

# Jupyter Apps and Jupyter Lab

Getting more out of Jupyter

# Doing more with the Notebook interface

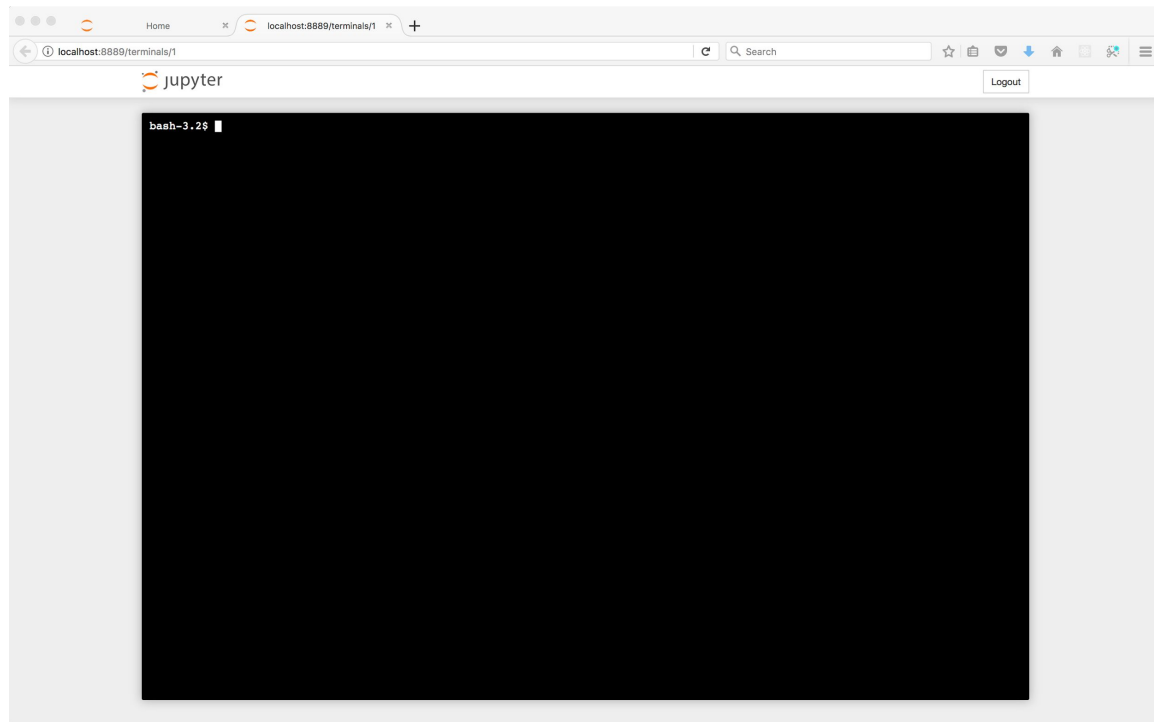
- Other interfaces often used in conjunction with notebooks
  - Terminal
  - Text editor
  - File browser
  - Custom dashboards
- Some available from the regular Jupyter Interface

