# GUIDE TO JUPYTER NOTEBOOK

All of us at theDevMasters thanks you for your decision with our program.
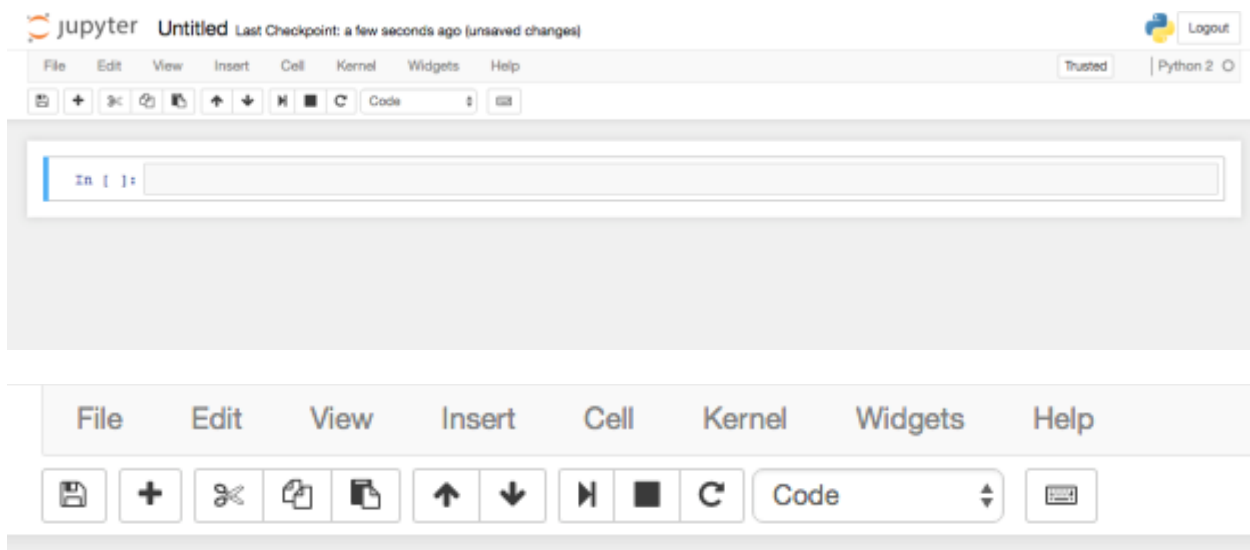
## TABLE OF CONTENTS

## DEFAULT VIEW OF JUPYTER NOTEBOOK WHEN LAUNCHED



This document will serve as a beginners' guide to the interface of Jupyter Notebook.

It is primarily used a scratchpad for code, kind of like an editor, but the difference is that each cell of code is executable, while simultaneously interactive with the environment within the notebook itself.

It is preferred because of the portability & sharable format when it comes to the data science community.

## TO RUN A CELL / BLOCK OF CODE,

```
In [1]:  2+2
Out[1]:  4

In [ ]:
```

Type your code in the cell & press **Shift-Enter** to run the cell.

## TYPES OF CELLS

There are three types of cells in Jupyter Notebook: Code, Markdown, & Raw NBConvert, in order below.

```
In [ ]:  # html
```

# html

```
# html
```

This screenshot shows the difference of when a # is used in front of some text.
In Python, the # is to denote a comment. In Markdown, it automatically turns it into a heading; while Raw NBConvert keeps it in its raw state, as expected.

To change the type of cell, use the shortcut, which also sometimes serves as your indicator of cell type.

```
Markdown      ▲▼
```

You should always be wary of what type of cell the cell you are running is; some have been frustrated by their code not running when their cell was in fact a markdown.

## CODE

Code is your default cell type; you can tell you are in a code cell when the IN[ ] format appears.

```
In [2]: 3+3

Out[2]: 6
```

When you run the cell, an output is usually displayed also.

## MARKDOWN / HEADING VS RAW NBCONVERT

When a Markdown cell is ran, the formatting of the cell will display accordingly. Markdown cells take HTML as code for more advanced formatting.

```
### <font color="red">Message to Student:</font>
There will be questions throughout the Prework materials: please
evaluation of your understanding of the section. **If any particu
corresponding answer blank for the resident statistician, *Kate*,

### Key to Color Coordination:
1. <font color="red">**Sections**</font><br>
2. <mark>**Vocabulary**</mark> <br>
2. <font color="orange">**Examples**</font> <br>
3. <font color="green">**Checkpoint Questions**</font> <br>
4. <font color="blue">**Conceptual Questions**</font> <br>
5. <font color="purple">**Optional Questions**</font>
```

**Message to Student:**

There will be questions throughout the Prework ma
section. **If any particular question is unclear,** plea
additionally.

**Key to Color Coordination:**

1. Sections
2. Vocabulary
3. Examples
4. Checkpoint Questions
5. Conceptual Questions
6. Optional Questions

Compared to the Raw NBConvert format,

```
### <font color="red">Message to Student:</font>
There will be questions throughout the Prework materials: pleas
evaluation of your understanding of the section. **If any parti
corresponding answer blank for the resident statistician, *Kate

### Key to Color Coordination:
1. <font color="red">**Sections**</font><br>
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3. <font color="green">**Checkpoint Questions**</font> <br>
4. <font color="blue">**Conceptual Questions**</font> <br>
5. <font color="purple">**Optional Questions**</font>
```

which has no color to the code & when ran, looks exactly the same.

