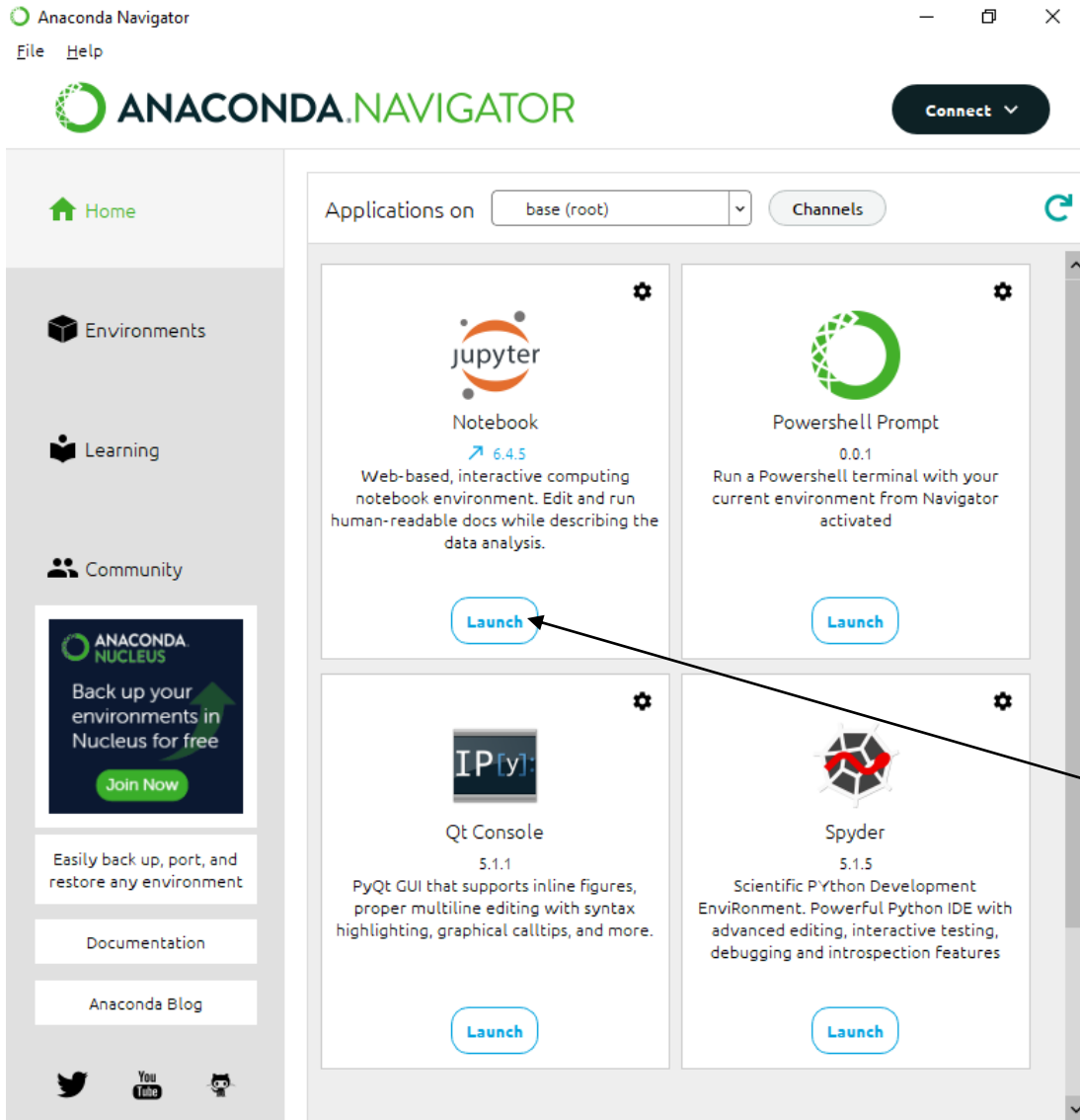


# Jupyter Notebook: An Introduction

- The Jupyter Notebook is an open-source web application that you allows you to author engaging documents that combine live-code with narrative text, equations, images, video, and visualizations.
- By encoding a complete and reproducible record of computation, the documents can be shared with others.

# Starting the Jupyter Notebook Server



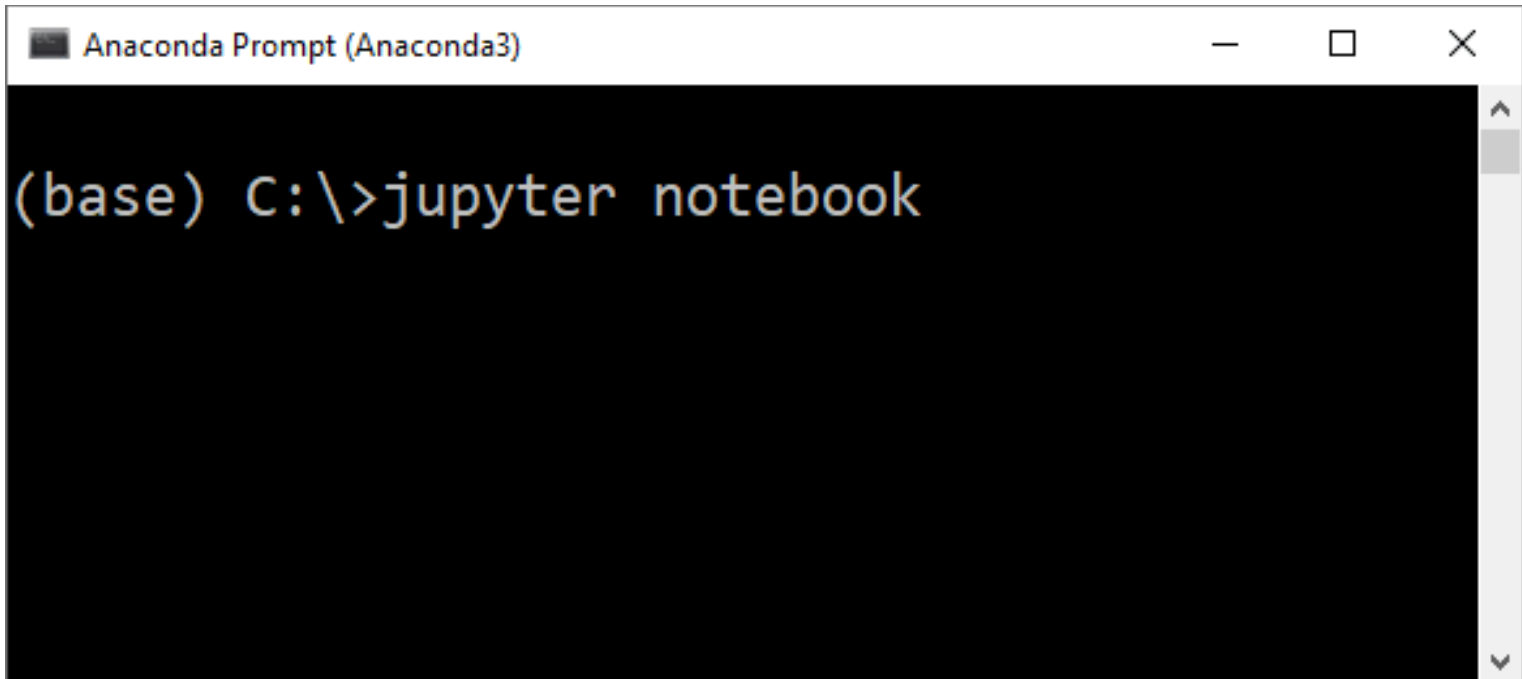
- The easiest way to start up Jupyter is by launching it through Anaconda Navigator

Click here

# Starting the Jupyter Notebook Server

- Alternately, you can run the following command in a terminal window:

```
jupyter notebook
```

A screenshot of an Anaconda Prompt terminal window. The title bar at the top reads "Anaconda Prompt (Anaconda3)" and includes standard window control buttons (minimize, maximize, close). The terminal area has a black background with text in a light blue/cyan font. The prompt "(base) C:\>" is followed by the command "jupyter notebook" which has been entered. A vertical scrollbar is visible on the right side of the terminal window.

