Setting Up an IPython Notebook

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https://github.com/ResearchComputing/Final_Tutorials/tree/master/Python_notebook

What is IPython?

- An interactive shell for Python
- Goes beyond the capabilities of the “normal” Python shell
- Improved functionality and flexibility
- Some nice features:
  - Tab completion of functions
  - Highlighting

What is the IPython Notebook?

- In-browser editing
- Web-based interactive computational environment
- Ordered list of input/output cells
- Combine code, text, plots, etc on one page
- Great way to demonstrate code execution in teaching environments
- Serves as a complete computational record of a session
- Can be converted to HTML, PDF, etc

http://ipython.org/notebook.html
http://ipython.org/ipython-doc/dev/notebook/notebook.html#introduction

Launching Notebooks - Local

- From your local machine, launch the example notebook we'll examine in this tutorial
- Download the material from our github site: https://github.com/ResearchComputing/meetup_fall_2014/
- Download the python notebook to a specific directory
- Make sure you have python installed, then run

  pip install ipython
- To run the notebook, type

  ipython notebook 01_introduction.ipynb

Launching Notebooks

- Upon launching the notebook we open a web page
- If just type **ipython notebook** will open a dashboard of all available notebooks
- Can start a new notebook from the dashboard
  - Change title
  - Cells default to code cells
    - Python
    - Can change to Markdown
    - http://nbviewer.ipython.org/github/ipython/ipython/blob/1.x/examples/notebooks/Part%204%20-%20Markdown%20Cells.ipynb

Launching Notebooks - Remote

- You can also launch a notebook on a remote machine and display it
- Some machines you can log in directly, while others you have to do a port forward from your local machine

1. Login to Janus (or remote machine)
   ssh knuths@login02.rc.colorado.edu
2. Load the python module
   module load python/anaconda-2.0.0
3. Run the notebook on a random port on Janus
   ipython notebook --no-browser --port=9088 --ip=*
4. Then do a port forward from your local machine to a remote machine
   ssh –L 8099:login02.rc.colorado.edu:9088 –f –N login02.rc.colorado.edu
5. Open a web browser and type:
   localhost:8099

http://researchcomputing.github.io/xsede_2014/python/02_starting_notebooks.html

Launching Notebooks - Remote

BE CAREFUL!!!!!

DO NOT DO HEAVY COMPUTATION ON LOGIN NODES!!!!!!

Converting to other files

- You can easily convert your ipython notebook to another format

Ipython nbconvert --to <format> 01_introduction.ipynb

- To do PDF

Ipython nbconvert --to PDF 01_introduction.ipynb

Try it out yourself!

- http://researchcomputing.github.io/xsede_2014/python/solution_04_example.html