## KEY ASPECTS TO NOTE
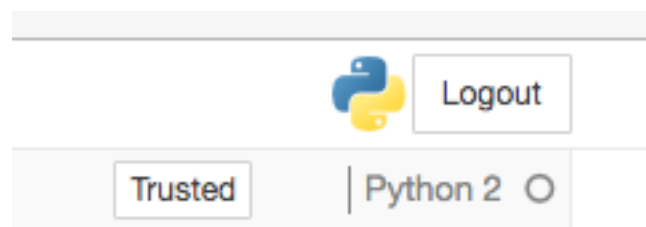
First & foremost, the language the notebook is default to is displayed in the top right corner.

**The Logout button is rarely used / advised against**, because once you logout, you will have to copy & paste in the same login URL with the token to access Jupyter Notebook again from the terminal, like below.
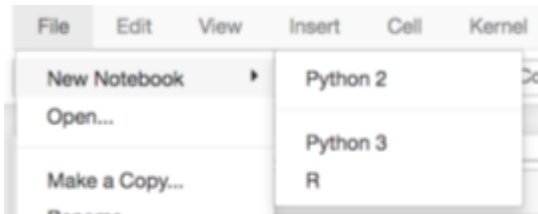
```
[C 13:20:20.751 NotebookApp]

    Copy/paste this URL into your browser when you connect for the first time,
    to login with a token:
        http://localhost:8888/?token=132760b107b11235a569719b87cce073ef79eec322a26fc7
```

## THE FILE MENU

### NEW NOTEBOOK



The New Notebook option lets you create a new notebook in whichever
installed environments you have, without having to navigate back to the Home view.

### OPEN AN EXISTING NOTEBOOK

The Open… option opens your directory in a new tab (regardless of if it is already open, for that matter)
for you to navigate to a different notebook.

### MAKE A COPY OF A NOTEBOOK

Useful for when you want to transfer existing code over without copy, pasting everything all over again
& for when you want to create different notebooks with different scenarios.
For example, of a project that should be clear cut,



### RENAMING THE NOTEBOOK

By default, a new notebook will be named fittingly: Untitled. For organizational purposes, please rename your
notebook to a title that encompasses its purpose, like **premodeling, stage 1, generate dummies.**
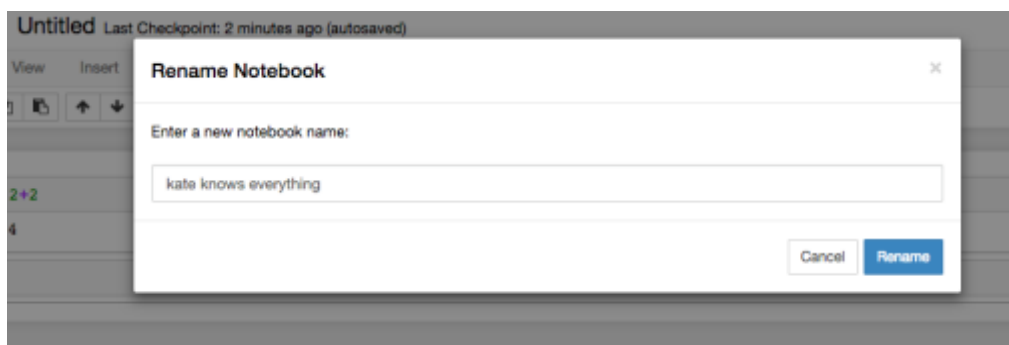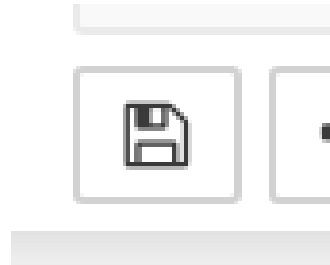


**Note:** There is no need to put .ipynb at the end, since this file will default to a Jupyter Notebook regardless.

## SAVE & CHECKPOINT

Rarely does this particular option get picked in the File menu, because there is a shortcut just for that in the navigation panel.



It is advised to save regularly & before you navigate away from the notebook, because Jupyter Notebooks are not always auto save, (:

## REVERT TO CHECKPOINT
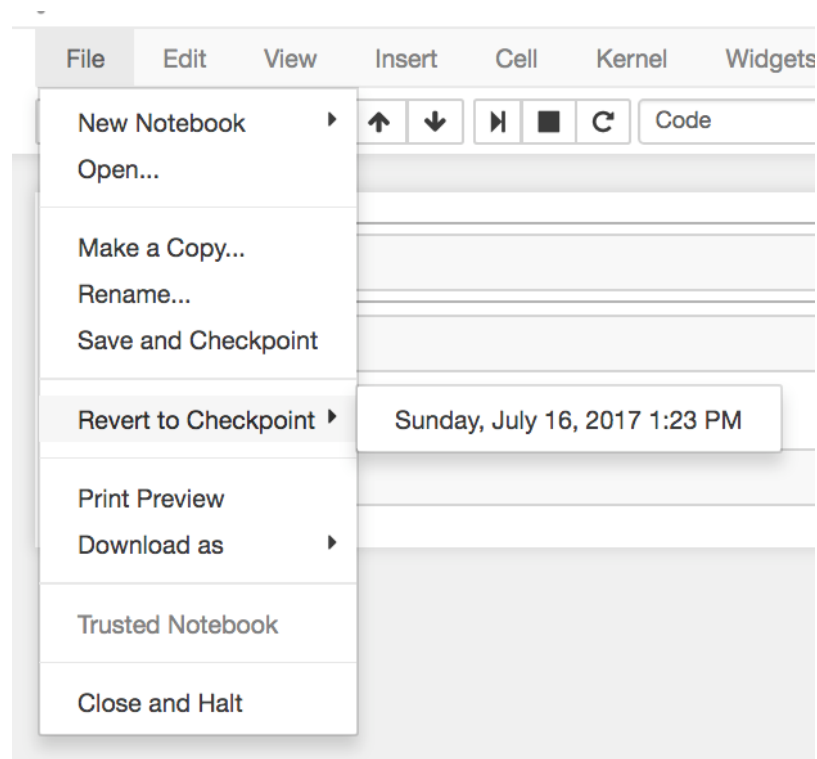


The Revert option is best when you did some initial changes to your notebook & want to revert to back to its original form, like when you had first opened it. Note, because of this condition, it will not revert to a state that your notebook was before it was opened.