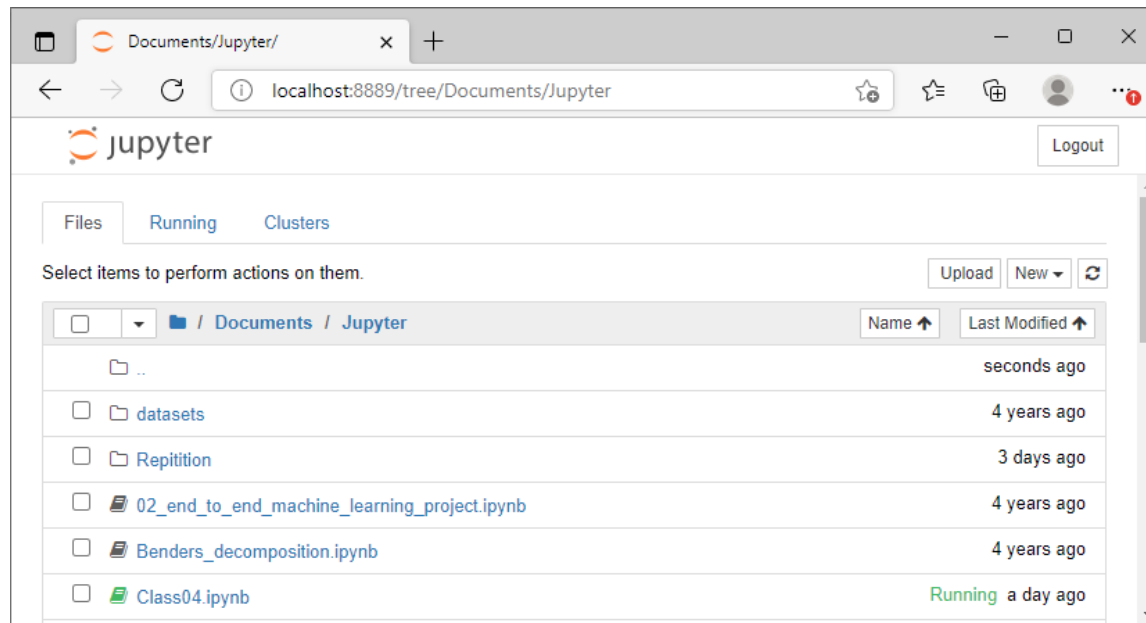
```
(base) C:\>jupyter notebook
```

# Jupyter Notebook Server

- When you start Jupyter, it will open your default browser to the following URL:

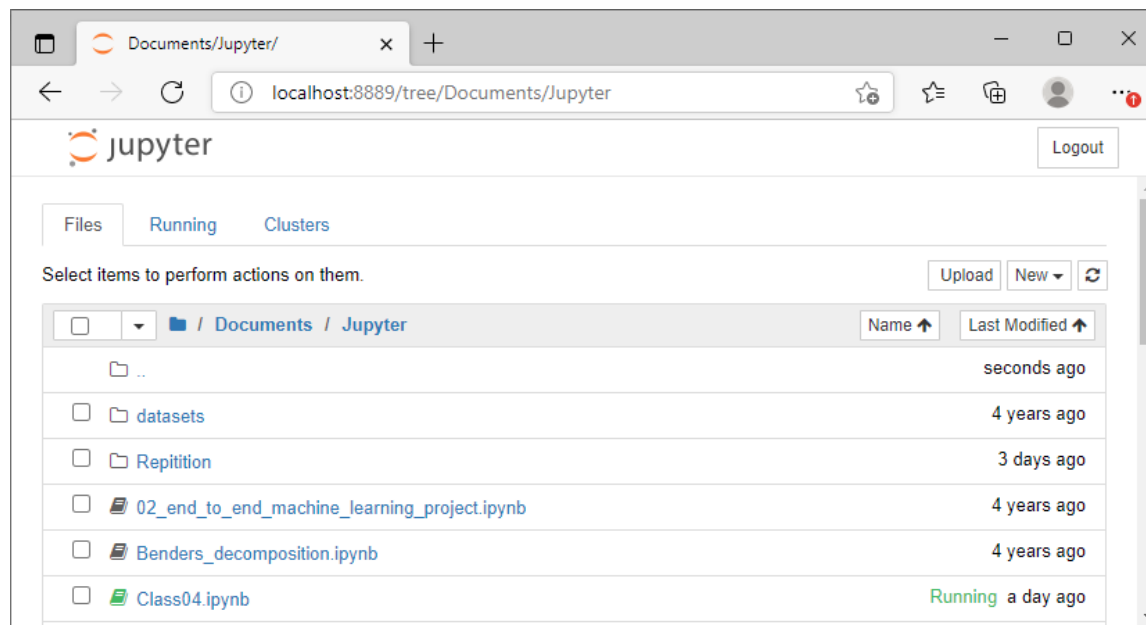
`http://localhost:8888/tree`

- Your browser should look something like this:



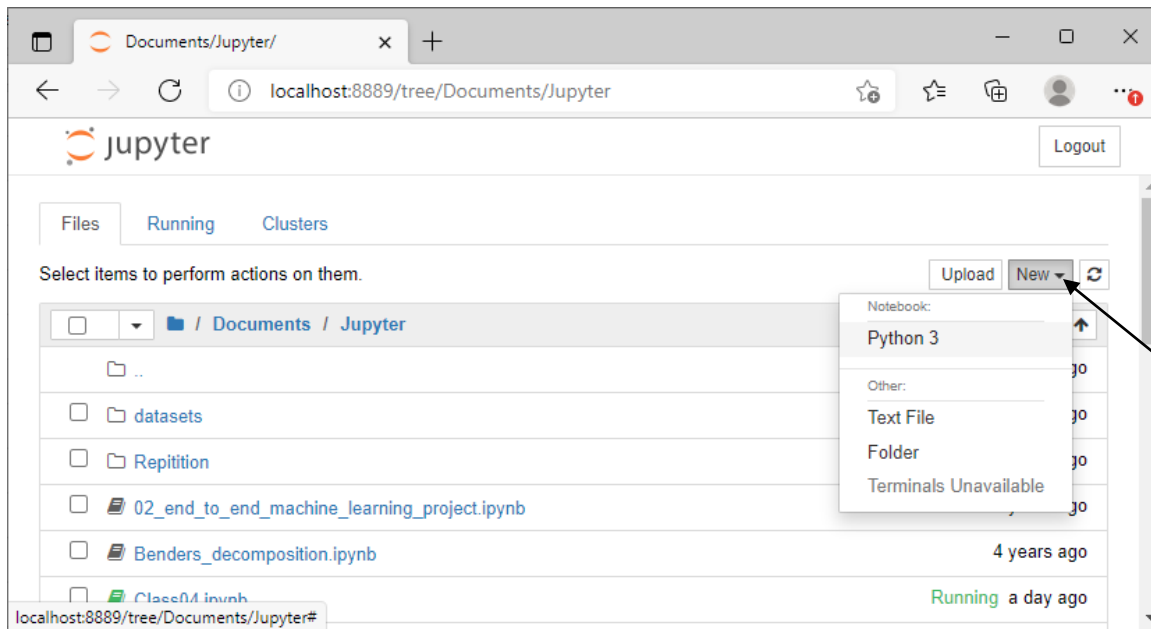
# Notebook Server

- Note that right now you are not actually running a Notebook, but instead you are just running a Notebook server.



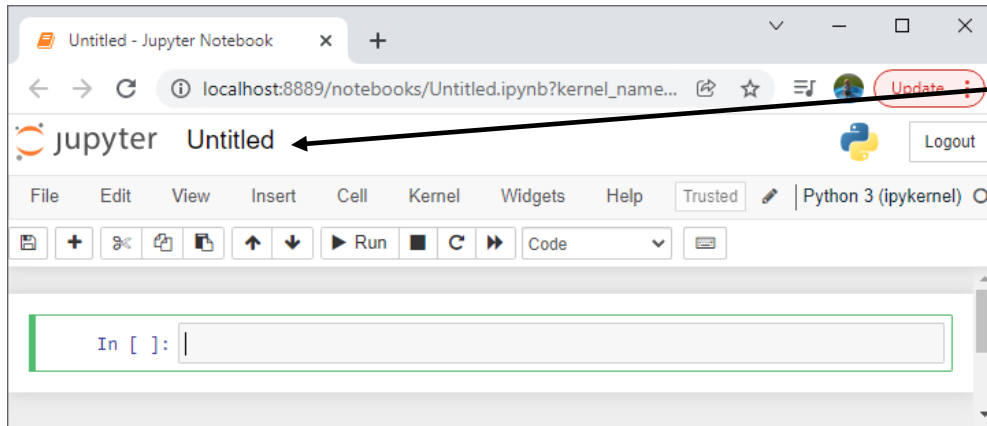
# Creating a Notebook

- To create a new notebook, click the **New** button (upper right) and it will open a list of choices (depending on your installation). Let's choose Python 3.

