AST 3722
Intro To Python

Python programming language

- Commonly used in astronomy
- Use is growing
- Key for research
- Useful for other career tracks too

Basic usage

- Linux: type `python` or `ipython` from the command line
- Mac: Same
- Windows: Start the anaconda python app

Basic usage: Jupyter

- Jupyter is a browser-based python interface
- Linux: type `jupyter` or `jupyter lab` from the command line
- Mac: Same
- Windows: Start the anaconda jupyter app (from the start menu)

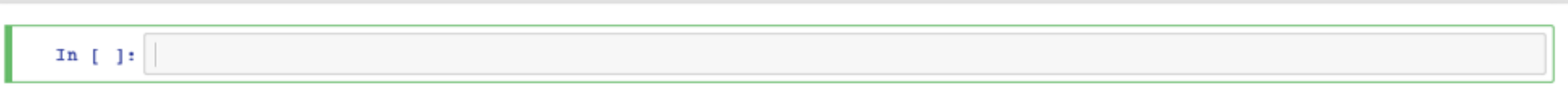
ipython

```
In [1]:
```

python

```
>>>
```

notebook (jupyter)



Doing things in python

- You can use *libraries* of tools developed by other people by `importing` them:

```
>>> import astropy
```

- Math operations:

```
>>> 3 * 4
12
>>> 3 ** 4
81
```

- Plotting:

```
>>> import pylab as pl
>>> pl.plot([0, 1, 2, 3], [0, 1, 4, 9])
```

Doing things in python

- Array operations:

```
>>> import numpy as np
>>> arr = np.array([0, 1, 2, 3, 4])
>>> arr_squared = arr ** 2
```

- Plotting with arrays:

```
>>> import pylab as pl
>>> pl.plot(arr, arr_squared)
```

Installation

- On any OS, download the anaconda python distribution: https://www.anaconda.com/distribution/ (choose the 64-bit, python3.7 version if you are given an option)

- Install it, then open either a python terminal or a notebook

- Run this command:

```
%pip install astroquery https://github.com/astropy/astroplan/archive/master.zip
```