## PRINT PREVIEW

```
In [ ]:

In [1]:    2+2
Out[1]:    4

In [2]:    3+3
Out[2]:    6

In [ ]:    # html
```
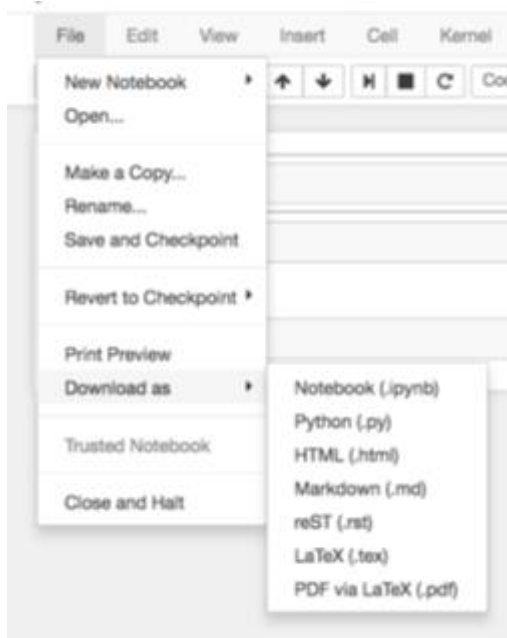
## html

\# html

Print preview will show you the way the notebook will be printed if exactly converted to a different format. Notice how Markdown cells remain aligned, while Raw NBConvert cells align with the edge of the page now. Also, this preview opens in a different tab.

## DOWNLOAD AS

Download As option really shows how well thought out Jupyter Notebook is in terms of sharing & conversions.

```
File    Edit    View    Insert    Cell    Kernel

New Notebook        ►
Open...

Make a Copy...
Rename...
Save and Checkpoint

Revert to Checkpoint ►

Print Preview
Download as          ►      Notebook (.ipynb)
                            Python (.py)
Trusted Notebook            HTML (.html)
                            Markdown (.md)
Close and Halt              reST (.rst)
                            LaTeX (.tex)
                            PDF via LaTeX (.pdf)
```

Each option can happily be explored, but might require additional installations of packages, like LaTeX.

## TRUSTED NOTEBOOK

The Trusted Notebook option is greyed out for notebooks that you personally created in the same machine/computer. It is clickable when you do trust the information from a notebook that is shared to you by someone else, downloaded from the internet, or one of your own personal notebooks loaded from a cloud service.
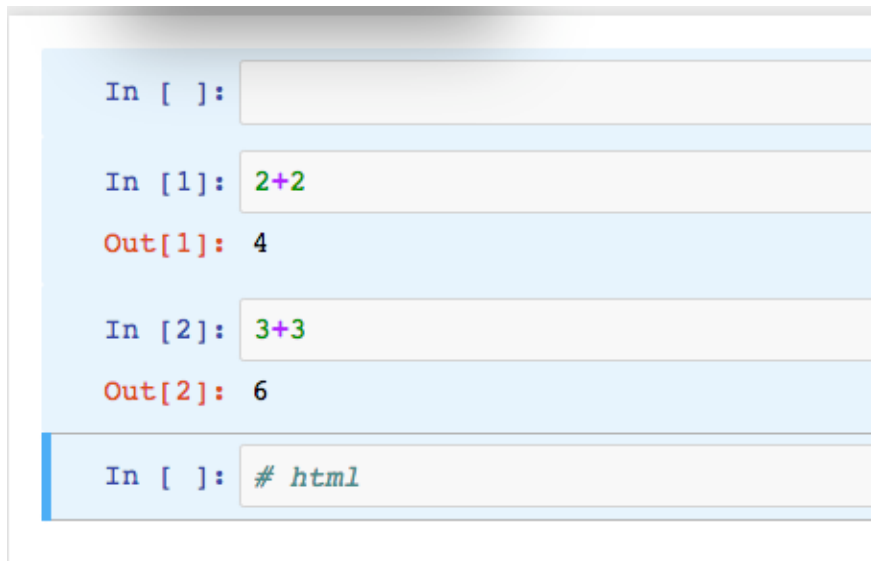
## CLOSE & HALT

Close & Halt option is very special because it shutdowns your particular notebook & its associated kernel, but the Python server will still run in the background, until you kill the terminal window of your Jupyter Notebook server, so it isn't a shortcut to stop your Jupyter Notebook server. It is used as good practice to allocate memory & computational power when multiple notebooks will be open.

## THE EDIT MENU

The Edit menu is used mostly for the arrangement of your cells in the notebook in any manner possible.

It is also possible to select multiple cells for editing by clicking on the cell by the left space, turning it blue as a selection color & using the Shift button & arrows to select more cells, like below.