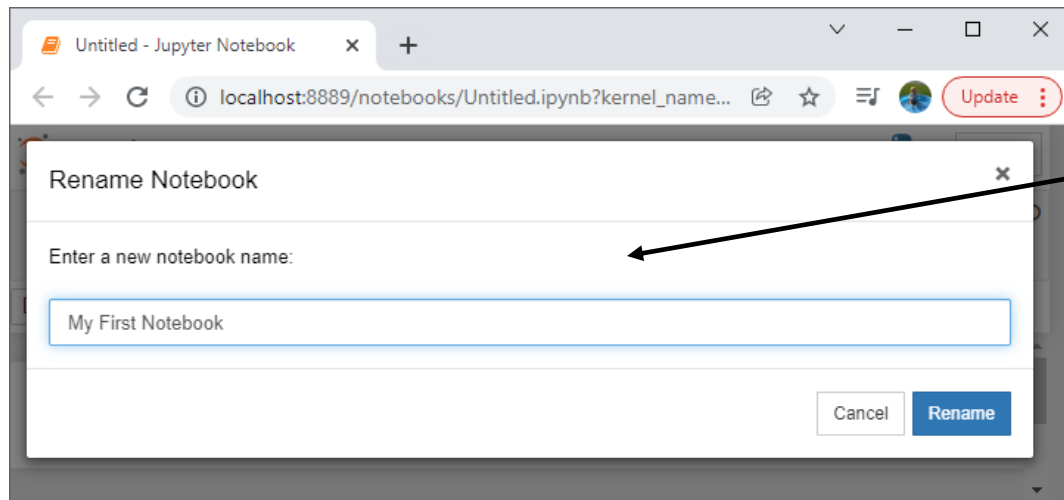


New button

# Naming a Notebook



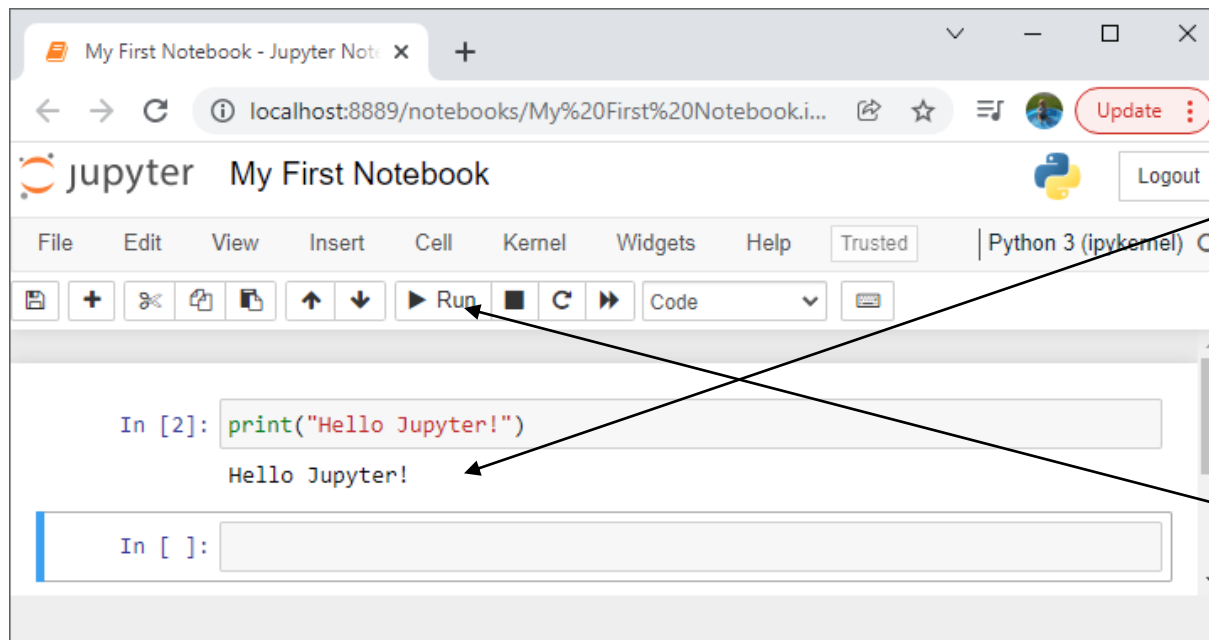
The top of the page is the word *Untitled*. Move your mouse over the word *Untitled* and click on it to rename the notebook to *My First Notebook*.



Note that this will also change the name of the file.

# Running Cells

- A notebook's cell defaults to using code whenever you first create one, and that cell uses the *kernel* that you chose when you started the notebook (in our case Python 3).
- Add the following code to the cell: `print("Hello Jupyter!")`
- To execute a cell, you can select the cell and press the *Run* button.



Output produced  
from execution

*Run* button



# Code in Jupyter Notebooks

- If you have multiple cells in your notebook, and you run the cells in order, you can share your variables and imports across cells.
- This makes it easy to separate your code into logical chunks without the need to reimport libraries or recreate variables or functions in every cell.
- When you run a cell, you will notice that there are some square braces next to the word *In* to the left of the cell. The square braces will auto fill with a number that indicates the order that you ran the cells.

# The Menus

- The Jupyter Notebook has several menus that you can use to interact with your Notebook:
  - *File*
  - *Edit*
  - *View*
  - *Insert*
  - *Cell*
  - *Kernel*
  - *Widgets*
  - *Help*

# The Menus

- The first menu is the *File* menu. Here you can create a new Notebook or open a preexisting one. This is also where you would go to rename a Notebook.
  - The *Save and Checkpoint* option allows you to create checkpoints that you can roll back to if you need to.
- The *Edit* menu can be used cut, copy, and paste cells. This is also where you would go if you wanted to delete, split, or merge a cell. You can reorder cells here too.
- The *View* menu is useful for toggling the visibility of the header and toolbar. You can also toggle Line Numbers within cells on or off.

