

# Kernels

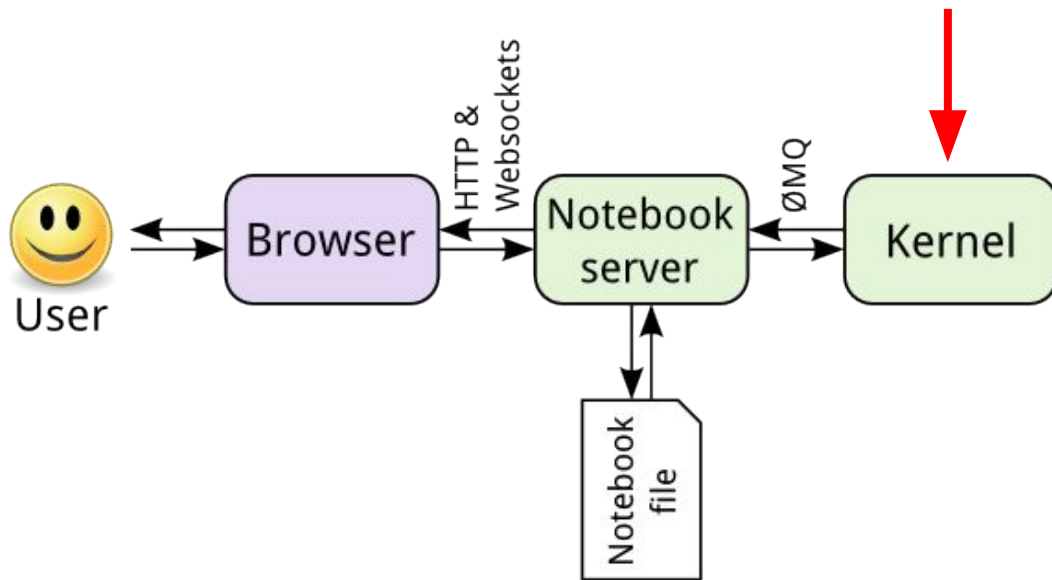
# What is the kernel

A **kernel** provides programming language support in Jupyter. IPython is the default kernel. Additional kernels include R, Julia, and many more.

Fun fact: Jupyter was named after **JULia** **PY**Thon and **R** once the old IPython notebook started supporting other languages

