

Getting set up

In this class, we will be using *IPython Notebooks* for all of the problem sets. We have set up a server that you can use to access the assignments. Using the server you will also be able to submit your assignments and receive feedback about previous assignments.

Step 1: Signing in to the server

Before you can access the problem sets, you will need to log in to the course server using your UC Berkeley email address and CalNet ID. To get started, click the following url:

<http://datahub.berkeley.edu/user-redirect/interact?account=compmodels&repo=problem-sets&branch=master&path=ps0>

You should be greeted with the following screen:

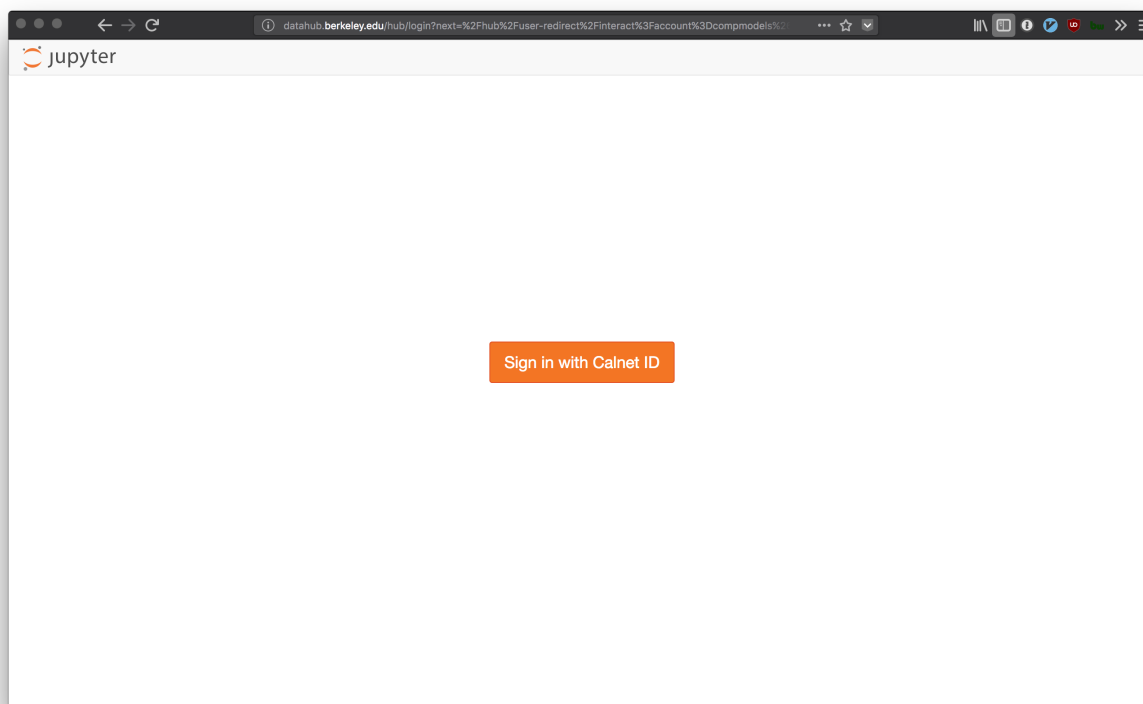


Figure 1: Jupyter sign-in screen

Upon clicking the 'Sign In' button, you should be prompted with a Google log-in form:

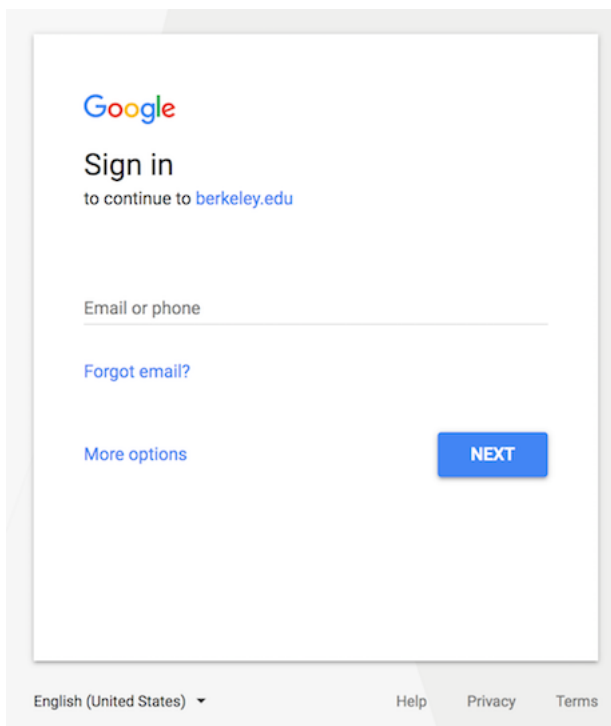


Figure 2: Google sign-in screen

In order to be granted access to the server, you *must* log in using your @berkeley.edu email address.