## CUT CELLS & SHORTCUT


The Cut shortcut & option is used when the cell you select does not need to be there anymore.

## COPY CELLS & SHORTCUT

The Copy shortcut is usually used when the cell(s) contain a chunk of code that only require some changes, but remain in the same fashion.

## PASTE CELLS & SHORTCUT

The Paste shortcut is used after the copy shortcut. (:

## DELETE CELLS

The Delete option is rarely used, because this means that you do not want these cells at all. Ever again.

## SPLIT & MERGE CELLS

Split & Merging cells are popular when a chunk of code can be divided for organization or when you want to run multiple cells at one time without running all of them separately.

```
In [1]:  2+2

         3+3

Out[1]:  4
```

Note: Merging cells will keep the bottom output regardless of merging below or above.

## MOVE CELLS

Moving cells is useful when you have ran a chunk of code that is in the wrong order once you've decided to reorganize your notebook again. This tool is very useful for keeping track of which codes run where.

## EDIT NOTEBOOK METADATA

Editing the notebook metadata is advised for those who know what they want their notebook to look like & understand the JSON language perfectly. It is ill advised to play with unless you want to spend the time really formatting your notebook down to the core. Here is a screenshot to show what happens as a first step after you click on that option.
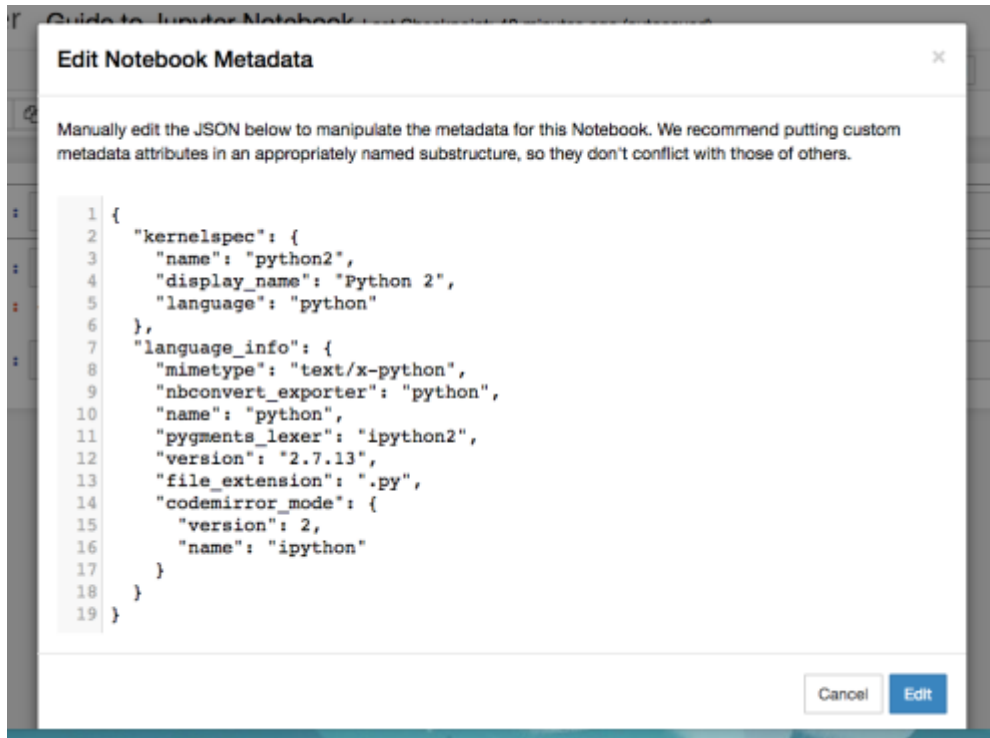


## FIND & REPLACE

Easily overlooked, because there is a keyboard shortcut for this option, it is useful for when you are replacing, but not for looking. Finding code in the notebook is your regular Ctrl + F or Command + F.
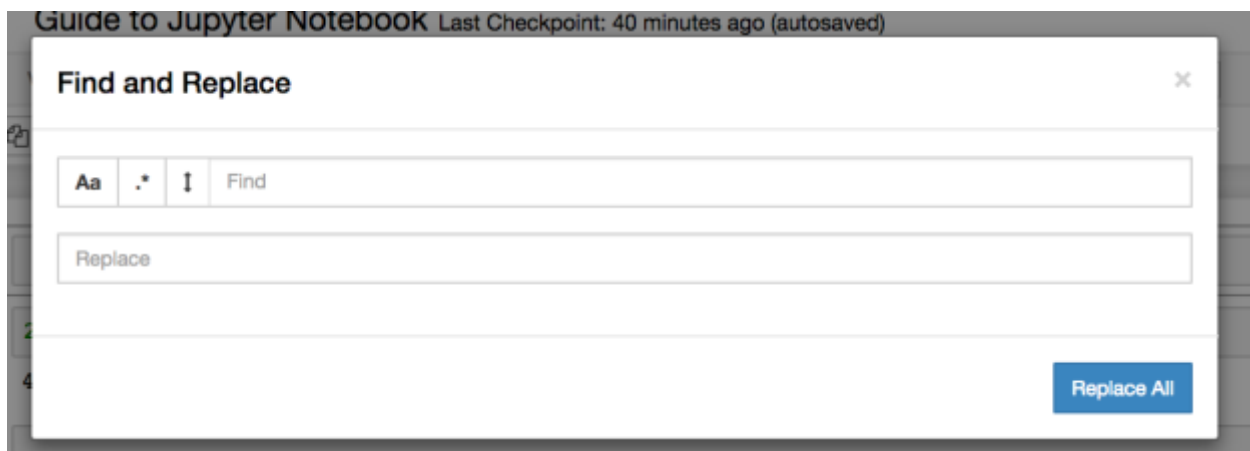
## CELL ATTACHMENTS

Cell Attachments are not common in Jupyter Notebook's practice, but when the time comes, you will know what to do. But It is not common, so not expected to know what are the pros & cons.

