want to continue (type "y" for yes). Then you will be prompted to enter your password. This is your UW net ID password.

This should get you in to your home directory on your astrolab machine. Note: it doesn't matter which astro lab machine you log into. Your "home" directory is just linked to your UW net ID and password, not the individual machine itself.

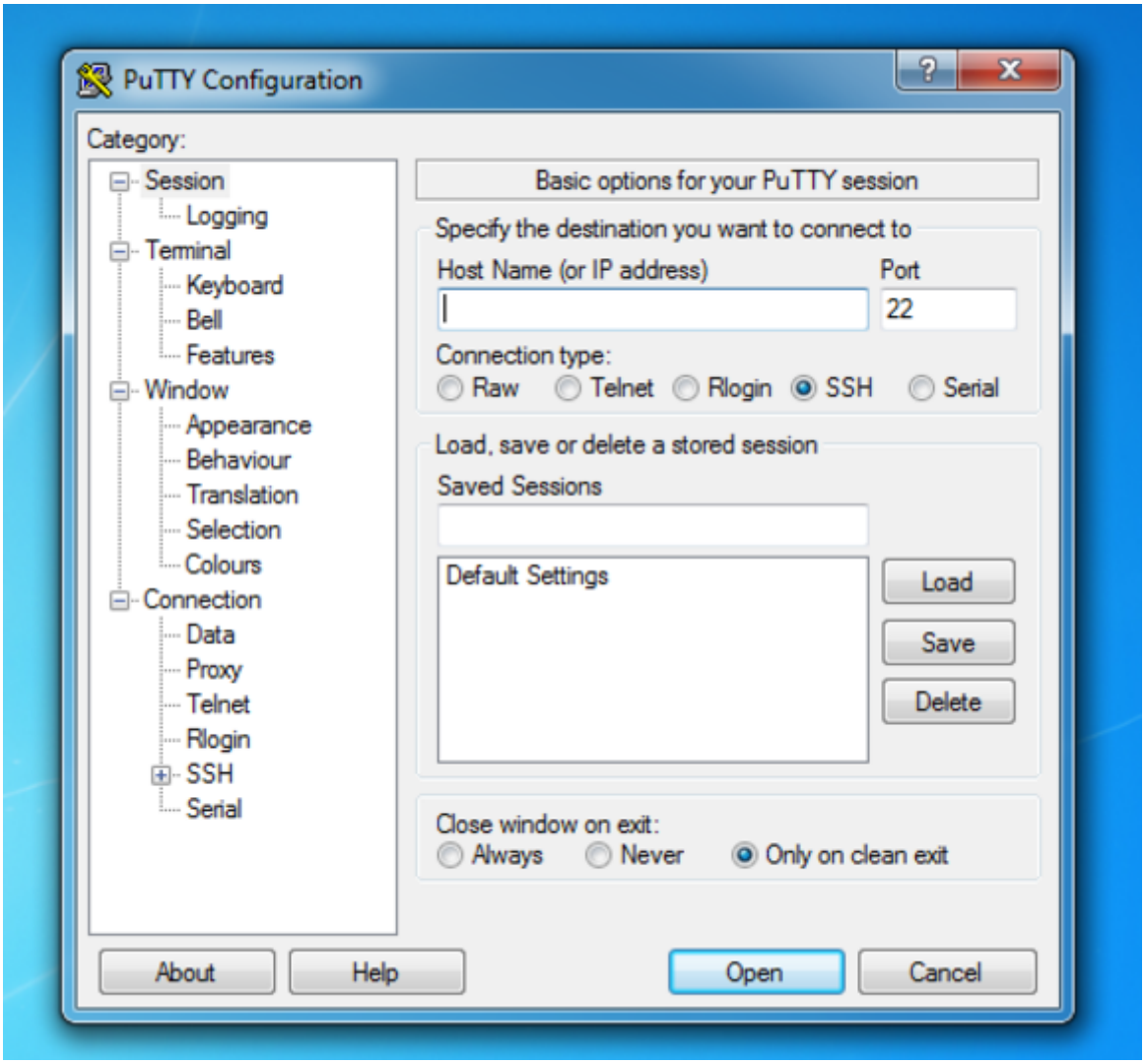
To open up a notebook with one of our lessons, simply follow the directions in the section above to open up a Jupyter notebook.

To exit a session:

1. Save your notebooks using the floppy disk icon or file->save
2. Go back to the terminal window where you opened up the notebook originally by typing "notebook". Type control-C and then y to close the jupyter notebook session.
3. Log out of your remote login by typing `exit` into the same terminal window.
4. To log back in again, make sure you have HuskyOnNet running, open a terminal and all you have to do is type `ssh -XY netID@astrolabXX.astro.washington.edu` again and it will prompt you to enter your password. Then you can start a Jupyter Notebook session again by typing `notebook` into the terminal window.

For Windows Users

First, download putty (http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html)--use putty.exe--and then download Xming (http://sourceforge.net/projects/xming/). For convenience drag both of these to make icons on your desktop so that you don't have to go searching for them later. Make sure both have installed properly. Make sure Xming is open (just double click, nothing will show up on the screen) **before** opening putty. Once this is done, you can open up putty. It should look like this:



Where it says "Host Name (or IP address) type `gateway.phys.washington.edu`. On the left hand

side click the "+" next to "SSH." More options should come up. Next click on **X11** and on the new screen check the box that says "enable X11 forwarding." Now go back to the first screen (click "Session" on the left hand side). Under "Saved Sessions" type something like "astrolab" and hit "Save." This saves the settings you just input under the name astrolab. Next click "Open." An Xming terminal should pop up and prompt you for your username. Enter your uwnetid and your password. If this works, you have tunneled through gateway! Only one more step. In the terminal type the following:

```
ssh -l UWNETID astrolabXX.astro.washington.edu
```

And once again enter your password when prompted. Note that the "-l" is a lowercase L (not a 1), and that you should put in your username and preferred astrolab computer where it says UWNETID and XX. Now you should be logged into your astrolab computer! Try doing an `pwd` to make sure you are in your home directory on the astrolab machine, or do an `ls` to see what is there. You will need to enter `exit` once to log out of your astrolab machine, and then `exit` once more to log out of gateway. Once you've done this your Xming terminal window should disappear.

The next time you want to do a remote login just make sure that Xming is open first and then open putty. Then you should be able to click on "astrolab" in your "Saved Sessions" and just hit "Open." An Xming terminal will again open and prompt you for your uwnetid and password. Then you type the `ssh -l UWNETID astrolabXX.astro.washington.edu` command above and you will be logged in again!

Next time we will cover a brief bit of astro background, talk about using text editors (to more easily create and edit files), and then get started on our first Unix assignment!