Note: This page may not load correctly if you are already signed in to a different Google account. In this event, try either (a) accessing the website from an incognito/private browsing window, (b) accessing the website using a different web browser, or (c) deleting any stored cookies from your current browser and retrying.

Upon entering your Berkeley email address, you will be redirected to the familiar CalNet Authentication page. Sign in as you would for any other Berkeley service and you should be greeted with a loading page, indicating that the first problem set, `ps0`, is being downloaded to your account:

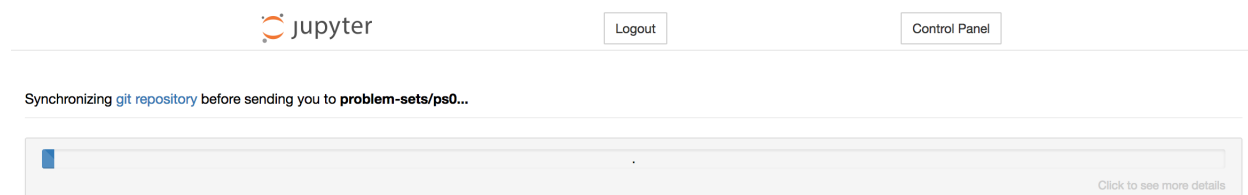


Figure 3: Loading screen

When the download is complete, you should arrive at a screen like this:

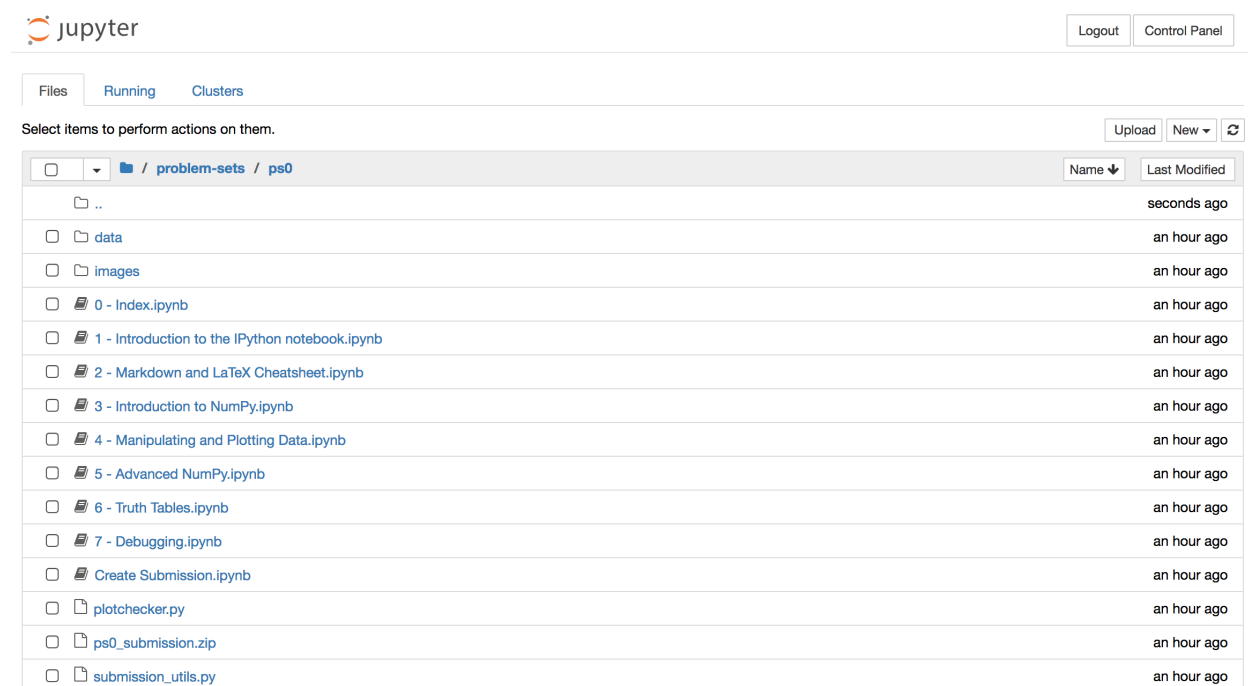


Figure 4: IPython Notebook server, `ps0` directory

Congratulations! You are now authenticated, and have already downloaded `ps0` to your account. This system is called *JupyterHub*, and it will be the main entry point to accessing your COG SCI 131 assignments throughout the semester.