# Notebook file browser

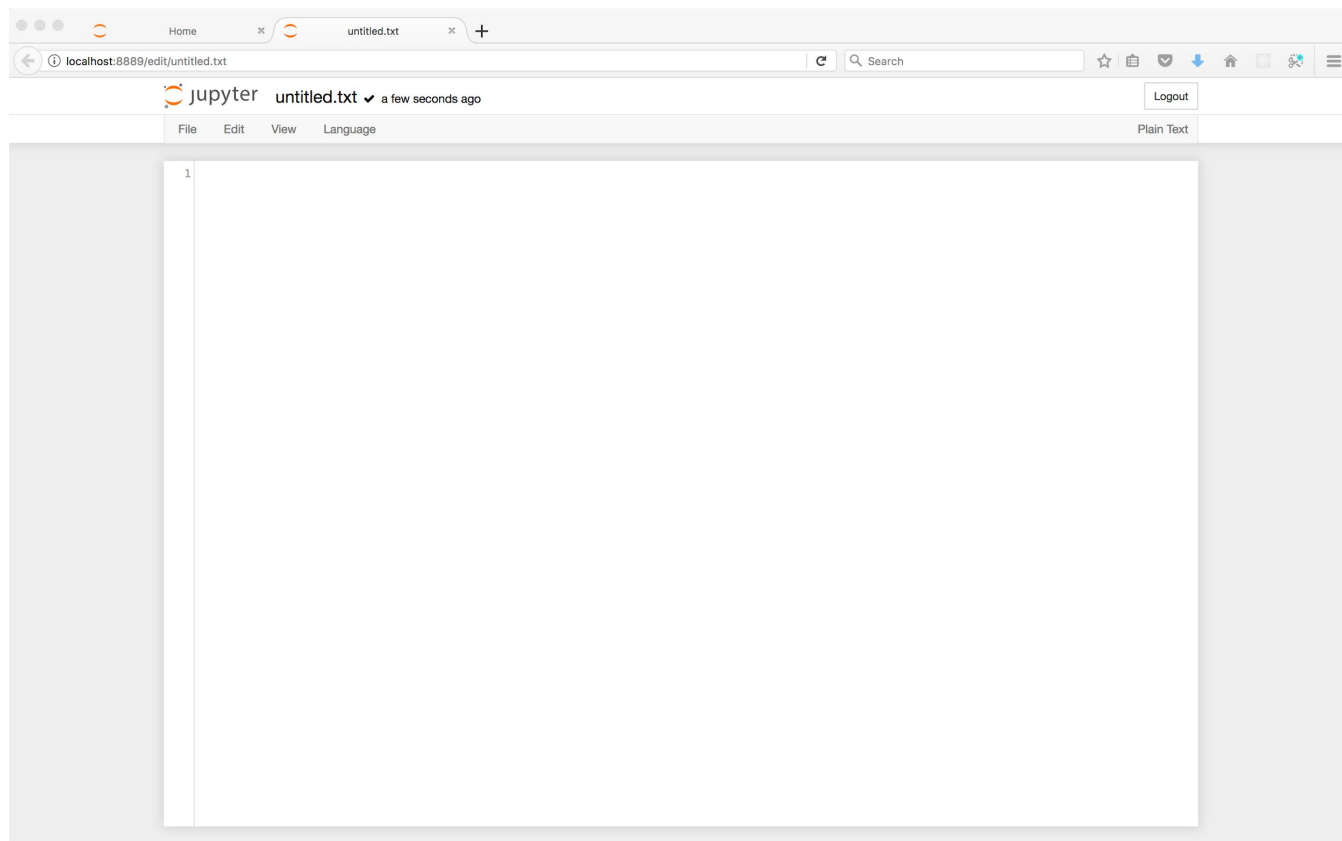
The screenshot shows the Jupyter Notebook file browser interface in a web browser. The browser's address bar shows the URL `localhost:8889/tree`. The Jupyter logo and a "Logout" button are at the top right. Below the navigation tabs (Files, Running, IPython Clusters), there is a prompt "Select items to perform actions on them." and buttons for "Upload", "New", and a refresh icon. The main area displays a list of files and folders. Each item has a checkbox on the left, a folder icon or notebook icon, the item name, and a "Last Modified" timestamp on the right. The items are sorted by "Last Modified" in descending order.

	Name	Last Modified
<input type="checkbox"/>	images	a day ago
<input type="checkbox"/>	python-tutorial	a day ago
<input type="checkbox"/>	01b_History.ipynb	3 hours ago
<input type="checkbox"/>	02_Introduction-To-Jupyter.ipynb	3 hours ago
<input type="checkbox"/>	04_Super-Fast-Python.ipynb	3 hours ago
<input type="checkbox"/>	07_Scientific-Python.ipynb	3 hours ago
<input type="checkbox"/>	08a_IPyWidgets-Intro.ipynb	a day ago
<input type="checkbox"/>	08b_IPyWidgets-Widget-List.ipynb	a day ago
<input type="checkbox"/>	09_Sharing-Notebooks.ipynb	a day ago
<input type="checkbox"/>	10b_Kernels-Py27.ipynb	a day ago
<input type="checkbox"/>	10c_R_demo.ipynb	a day ago
<input type="checkbox"/>	13b_IPyParallel.ipynb	a day ago
<input type="checkbox"/>	01_Jupyter-and-its-Moons.pdf	3 hours ago
<input type="checkbox"/>	03_File-Browser.pdf	a day ago
<input type="checkbox"/>	06_Architecture.pdf	3 hours ago
<input type="checkbox"/>	10_Jupyterhub-Tutorial.pdf	a day ago
<input type="checkbox"/>	10_Kernels-and-Customizations.pdf	a day ago
<input type="checkbox"/>	11_Other-Moons.pdf	3 hours ago
<input type="checkbox"/>	README.md	3 hours ago

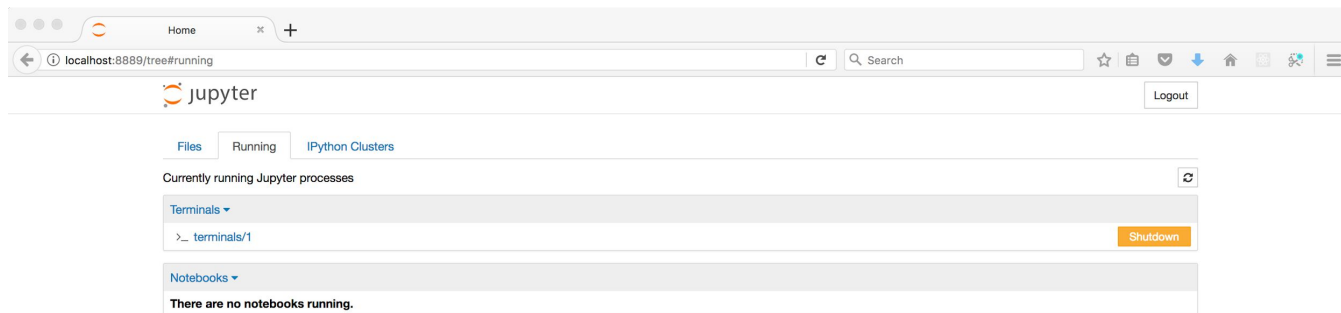
# Terminal



# Text Editor



# Running processes



The screenshot shows a web browser window with the address bar displaying `localhost:8889/tree#running`. The page title is "jupyter" and there is a "Logout" button in the top right corner. Below the header, there are three tabs: "Files", "Running" (which is active), and "IPython Clusters". The main content area is titled "Currently running Jupyter processes" and contains two sections: "Terminals" and "Notebooks".