# The Menus

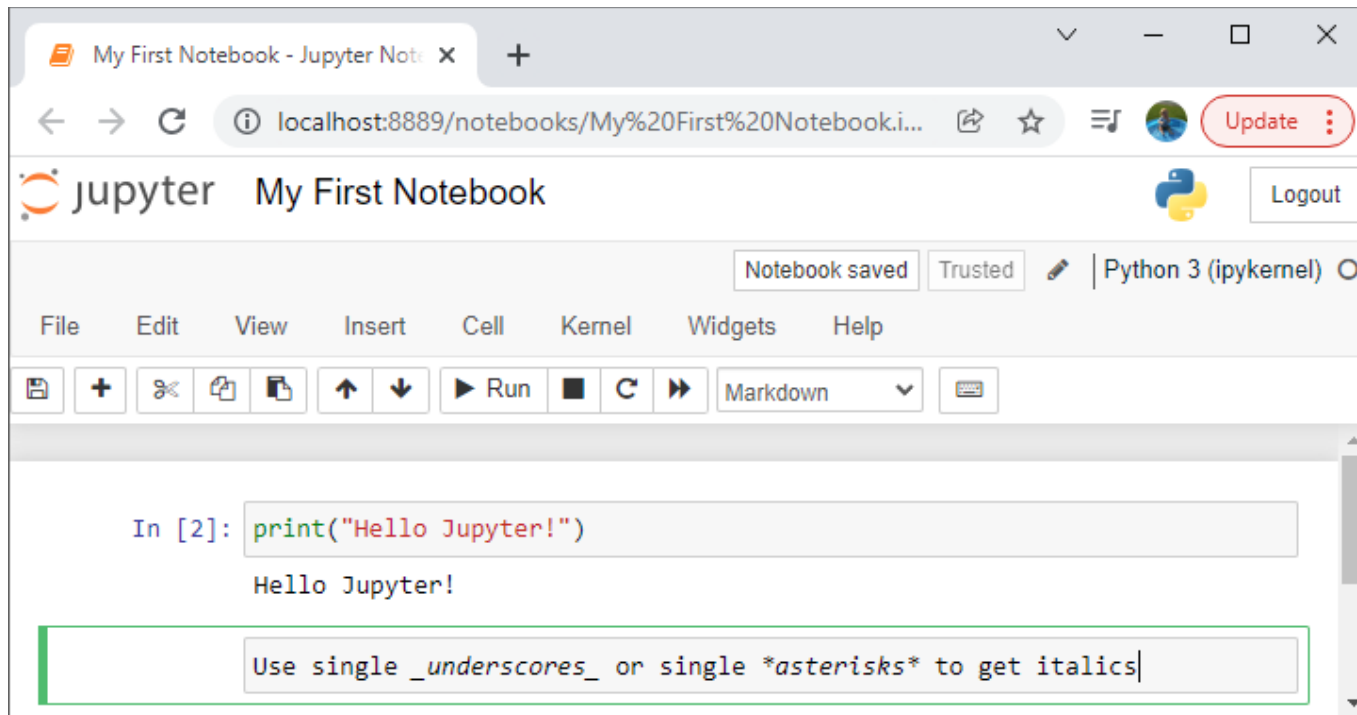
- The *Insert* menu is just for inserting cells above or below the currently selected cell.
- The *Cell* menu allows you to run one cell, a group of cells, or all the cells. You can also go here to change a cell's type, although the toolbar is more intuitive for that.
  - The other handy feature in this menu is the ability to clear a cell's output. If you are planning to share your Notebook with others, you will probably want to clear the output first so that the next person can run the cells themselves.

# Adding Rich Content

- Jupyter Notebook supports adding rich content to its cells.
- There are technically four cell types: `Code`, `Markdown`, `Raw NBConvert`, and `Heading`.
- The `Heading` cell type is no longer supported. Instead, you are supposed to use `Markdown` for your Headings.
- The `Raw NBConvert` cell type is only intended for special use cases when using the `nbconvert` command line tool. Basically, it allows you to control the formatting in a very specific way when converting from a Notebook to another format.
- The primary cell types that you will use are the `Code` and `Markdown` cell types.

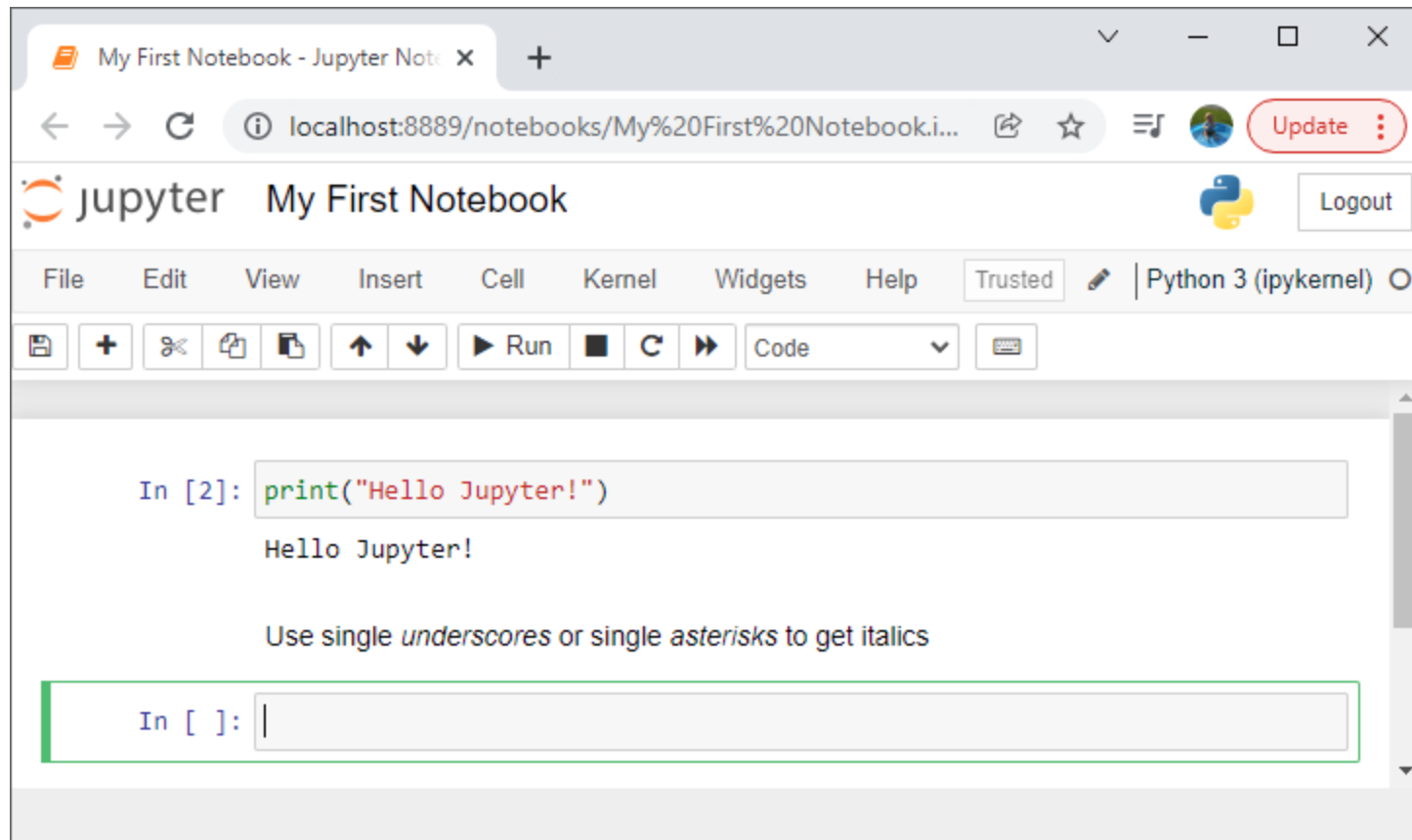
# Styling Your Text

- Jupyter Notebook supports Markdown, which is a markup language that is a superset of HTML.
- Set a new cell to Markdown and add the following text to the cell:  
Use single `_underscores_` or single `*asterisks*` to get italics