Step 2: Opening a notebook

From the `ps0` page, if you select, `1 - Introduction to the IPython Notebook.ipynb` (notebooks always end with the `.ipynb` extension), the notebook will open in a new tab in your browser:

The screenshot shows the Jupyter Notebook interface. At the top, there is a header with the Jupyter logo, the notebook title "1 - Introduction to the IPython notebook", and a status "(unsaved changes)". On the right, there are buttons for "Logout" and "Control Panel". Below the header is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Widgets, Help. To the right of the menu bar are "Not Trusted" and "Python 3" indicators. A toolbar contains various icons for file operations (new, open, save, copy, paste) and execution (run, stop, refresh). The main content area contains a text box with instructions: "Make sure you fill in any place that says YOUR CODE HERE or 'YOUR ANSWER HERE', as well as your collaborators below:". Below this is a code cell with the text `COLLABORATORS = ''`. Further down, there is a paragraph of text: "In this class, you will be using the IPython Notebook to write code and written responses to assignments. The notebook consists of a series of cells. For example, this text is in what is called a 'Markdown' cell. The following cell is a 'code cell':". Below this is another code cell with the text `# this is a code cell`. At the bottom, there is a paragraph of text: "You can tell what the type of a cell is by selecting the cell, and looking at the toolbar at the top of the page. For example, try clicking on this cell. You should see the cell type menu displaying 'Markdown', like this:". Below this text is a smaller screenshot of the Jupyter Notebook toolbar, where a red arrow points to the "Markdown" dropdown menu. The "Cell Toolbar" is set to "None".

Figure 5: IPython Notebook server, Files tab, `ps0/1 - Introduction to the IPython Notebook.ipynb`

From here, you should follow the instructions in the notebook, which will walk you through how to use the IPython Notebook interface. The other notebooks will cover other tools we'll be using in this class, including Markdown, LaTeX, NumPy, and Matplotlib.

Important: Be sure to read the material in `0 - Index.ipynb`, which details policies on academic misconduct, collaboration, late days, problem set submissions, and other course FAQs.

Step 3: Validating a notebook

When you have finished working on a notebook, you can check to see if your coding solutions pass the included autograder tests. These tests are meant to give you an indication whether your coding solutions are on the right track, though they do not guarantee a correct solution. To run the validation tests for a notebook, open it and:

1. Restart the kernel and run all notebook cells (select “Restart & Run All” in the “Kernel” dropdown menu at the top of the notebook)
2. Save your work (select “Save and Checkpoint” in the “File” dropdown menu at the top of the notebook)
3. Scroll to the bottom of the notebook and ensure that the final cell has printed “No errors.” **If it has not, then your code has a bug in it!** Make sure you fix this error before creating your submission in order to receive full credit.

Note that validation only works for coding problems – there are no autograders for your written responses!