**Terminals**

Process Name	Action
<code>&gt;_ terminals/1</code>	<a href="#">Shutdown</a>

**Notebooks**

There are no notebooks running.

# Jupyter Notebook limitations (some)

- Built in 2011 using jquery, bootstrap, require.js
- Implementing some new features hard
  - Realtime collaboration (model and view were coupled)
  - Collapsing input/output (developers relied on DOM/CSS, changes would break)
- No private APIs
- Extending can be painful
  - Adding new panels or custom areas/overlays outside of code cells
  - No dashboards!

# Custom Notebook environments

- GenePattern
  - <http://genepattern-notebook.org/>
- KBase
  - <http://kbase.us/>



# 2015 user survey

- Top needs
  - Integration with version control systems
  - Improved code/text editing
  - Flexible layout and integration between the building blocks
  - Debugger, profiler, variable inspector

# Jupyter Lab

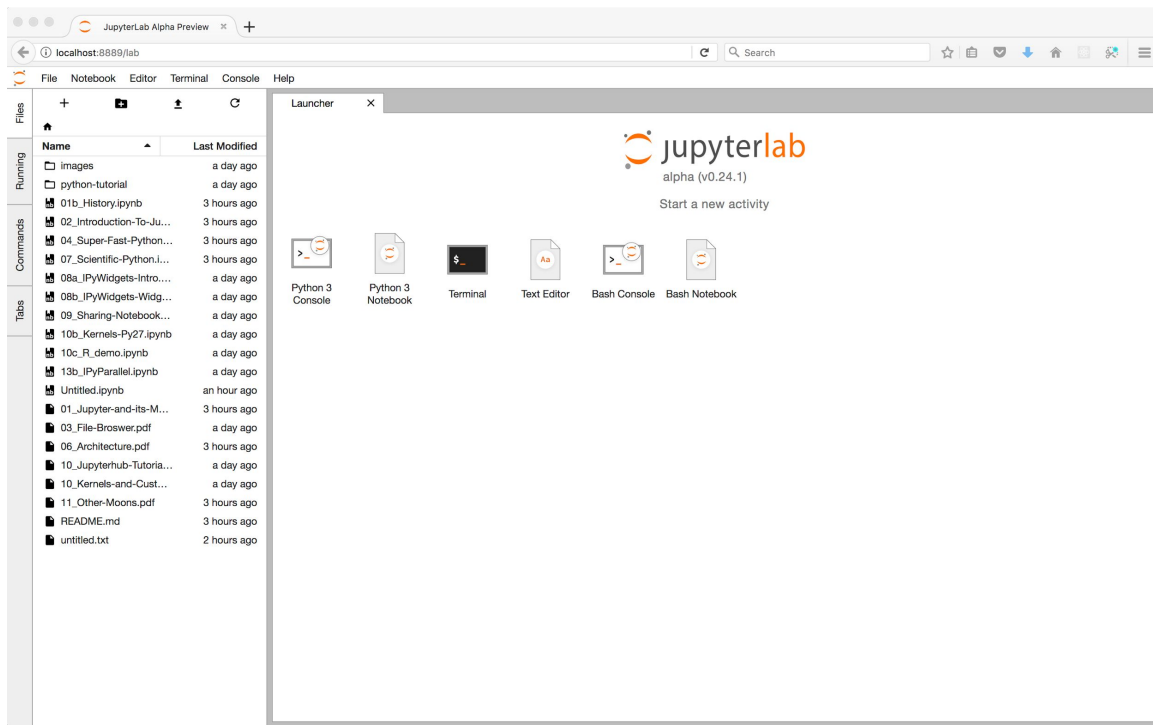
- Next generation Jupyter UI
- Not just notebooks
- Extensions for Terminal, Text Editor, File Browser, Notebook built in
- Introduces tabs and windows
- Closer to a desktop app

# Jupyter Lab

- Customizable by adding javascript extensions
- All the built-ins are implemented as extensions
- Goal is a customizable custom interface

# Running Jupyter Lab

Run “jupyter lab” instead of “jupyter notebook”



# Other interfaces

- Hydrogen
  - <https://atom.io/packages/hydrogen>
- Nteract (atom editor + Hydrogen)
  - <https://nteract.io/atom>
- Qt console
  - <https://github.com/jupyter/qtconsole>
- Spyder IDE
  - <https://github.com/spyder-ide/spyder>