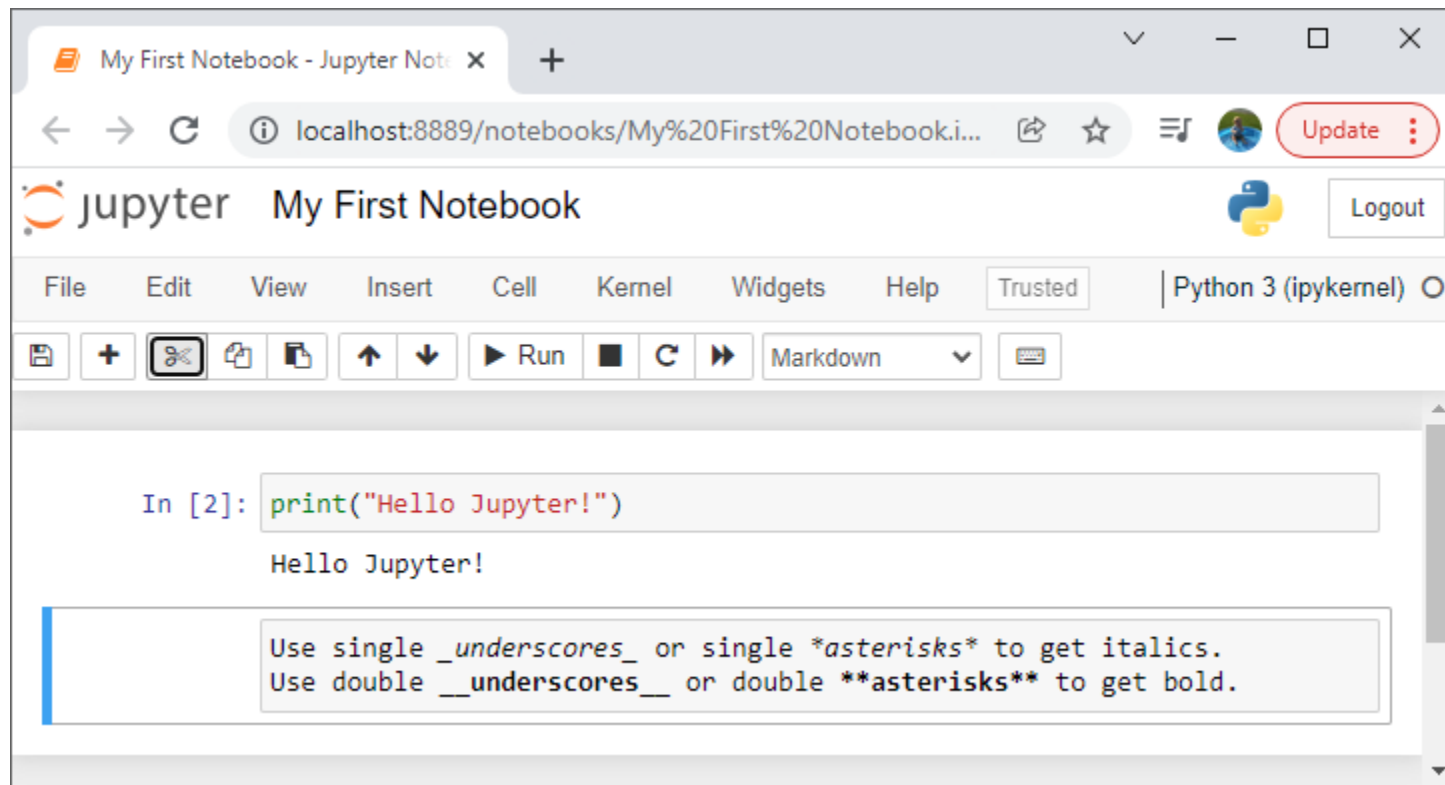
# Styling Your Text

- When you run the cell, the output should look like this:



# Styling Your Text

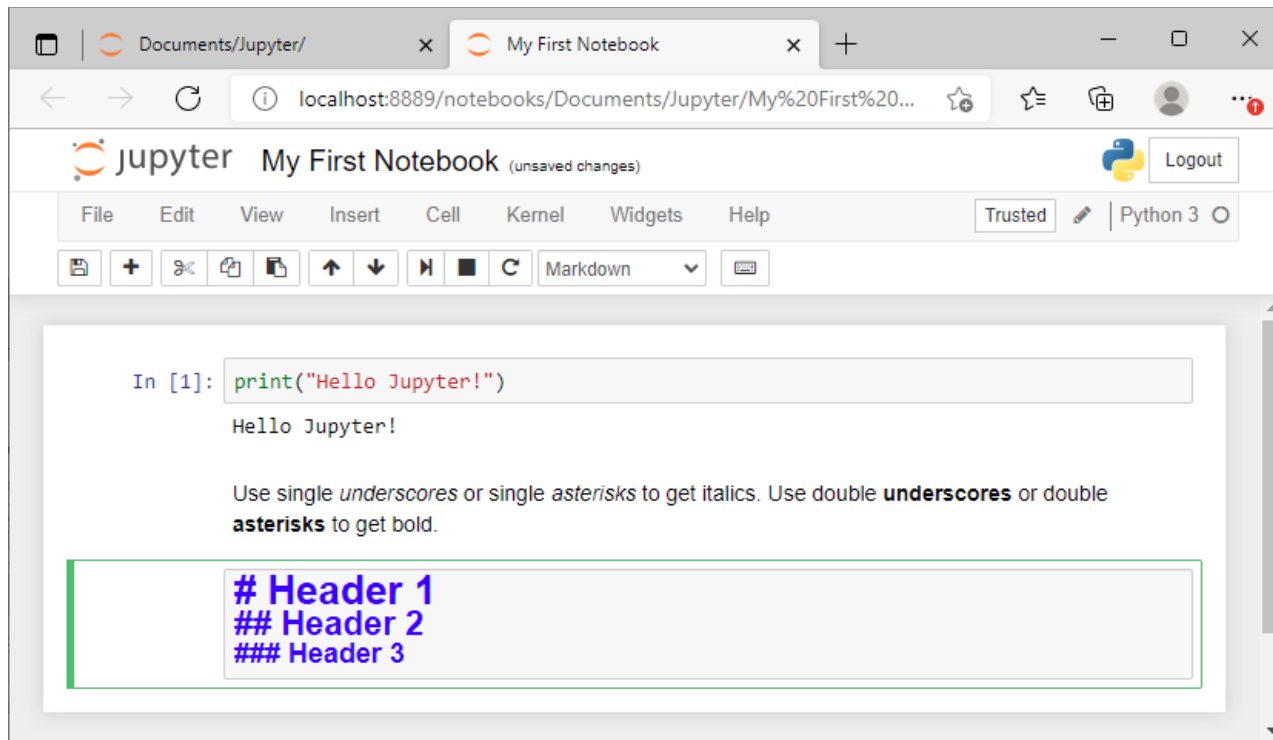
- To edit a `Markdown` cell after it has been run, just double click the cell.
- To make the text bold, use a double underscore or double asterisk.