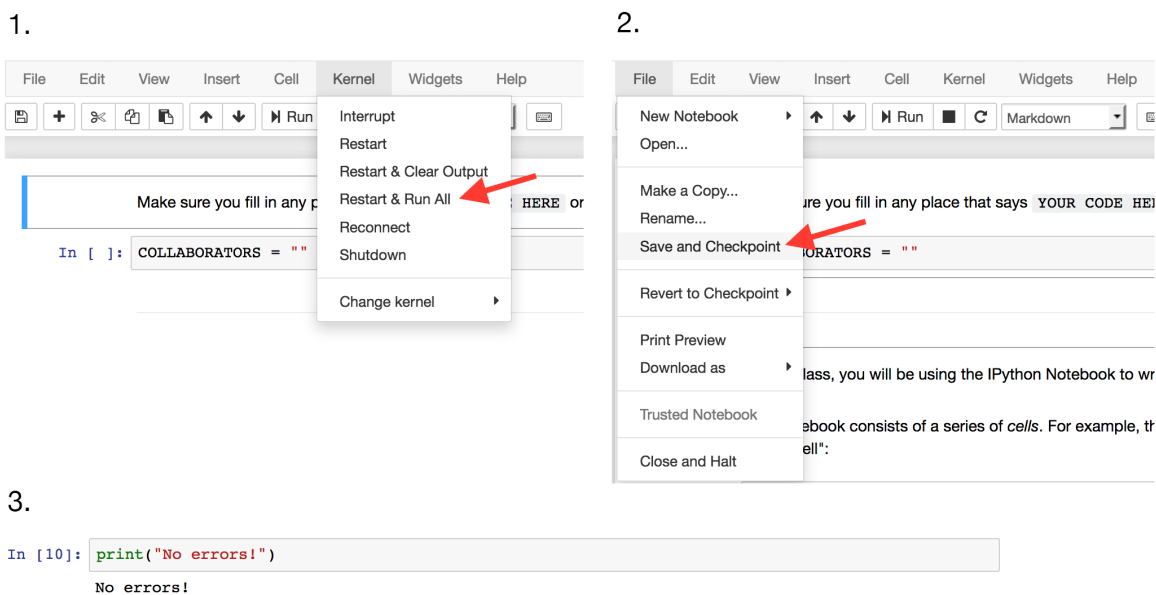
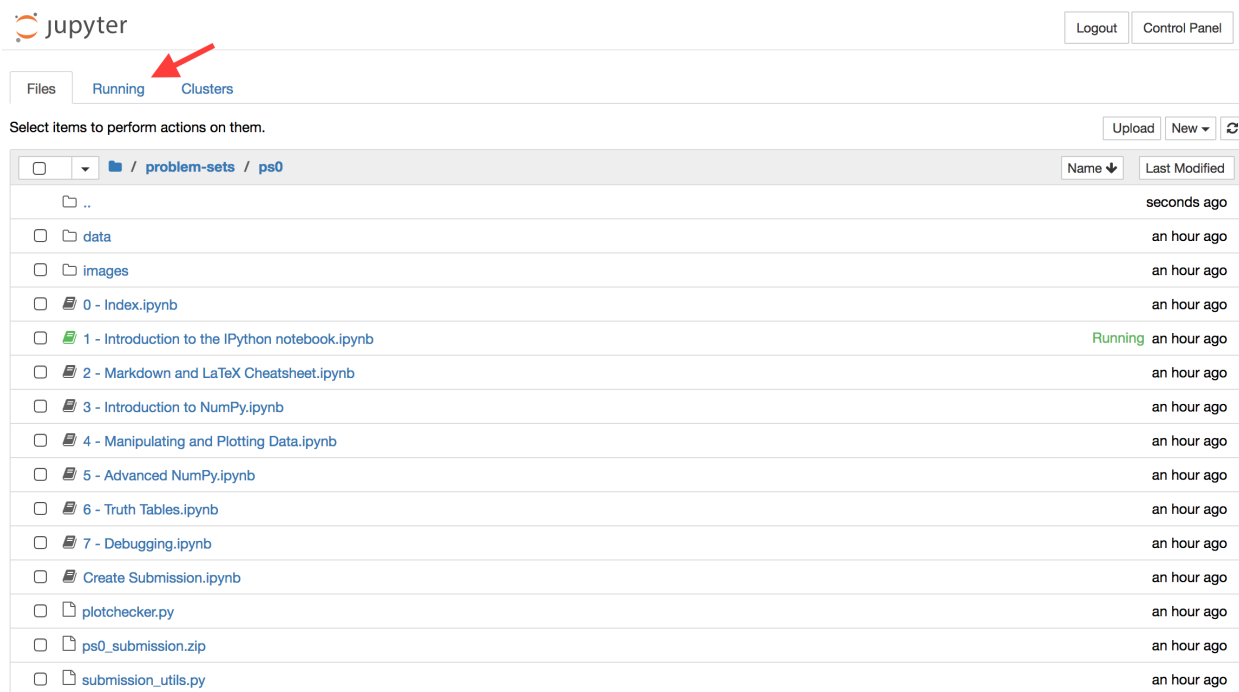


Figure 6: Steps for validating a problem set notebook

Step 4: Closing a notebook

Once you have finished working through the problems in a notebook, you should save your work either by going to “Save and Checkpoint” in the notebook’s File menu, or by using the keyboard shortcut `Cmd + s` (Mac) or `Ctrl + s` (Windows/Ubuntu).

When you are finished working, you should shut your notebook down to free up memory on your server. To close a notebook, go back to your `ps0` directory and click on the “Running” tab at the top of the page.