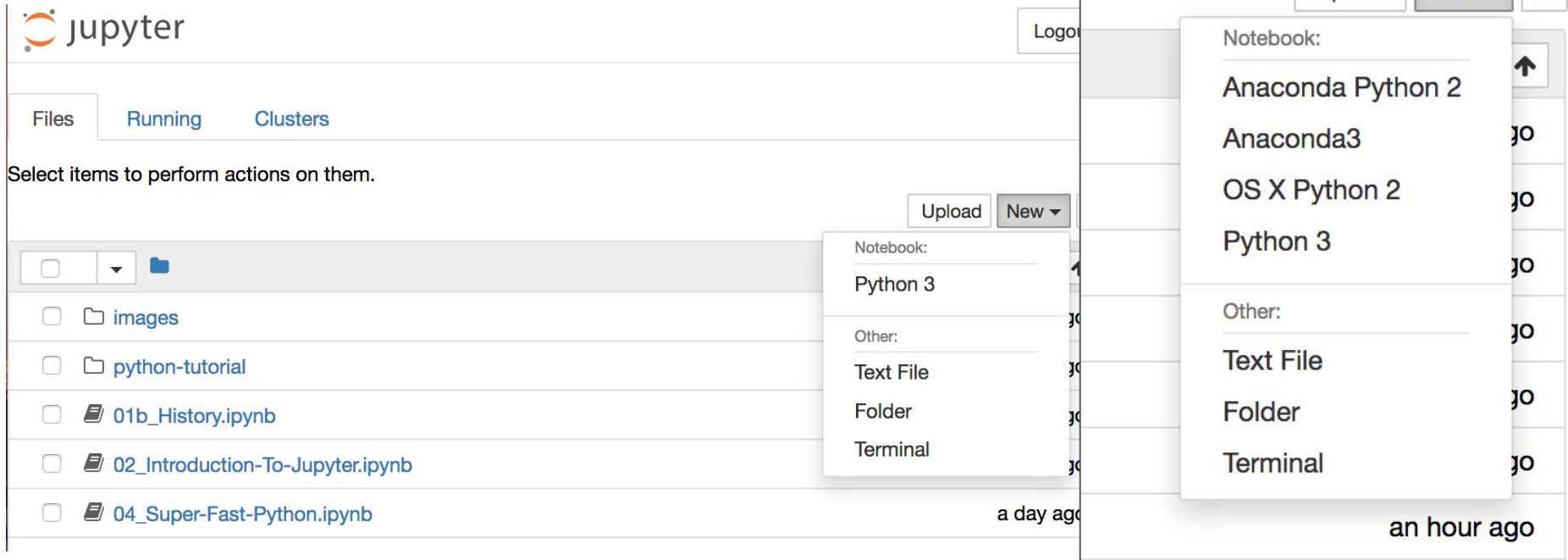


# Under the Covers



# Selecting a Kernel

In the Jupyter File Browser ...



The screenshot displays the Jupyter File Browser interface. At the top, the Jupyter logo is visible. Below it, there are tabs for 'Files', 'Running', and 'Clusters'. A message states 'Select items to perform actions on them.' The main area shows a list of files and folders: 'images', 'python-tutorial', '01b\_History.ipynb', '02\_Introduction-To-Jupyter.ipynb', and '04\_Super-Fast-Python.ipynb'. Two 'New' dropdown menus are open. The first menu, located over the file list, shows options under 'Notebook:' (Python 3) and 'Other:' (Text File, Folder, Terminal). The second menu, located over the top right of the interface, shows options under 'Notebook:' (Anaconda Python 2, Anaconda3, OS X Python 2, Python 3) and 'Other:' (Text File, Folder, Terminal). The 'Upload' and 'New' buttons are visible above the file list, and 'Upload', 'New', and a refresh icon are visible at the top right.

jupyter

Files Running Clusters

Select items to perform actions on them.

Upload New

Notebook:

- Python 3

Other:

- Text File
- Folder
- Terminal

Upload New ↻

Notebook:

- Anaconda Python 2
- Anaconda3
- OS X Python 2
- Python 3

Other:

- Text File
- Folder
- Terminal

a day ago an hour ago

# Adding a New Kernel

Instructions will vary from each language but you basically install a package and write a kernel file to your homedir