## INSERT IMAGE
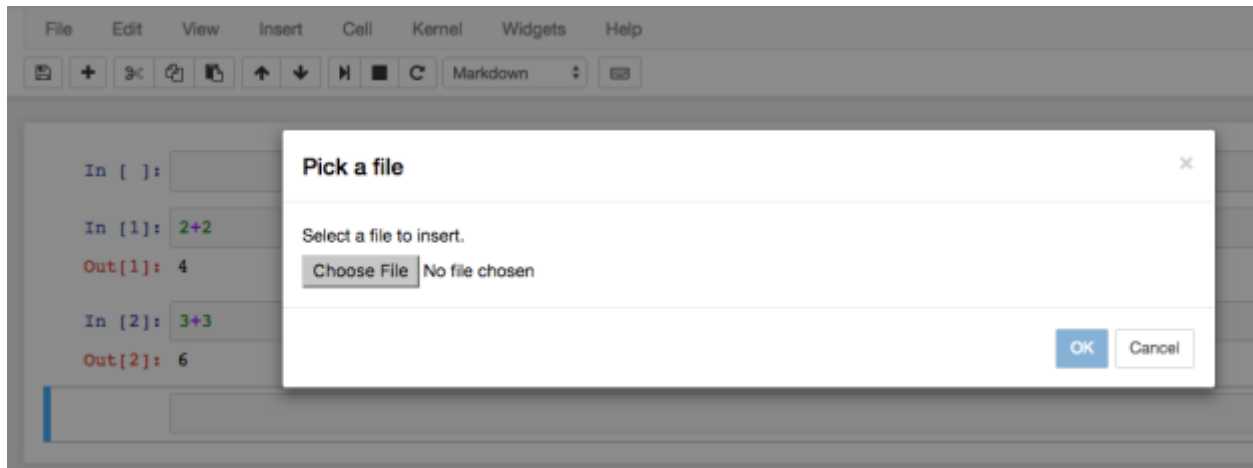


Inserting an image in the notebook requires the cell to be a Markdown type cell & the image to be accessible in your local directory. Note: when sharing the notebook, you have to send the image file itself with the notebook or this code will print error. Also, to bypass this error, insert the URL of the picture hosted on the web in the path. (:
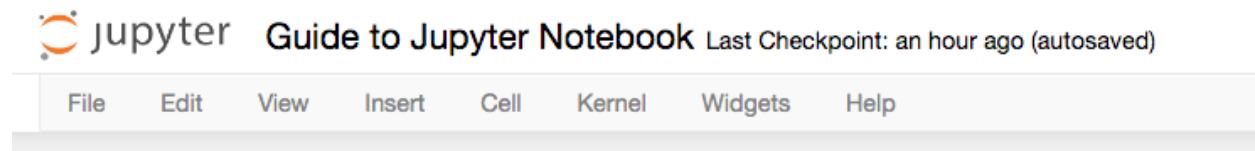
## THE VIEW MENU
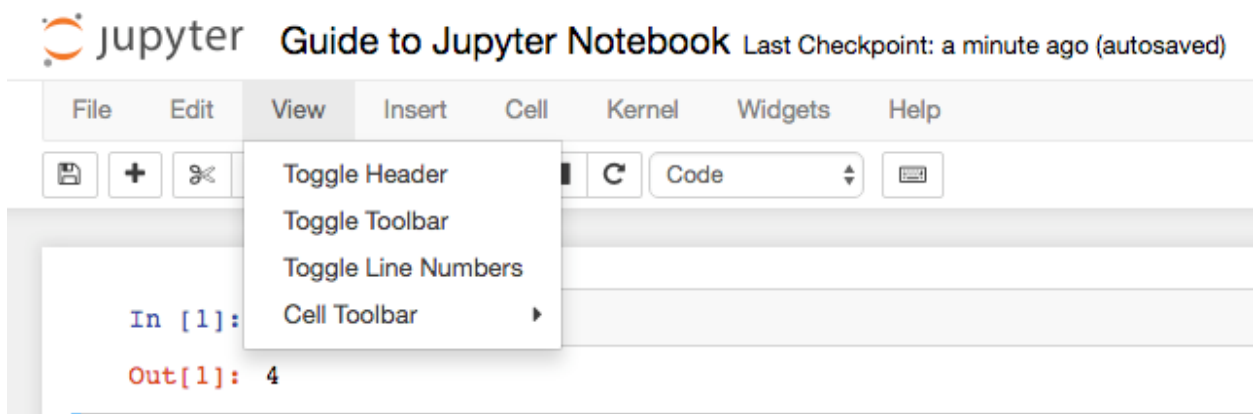