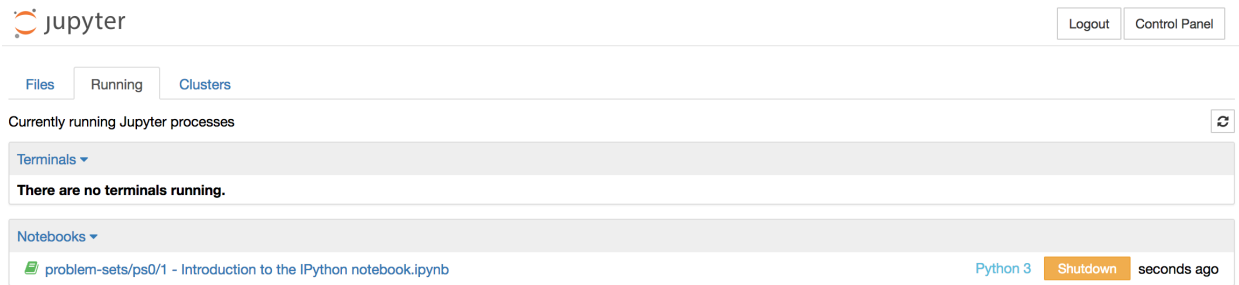


The screenshot shows the JupyterLab interface. At the top left is the Jupyter logo. To the right are 'Logout' and 'Control Panel' buttons. Below the logo are three tabs: 'Files', 'Running', and 'Clusters'. A red arrow points to the 'Running' tab. Below the tabs is a message: 'Select items to perform actions on them.' To the right of this message are 'Upload', 'New', and a refresh icon. Below this is a file browser showing the directory structure: `/ problem-sets / ps0`. The browser contains a table of files and folders:

	Name ↓	Last Modified
<input type="checkbox"/>	..	seconds ago
<input type="checkbox"/>	data	an hour ago
<input type="checkbox"/>	images	an hour ago
<input type="checkbox"/>	0 - Index.ipynb	an hour ago
<input type="checkbox"/>	1 - Introduction to the IPython notebook.ipynb	Running an hour ago
<input type="checkbox"/>	2 - Markdown and LaTeX Cheatsheet.ipynb	an hour ago
<input type="checkbox"/>	3 - Introduction to NumPy.ipynb	an hour ago
<input type="checkbox"/>	4 - Manipulating and Plotting Data.ipynb	an hour ago
<input type="checkbox"/>	5 - Advanced NumPy.ipynb	an hour ago
<input type="checkbox"/>	6 - Truth Tables.ipynb	an hour ago
<input type="checkbox"/>	7 - Debugging.ipynb	an hour ago
<input type="checkbox"/>	Create Submission.ipynb	an hour ago
<input type="checkbox"/>	plotchecker.py	an hour ago
<input type="checkbox"/>	ps0_submission.zip	an hour ago
<input type="checkbox"/>	submission_utils.py	an hour ago

Figure 7: IPython Notebook server, “Files” tab, `ps0` directory

From here, you can see a list of all of your currently running notebooks. To shut one down, simply click the orange “Shutdown” button to the right of the notebook. You can always start your notebook up again later by clicking on it from the Files tab.



The screenshot shows the Jupyter web interface. At the top left is the Jupyter logo. To the right are 'Logout' and 'Control Panel' buttons. Below the logo are three tabs: 'Files', 'Running' (which is active), and 'Clusters'. Under the 'Running' tab, the text 'Currently running Jupyter processes' is followed by a refresh icon. There are two sections: 'Terminals' and 'Notebooks'. The 'Terminals' section is empty with the message 'There are no terminals running.'. The 'Notebooks' section contains one entry: a notebook icon, the path 'problem-sets/ps0/1 - Introduction to the IPython notebook.ipynb', the text 'Python 3', an orange 'Shutdown' button, and the text 'seconds ago'.

Figure 8: IPython Notebook server, “Running” tab

Step 5: Submitting a completed problem set

Once you have completed each of your problem set notebooks and verified that your notebooks pass all of the required tests, you can open the `Create Submission.ipynb` notebook in the `ps0` directory to create a zip file that you can submit to BCourses. More detailed submission instructions are provided in the `submissionInstructions.pdf` file on Piazza / BCourses.

Note that you may make multiple submissions of the same assignment before the deadline – only your most recent submission will be graded. If you make any changes to your submission *after* the due date, we will regard your **entire** problem set as having been turned in at the last time it was changed.