[1]:
```
%matplotlib inline
```

[2]:
```
import matplotlib.pyplot as plt
```

[3]:
```
print(5+4+3+2)
```

```
14
```

[4]:
```
import numpy as np
```

[5]:
```
np.array([1,2,3,4])
```

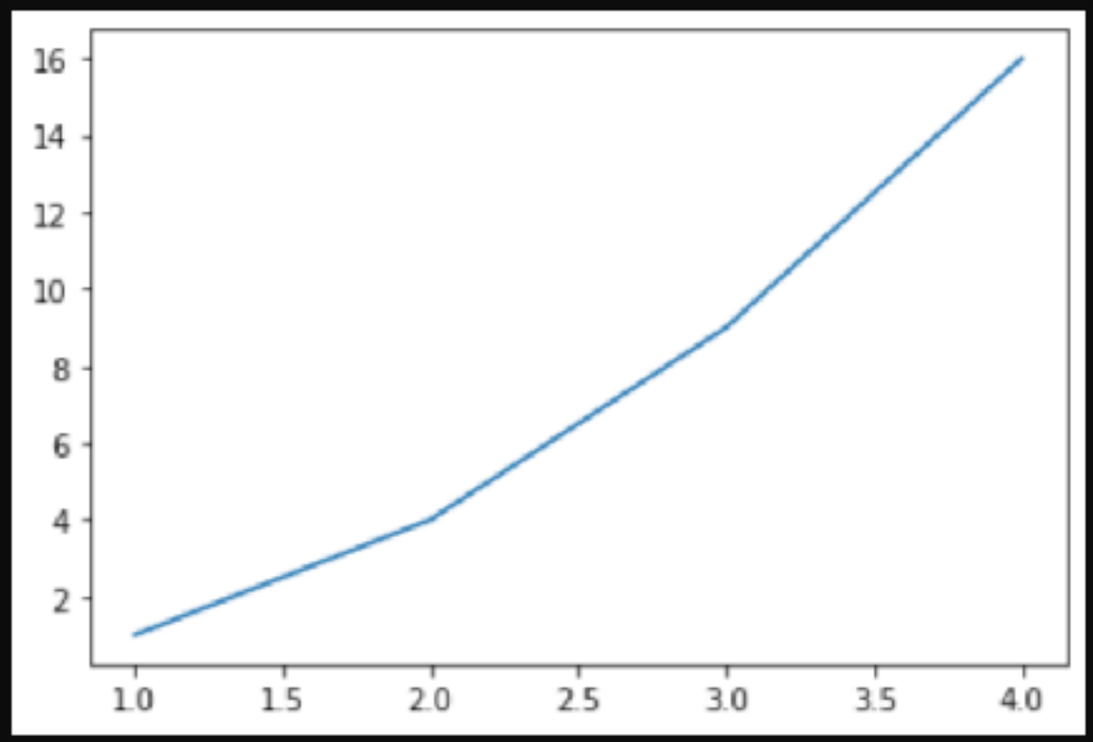
[5]:
```
array([1, 2, 3, 4])
```

[6]:
```
x = np.array([1,2,3,4])
print(x**5)
```

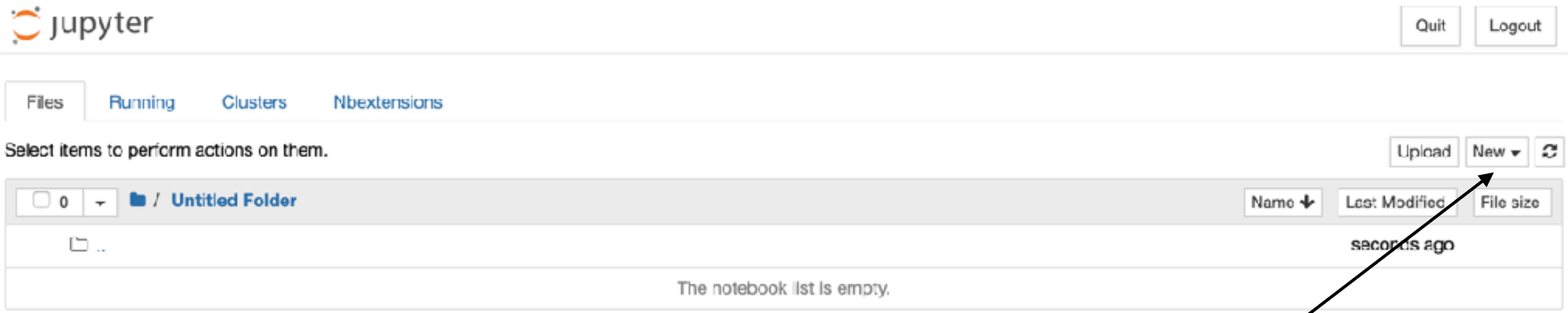
```
[   1   32  243 1024]
```

[7]:
```
plt.plot(x, x**2)
```

[7]:
```
[<matplotlib.lines.Line2D at 0x120085610>]
```



When you start a notebook server with `jupyter notebook`, you may see this:



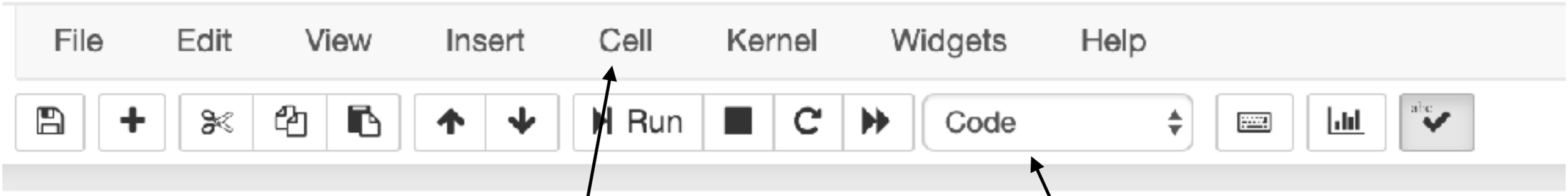
Click “New” to create a new notebook

Homework 1:
Install & Test python

Due by next class. Should take <30 minutes.

Reminder:
Sarik's office hours are 1600-1700 Monday
My office hours are 1700-1800 T/Th

Step six in the homework asks you to make a “markdown” cell.



The dropdown menu it’s referring to is this one

You can also access the cell type from the “Cell” menu

Learn more?

- Online tutorials: http://introtopython.org/var_string_num.html