Python basics

Python is a script language

A scripting language or script language is a programming language for a runtime system that automates the execution of tasks that would otherwise be performed individually by a human operator.

Scripting languages are usually interpreted at runtime rather than compiled.

setting up conda environment

- https://conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html
- connect to adroit.princeton.edu

```
$module load anaconda3/2021.11

$conda create --name usrp

$conda activate usrp

$conda install jupyterlab pip matplotlib numpy astropy
```

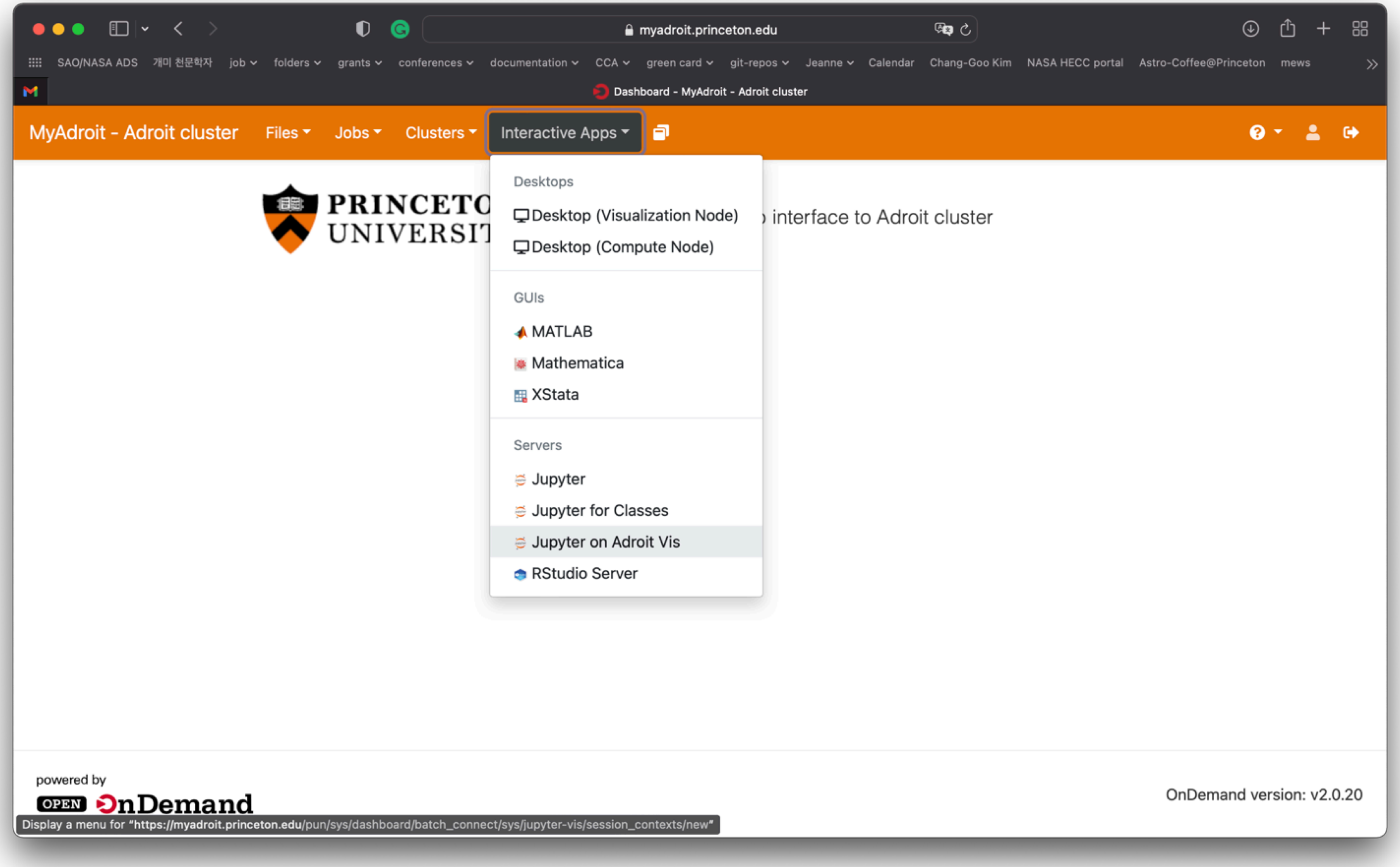
python/ipython/jupyter-notebook

- https://jakevdp.github.io/WhirlwindTourOfPython/01-how-to-run-python-code.html
- The most basic way to execute Python code is line by line within the **Python interpreter**.
- An alternative interpreter called **IPython (for Interactive Python)** is bundled with the Anaconda distribution, and includes a host of convenient enhancements to the basic Python interpreter.
- for more complicated programs it is more convenient to save code to file, and execute it all at once.
- A useful hybrid of the interactive terminal and the self-contained script is the **Jupyter notebook**, a document format that allows executable code, formatted text, graphics, and even interactive features to be combined into a single document.