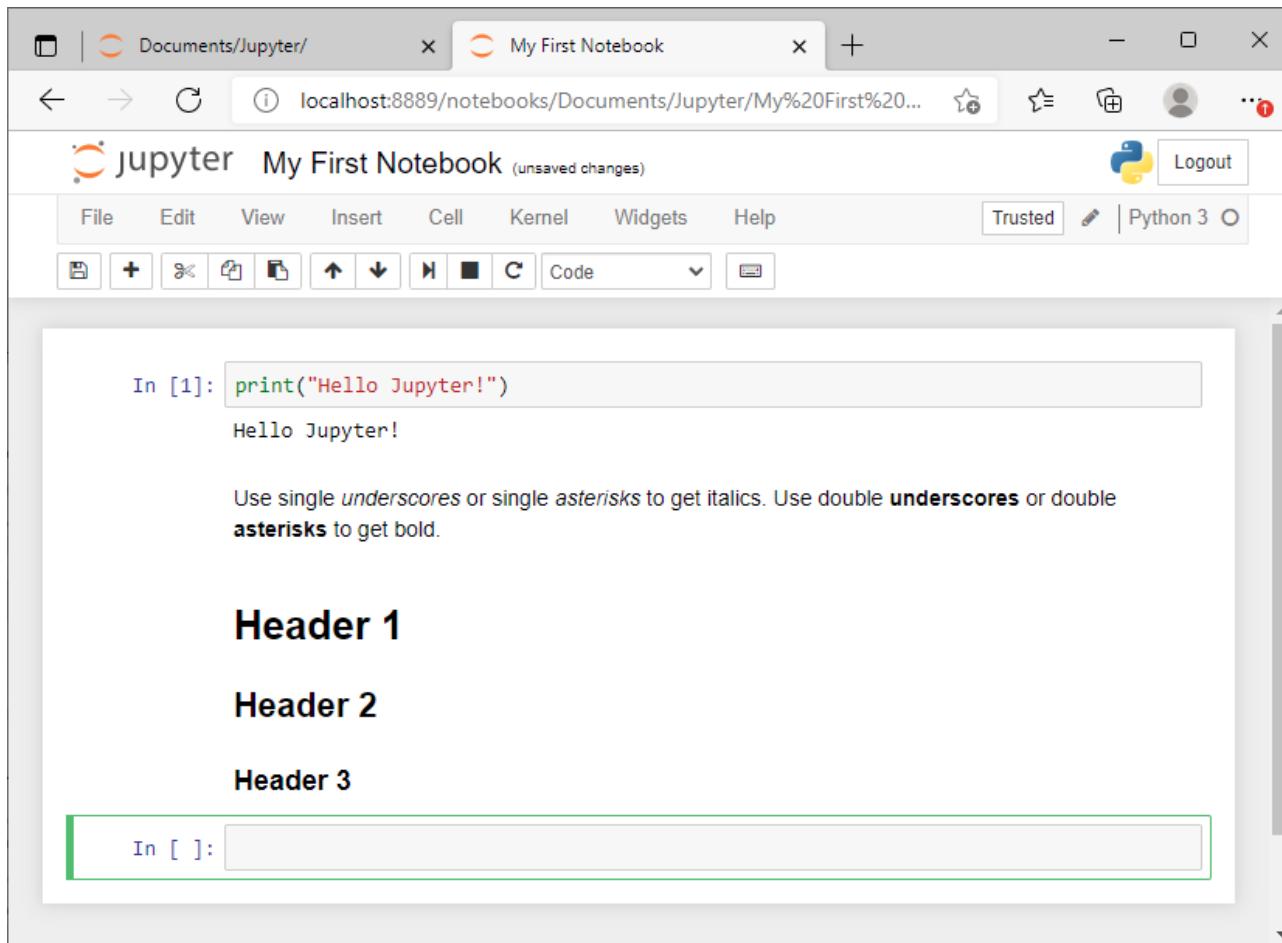
# Headers

- Headers are created in Markdown using the pound sign.
- The more pound signs you use, the smaller the header. Jupyter Notebook preview it for you:



# Headers

- When you run the cell, it will look like this:

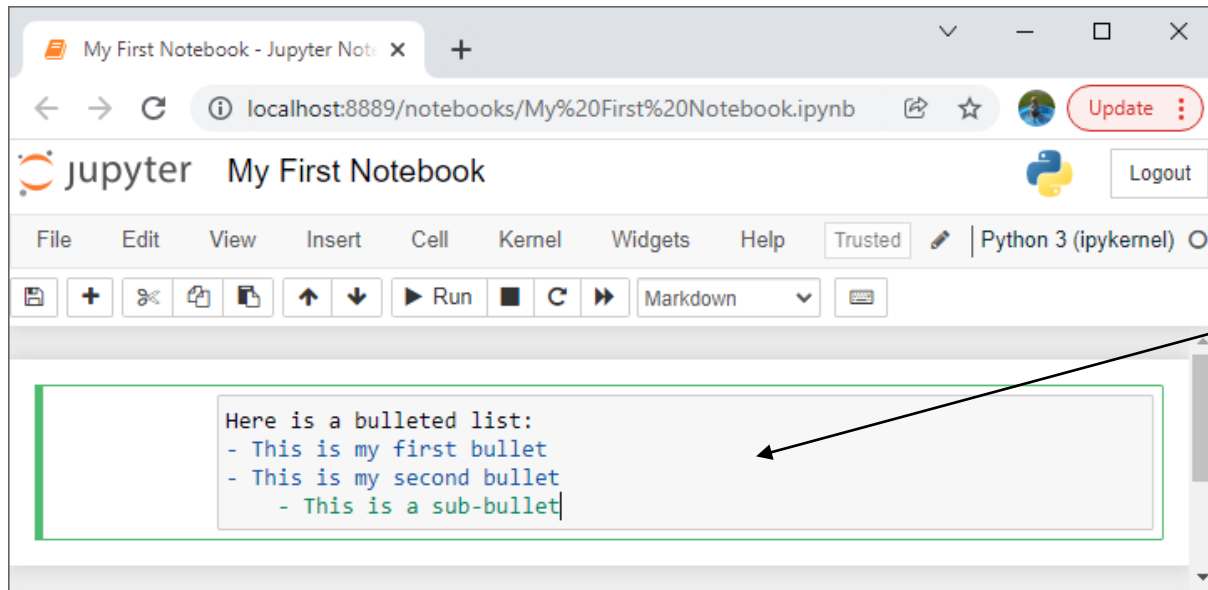


# Additional Options

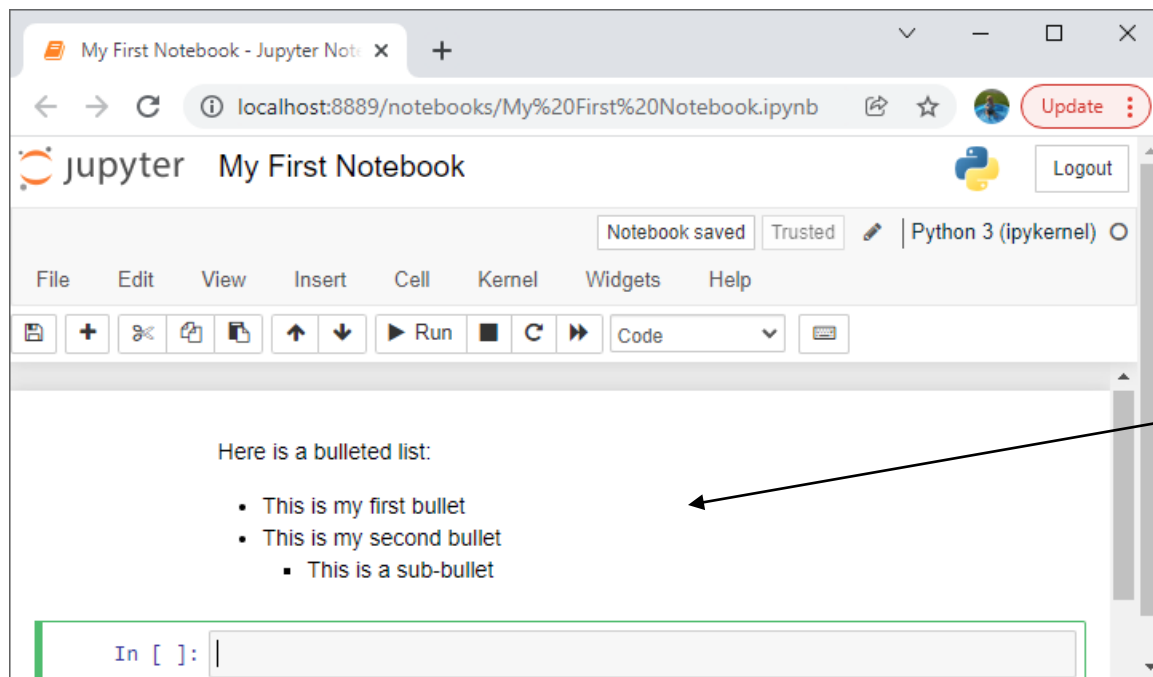
- You can switch to *monospace* font with a back single quotation mark (```): ``string``
  - This is useful if you want to include commands or Python output in the Markdown cell.
- Sometimes markdown doesn't make line breaks when you want them. To force a line break, use the following: `<br>`
- Use the greater than sign (`>`) followed by a space to achieve an indent until the next carriage return.

# Bulleted List

- To create bullet points, use one of the following methods. Note that each bullet point must be on its own line.
  - An asterisks (\*) followed by one or two spaces
  - A hyphen (–) followed by one or two spaces
- To create a sub-bullet, press Tab before entering the bullet point before using one of the methods described above.