## TOGGLE HEADER
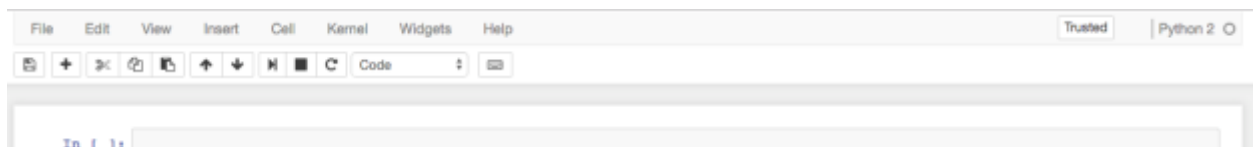
When this option is selected, the row of the Jupyter Notebook logo is removed; used for when your display space is limited or it is particularly annoying to have that displaying in your presentation / notebook.
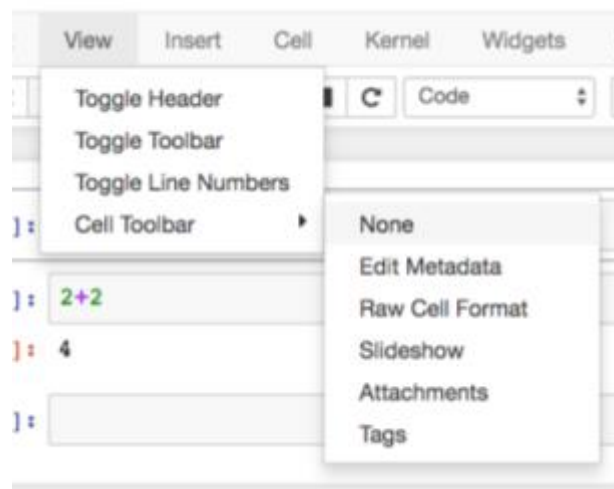
## TOGGLE TOOLBAR



Toggle the Toolbar to hide the navigational shortcut buttons; this is for advanced users who have designated their keyboard shortcuts & find it as a nuisance.

## TOOGLE LINE NUMBERS
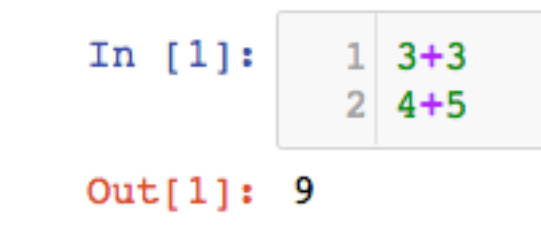


Toggle the Line Numbers to see how long your code really was; note output always displays the last line of code.

## CELL TOOLBARS



These options toggle extra information about each cell; each have their own purposes for exploration.

### DEFAULT / NONE

By Default, no extra information is displayed.

## EDIT METADATA



## RAW CELL FORMAT



## SLIDESHOW

## ATTACHMENTS

In [ ]:                                                        Edit Attachments

In [1]:                                                        Edit Attachments
        2+2
Out[1]:  4

In [ ]:                                                        Edit Attachments

## TAGS

Tags are useful in particular for organization / quick way of summarizing your cells for quick references.

In [ ]:                                                  ...  [        ]  Add tag

In [1]:                                                  ...  [        ]  Add tag
        2+2
Out[1]:  4

In [ ]:                                                  ...  [        ]  Add tag

In [ ]:  sleepy ✗                                        ...  [        ]  Add tag

In [1]:                                                  ...  [        ]  Add tag
        2+2
Out[1]:  4

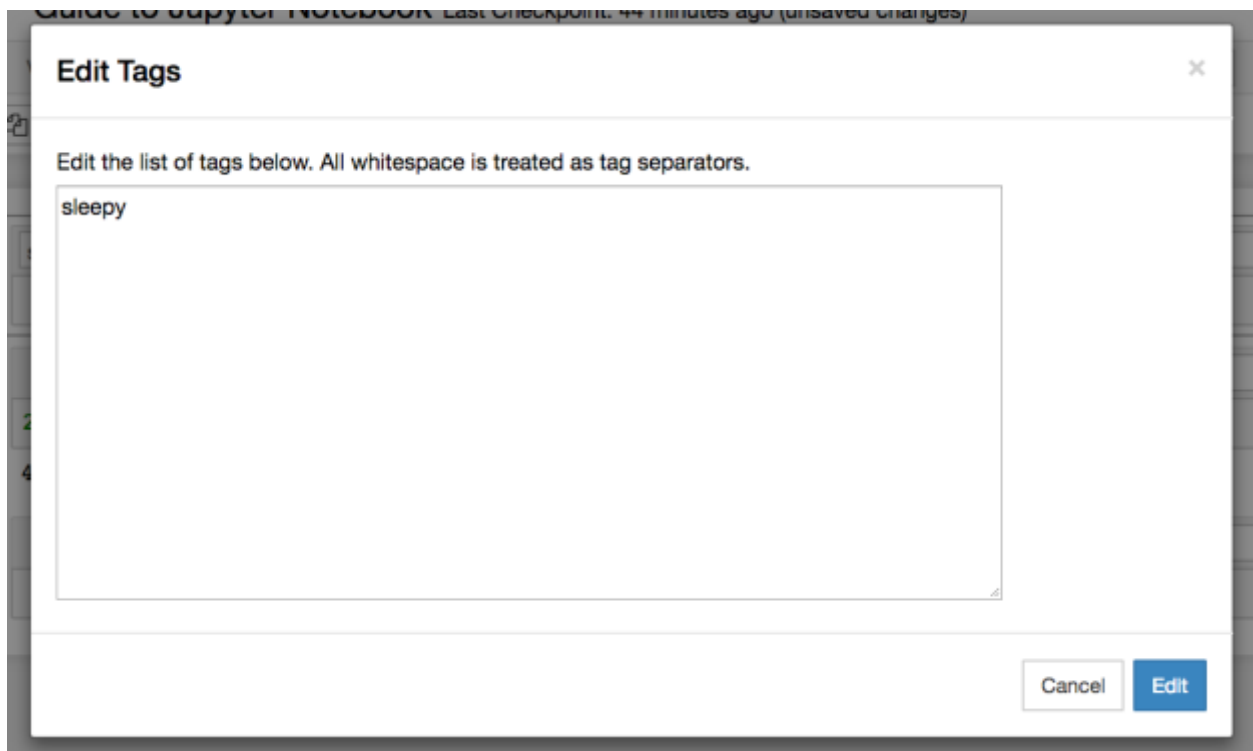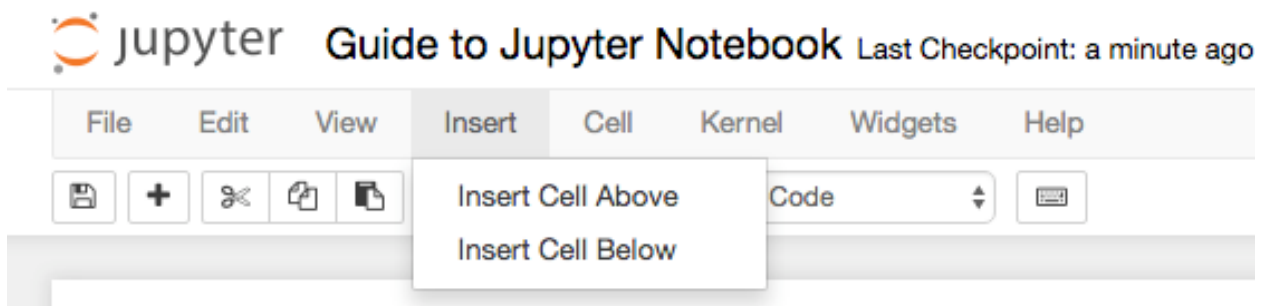In [ ]:                                                  ...  [        ]  Add tag