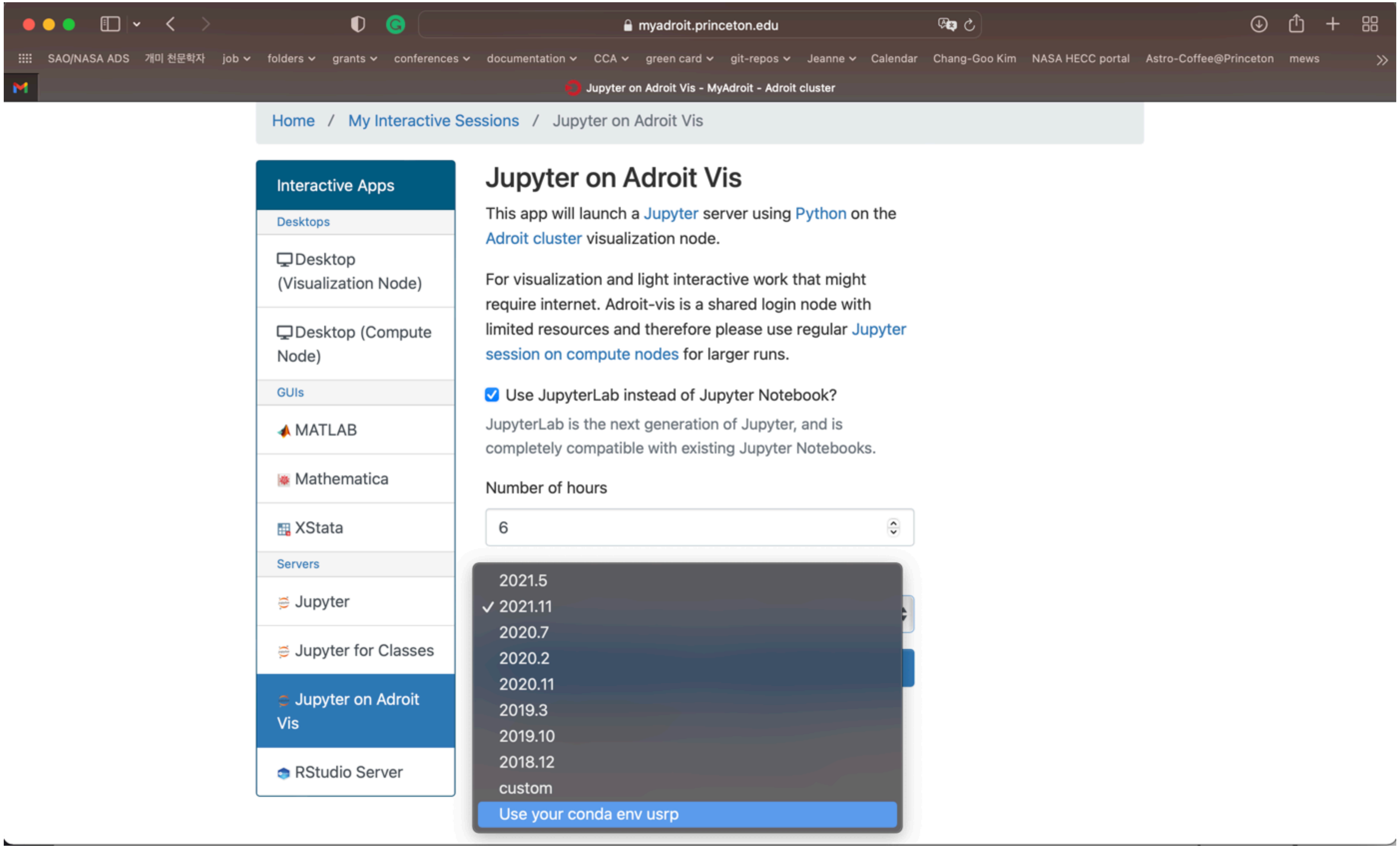
https://jakevdp.github.io/WhirlwindTourOfPython/

Whirlwind Tour of Python

- highly-recommended python tutorial
- clone the GitHub repository at https://github.com/jakevdp/WhirlwindTourOfPython
- or open it on Google colab
  - https://colab.research.google.com/github/jakevdp/WhirlwindTourOfPython/blob/master/Index.ipynb



Display a menu for "https://myadroit.princeton.edu/pun/sys/dashboard/batch_connect/sys/jupyter-vis/session_contexts/new"



Jupyter on Adroit Vis

This app will launch a Jupyter server using Python on the Adroit cluster visualization node.

For visualization and light interactive work that might require internet. Adroit-vis is a shared login node with limited resources and therefore please use regular Jupyter session on compute nodes for larger runs.