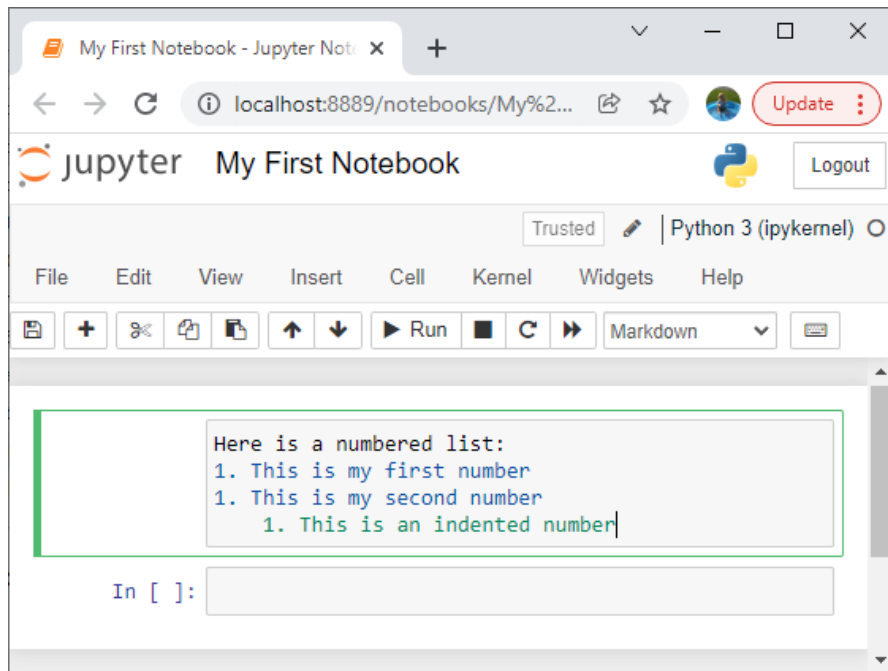
Before running the Markdown cell



After running the Markdown cell

# Numbered Lists

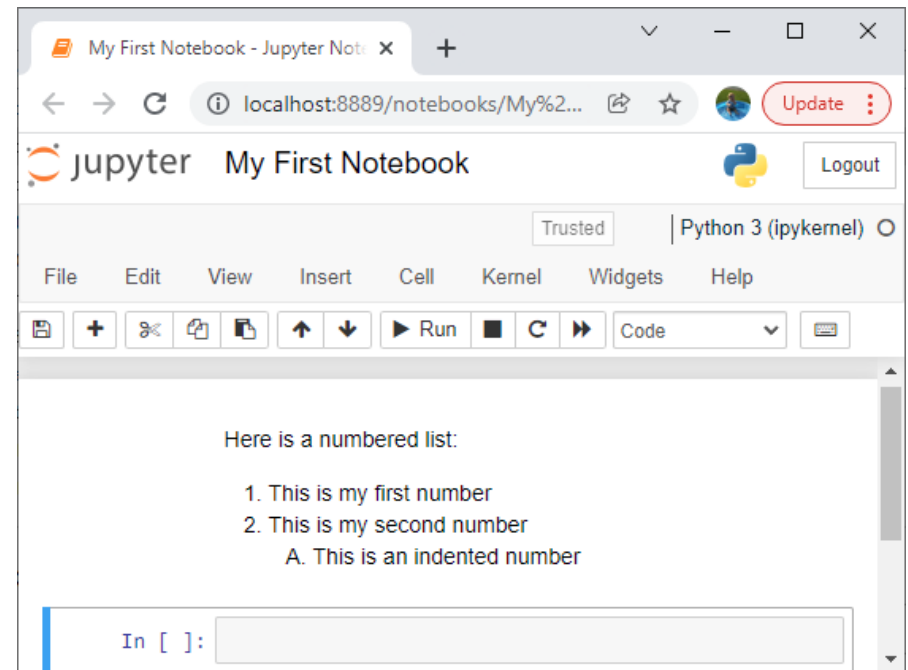
- To create a numbered list, enter 1 . followed by a space. For simplicity, you use 1 . before each entry and the list will be numbered correctly when you run the cell.



The screenshot shows a Jupyter Notebook window titled "My First Notebook - Jupyter Note". The browser address bar shows "localhost:8889/notebooks/My%2...". The Jupyter logo and "My First Notebook" are in the top left, with a "Logout" button in the top right. Below the header is a "Trusted" status indicator and "Python 3 (ipykernel)". A menu bar includes "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". A toolbar contains icons for saving, adding cells, undo, redo, and running. The main area shows a code cell with the text: "Here is a numbered list:", "1. This is my first number", "1. This is my second number", and "1. This is an indented number". The input prompt "In [ ]:" is visible at the bottom.

```
Here is a numbered list:
1. This is my first number
1. This is my second number
1. This is an indented number
```

In [ ]:



The screenshot shows the same Jupyter Notebook window after running the cell. The code has been rendered into a formatted list. The text "Here is a numbered list:" is followed by a list with two items: "1. This is my first number" and "2. This is my second number". The second item has a sub-item "A. This is an indented number". The input prompt "In [ ]:" is visible at the bottom.

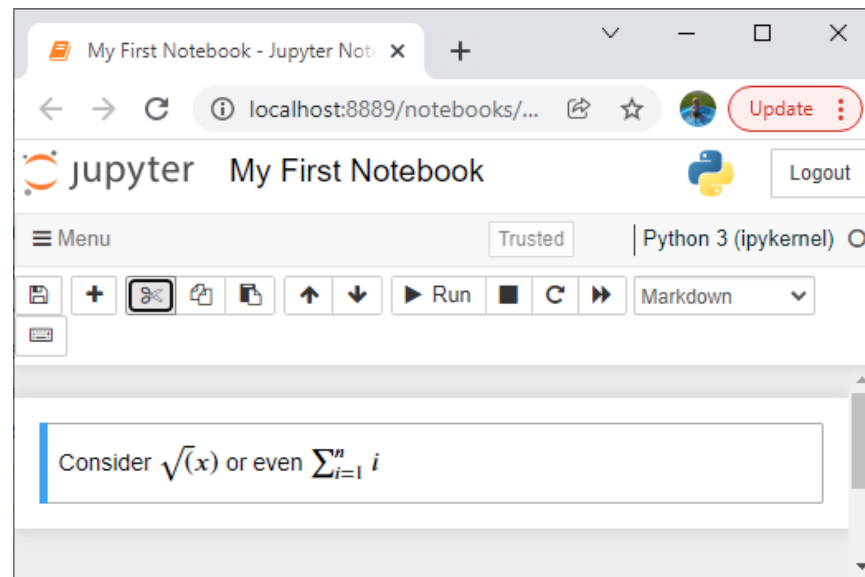
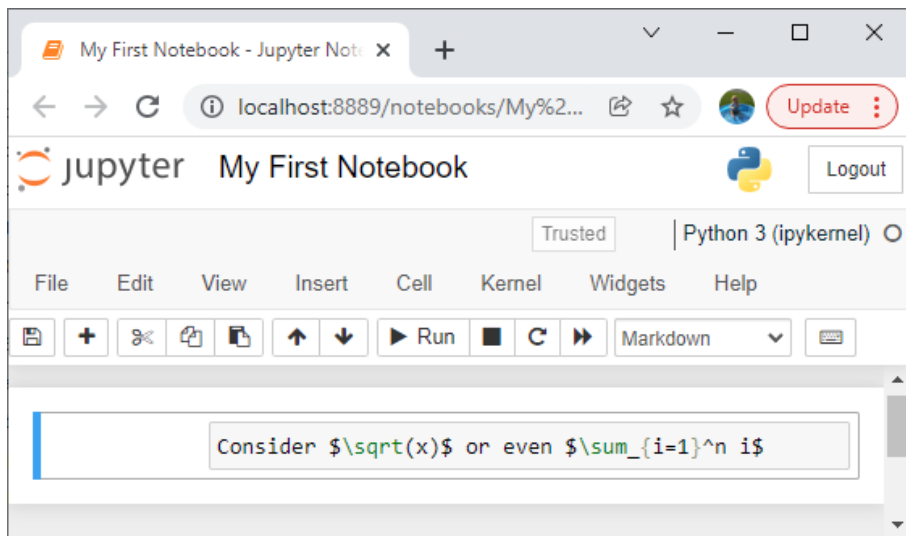
```
Here is a numbered list:

1. This is my first number
2. This is my second number
    A. This is an indented number
```

In [ ]:

# Mathematical Symbols

- You can create mathematical expressions using LaTeX syntax by using (\$) symbol:



# Additional Features

- Other available features include:
  - Inserting graphics
  - Using HTML code
  - Inserting web links
  - Inserting tables
  - ...and more



# Git & Github

- Git is an open source **version control** language, developed in 2005.
- GitHub is a cloud-based hosting service that lets you manage Git repositories
  - Extremely widely used in the industry
  - Similar to Dropbox, OneDrive, but is more sophisticated for collaborative work: version control

# Git & Github

- The files are stored in a “repository”, or “repo” that are simply folders containing the files for a project.
- Suppose you want to contribute to the TheGreatestApp repo.
  - You first “fork” the repo, which is a way to “clone” the original repo files, which creates an identical repo under your account’s name.

# Git & Github

- You work on your great idea to improve the app locally, and edit the files in your clone repo.
- Once you are done, you first “commit” your changes.
  - “Commit”ing basically is a manual way of overwriting files.
- Then you push your changes to your clone repo such that the files are modified and uploaded.