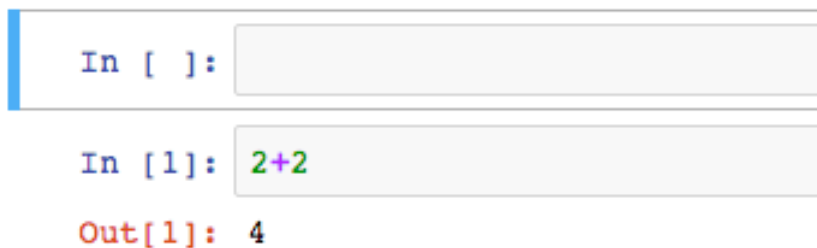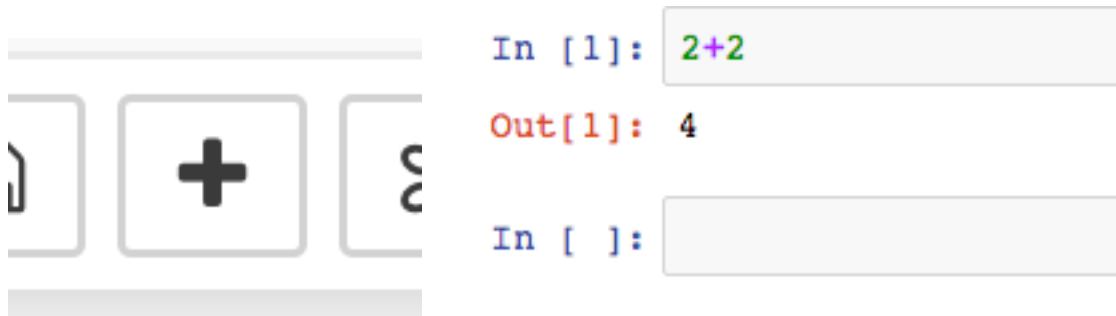There is also a massive editor of tags for one cell.



## THE INSERT MENU

By far, the most straightforward menu in the navigation panel.
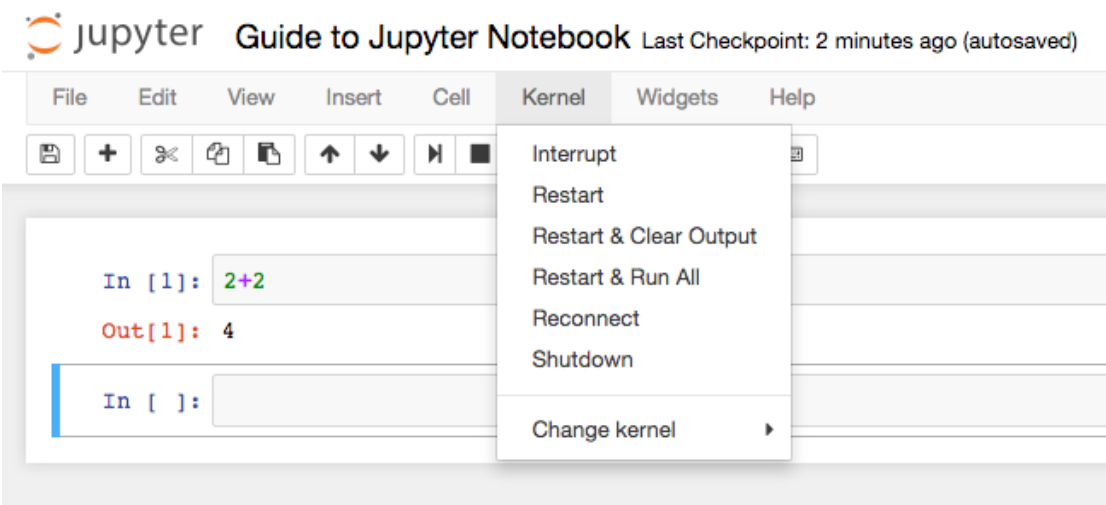


### INSERT CELL ABOVE

## INSERT CELL BELOW & NAVIGATION SHORTCUT



Jupyter Notebook also automatically adds a cell below the immediately ran cell.