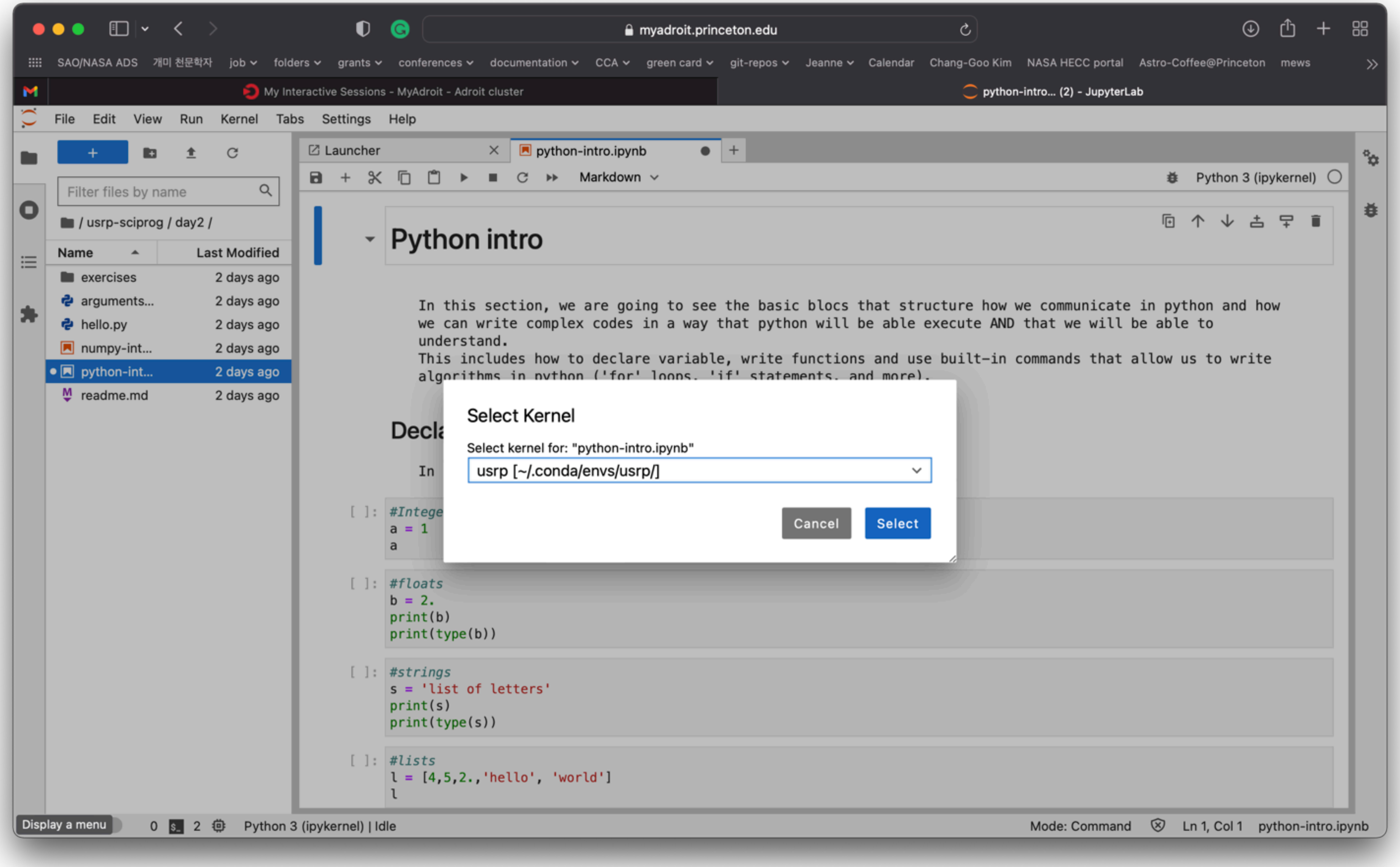
☑ Use JupyterLab instead of Jupyter Notebook?

JupyterLab is the next generation of Jupyter, and is completely compatible with existing Jupyter Notebooks.

Number of hours

6

2021.5
✓ 2021.11
2020.7
2020.2
2020.11
2019.3
2019.10
2018.12
custom
Use your conda env usrp



Python intro

In this section, we are going to see the basic blocs that structure how we communicate in python and how we can write complex codes in a way that python will be able execute AND that we will be able to understand.
This includes how to declare variable, write functions and use built-in commands that allow us to write algorithms in python ('for' loops, 'if' statements, and more).

Decl

In

Select Kernel

Select kernel for: "python-intro.ipynb"

usrp [~/.conda/envs/usrp/]

```
[ ]: #Intege
     a = 1
     a
```

```
[ ]: #floats
     b = 2.
     print(b)
     print(type(b))
```

```
[ ]: #strings
     s = 'list of letters'
     print(s)
     print(type(s))
```

```
[ ]: #lists
     l = [4,5,2.,'hello', 'world']
     l
```