# Python 2

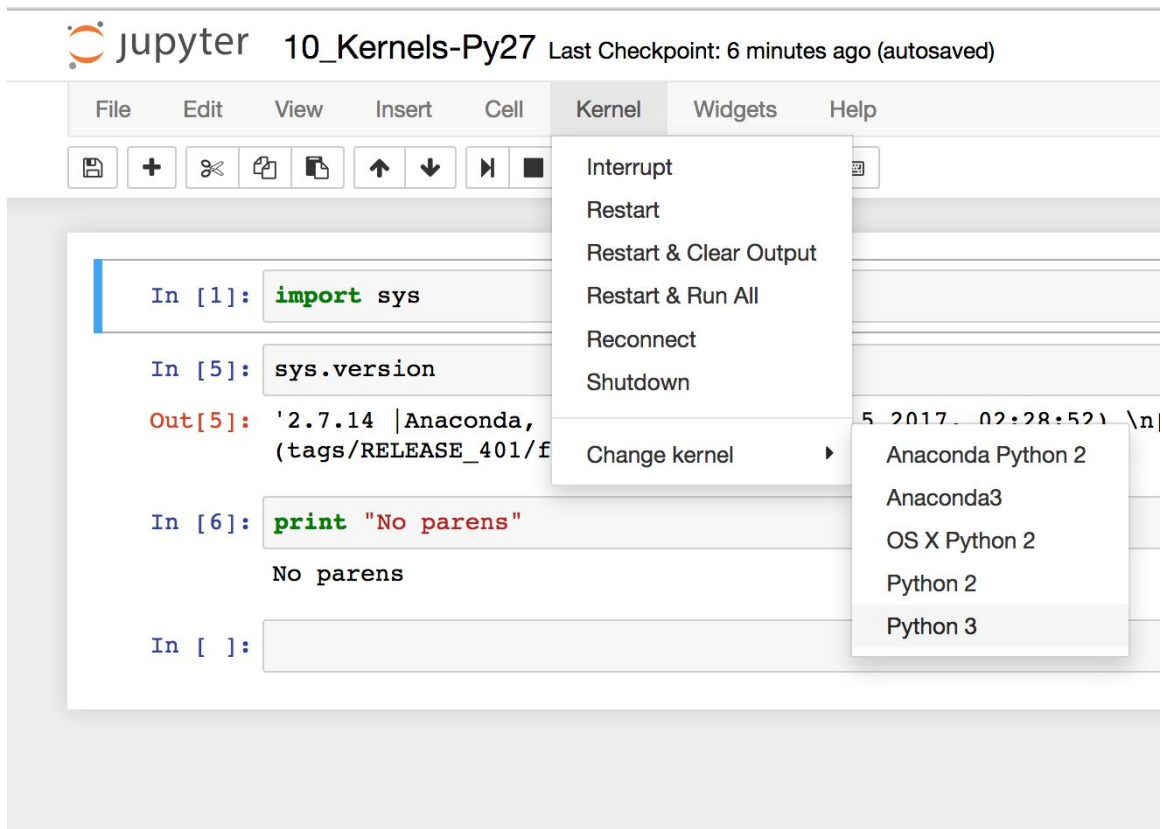
[https://ipython.readthedocs.io/en/latest/install/kernel\\_install.html](https://ipython.readthedocs.io/en/latest/install/kernel_install.html)

```
> conda create -n ipykernel_py2 python=2 ipykernel  
> source activate ipykernel_py2 # Windows: remove 'source'  
> python -m ipykernel install --user
```

Now restart jupyter and open up notebook 10\_Kernels-Py27.ipynb

R

# Switching Kernels



The screenshot shows the JupyterLab interface for a notebook named '10\_Kernels-Py27'. The top bar indicates the last checkpoint was 6 minutes ago (autosaved). The 'Kernel' menu is open, showing options: Interrupt, Restart, Restart & Clear Output, Restart & Run All, Reconnect, Shutdown, and Change kernel. The 'Change kernel' option is selected, opening a sub-menu with the following options: Anaconda Python 2, Anaconda3, OS X Python 2, Python 2, and Python 3. The Python 3 option is highlighted. The notebook content shows the following code cells:

```
In [1]: import sys
```

```
In [5]: sys.version
```

```
Out[5]: '2.7.14 |Anaconda,
(tags/RELEASE_401/f
```

```
In [6]: print "No parens"
```

```
No parens
```

```
In [ ]:
```

Re-run the notebook  
with a Python 3  
kernel



# Where do Kernels Live?

# Customizing the Kernel Spec

# Jupyter Settings

For command line options see

```
> jupyter notebook --help
```

Options can also be set by creating a file named `jupyter_notebook_config.py` in your Jupyter folder (`$HOME/.jupyter`).

To create a `jupyter_notebook_config.py` file, with all the defaults commented out, you can use the following command line:

```
> jupyter notebook --generate-config
```



# Let's change the Jupyter Default Directory

Edit `.jupyter/jupyter_notebook_config.py`

Change

```
#c.NotebookApp.notebook_dir = ''
```

to

```
c.NotebookApp.notebook_dir = '/'
```

Restart the notebook and notice where you are in the file browser!