## THE KERNEL MENU



The Kernel Menu is most used for when you have a particular need for the Python environment to shift / change.

## INTERRUPT

The Interrupt option is used for when a cell is caught in a loop or is lagging in computation. It will stop that particular cell from computing while maintaining other variables (even those that have run in the cell interrupted) in the environment.

## RESTART

Restart the environment when there is a particular error / hang that happens to your code;
you have the option to regular restart, clear all the outputs, or run all the cells when restarting.
It is very common to restart & run all of the cells again, sometimes when testing for notebook continuity errors.

(Kate personally uses this option when she doesn't want to show how many times she had to run the cell to get the right answer / right output. :P)

## RECONNECT

Reconnect your Python kernel when it randomly shuts down, which isn't common, but possible.

## SHUTDOWN

Shutdown the kernel if you are just shutting it down but want your notebook to remain open. There are particular reasons why this is the case for action, but none are notable at this moment.

## CHANGE KERNEL

Change your kernel is most useful when you find yourself running a line of code that is only compatible in Python 2, but the notebook environment is in Python 3. A quick switch is possible & vise versa also. R is a possibility, but it is ill advised to switch between Python & R for kernel changing in the same notebook.

## THE HELP MENU
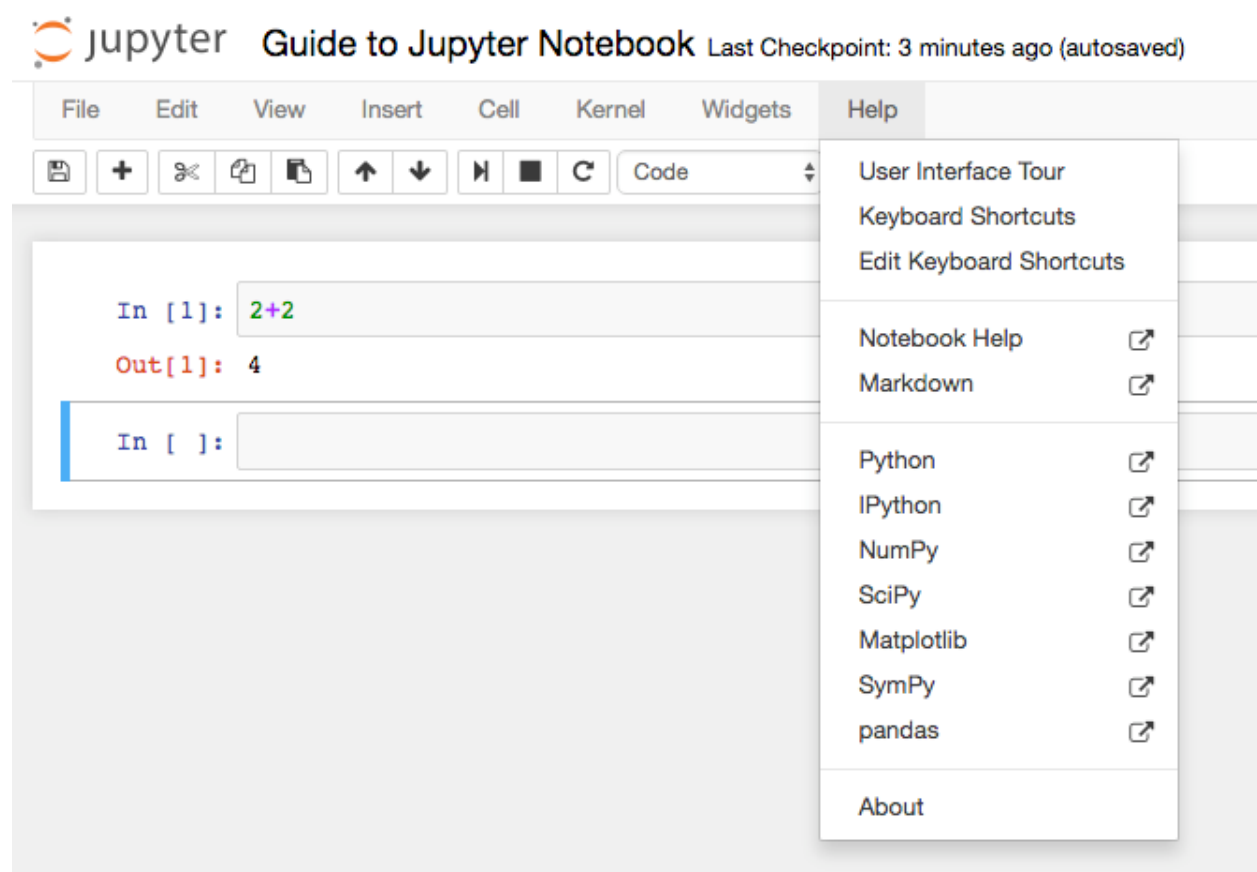


Notice there are keyboard shortcut that can be edited, but this is for your own exploration.