# Git & Github

- Note that nothing has happened to the original repo so far.
- You finally send a “pull request” to the owner of the original repo.
  - A pull request automatically shows the account owner what changes you have made in a nice intuitive side-by-side window.
  - You can add a message at this stage and communicate.

# Git & Github

Open eford wants to merge 1 commit into PsuAstro528:main from eford:ex1

Conversation 0 Commits 1 Checks 1 **Files changed 2** +369 -120

Changes from all commits **File filter...** Clear filters Jump to... 0 / 2 files viewed **Review changes**

> 481 ex1.ipynb ☐ Viewed ...

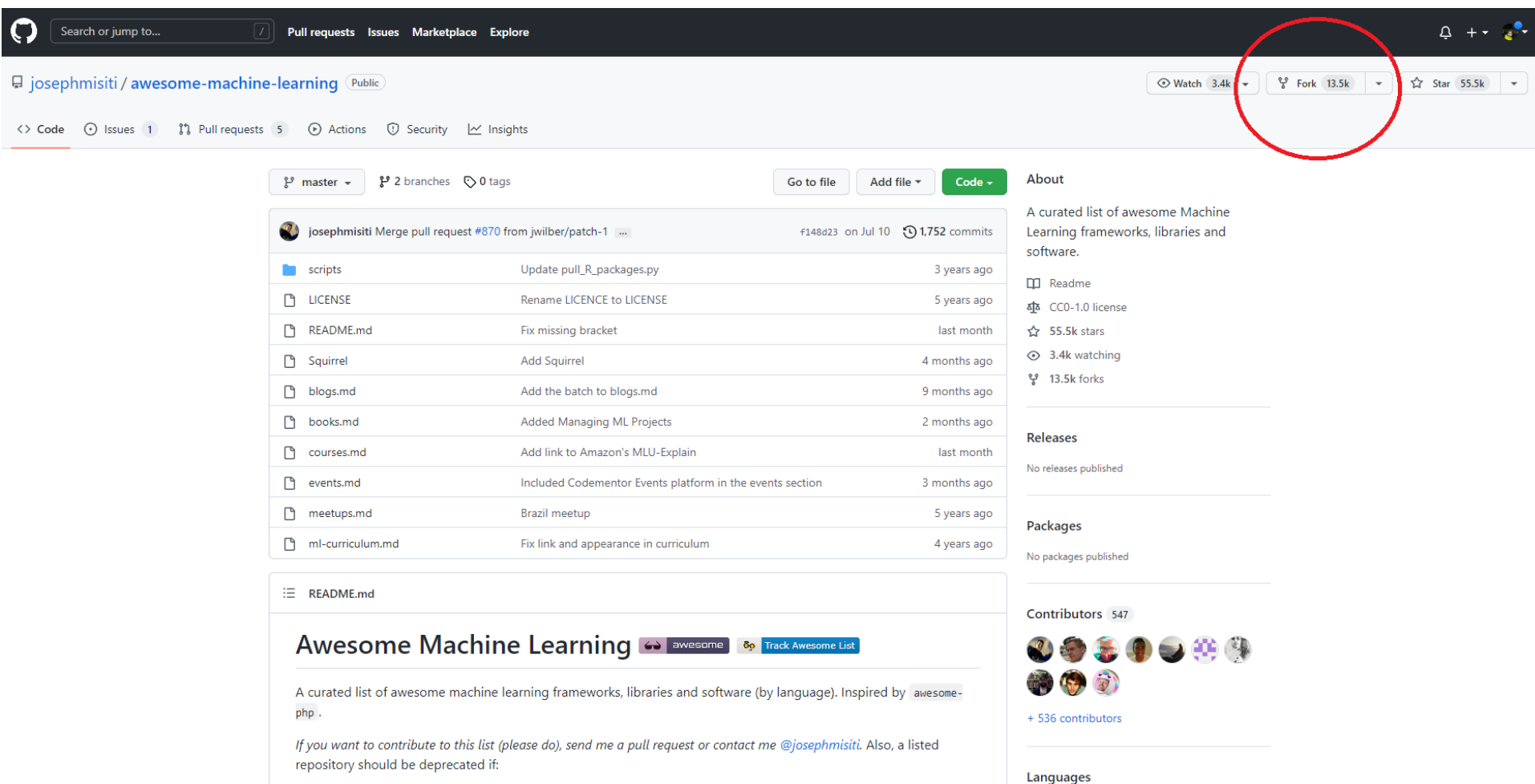
8 ex1.jmd ☐ Viewed ...

| ↑ ... @@ -42,8 +42,8 @@ plot_parabola(a,b,c)                                                         |                                                                |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 42                                                                                                   | 42                                                             |
| 43 ```julia                                                                                          | 43 ```julia                                                    |
| 44 # TODO: Replace with your response to question 1.                                                 | 44 # TODO: Replace with your response to question 1.           |
| 45 - q1_root1 = 0                                                                                    | 45 + q1_root1 = 1                                              |
| 46 - q1_root2 = 0                                                                                    | 46 + q1_root2 = 2;                                             |
| 47 ...                                                                                               | 47 ...                                                         |
| 48                                                                                                   | 48                                                             |
| 49 We can rewrite $f(x)$ as $f(x) = a(x-h)^2 + k$ ,                                                  | 49 We can rewrite $f(x)$ as $f(x) = a(x-h)^2 + k$ ,            |
| @@ -54,8 +54,8 @@ where $h = \frac{-b}{2a}$ is the value of $x$ that minimizes $f(x)$ and $k = ah^2$ |                                                                |
| 54 ```julia                                                                                          | 54 ```julia                                                    |
| 55 # TODO: Update code below with your response to question 2.                                       | 55 # TODO: Update code below with your response to question 2. |
| 56 function vertex(a,b,c)                                                                            | 56 function vertex(a,b,c)                                      |

# Git & Github

- After setting your own local repo via “fork”
  - commit
  - push
  - pull request

# Git & Github



Search or jump to... / Pull requests Issues Marketplace Explore

josephmisiti / awesome-machine-learning Public

Watch 3.4k Fork 13.5k Star 55.5k

<> Code Issues 1 Pull requests 5 Actions Security Insights

master 2 branches 0 tags

Go to file Add file Code

josephmisiti Merge pull request #870 from jwilber/patch-1 f148d23 on Jul 10 1,752 commits

|                  |                                                           |              |
|------------------|-----------------------------------------------------------|--------------|
| scripts          | Update pull_R_packages.py                                 | 3 years ago  |
| LICENSE          | Rename LICENCE to LICENSE                                 | 5 years ago  |
| README.md        | Fix missing bracket                                       | last month   |
| Squirrel         | Add Squirrel                                              | 4 months ago |
| blogs.md         | Add the batch to blogs.md                                 | 9 months ago |
| books.md         | Added Managing ML Projects                                | 2 months ago |
| courses.md       | Add link to Amazon's MLU-Explain                          | last month   |
| events.md        | Included Codementor Events platform in the events section | 3 months ago |
| meetups.md       | Brazil meetup                                             | 5 years ago  |
| ml-curriculum.md | Fix link and appearance in curriculum                     | 4 years ago  |

README.md

## Awesome Machine Learning

awesome Track Awesome List

A curated list of awesome machine learning frameworks, libraries and software (by language). Inspired by awesome-php.

If you want to contribute to this list (please do), send me a pull request or contact me @josephmisiti. Also, a listed repository should be deprecated if:

### About

A curated list of awesome Machine Learning frameworks, libraries and software.

Readme  
CC0-1.0 license  
55.5k stars  
3.4k watching  
13.5k forks

### Releases

No releases published

### Packages

No packages published

### Contributors 547

+ 536 contributors

### Languages

# Git & Github

The screenshot shows the GitHub interface for the repository `ernbilen/awesome-machine-learning`. A red circle highlights the repository name in the top navigation bar. Another red circle highlights the `Open with GitHub Desktop` option in the 'Clone' dropdown menu. The repository is a fork of `josephmisiti/awesome-machine-learning`. The file list shows various markdown files and a `scripts` directory. The right sidebar contains sections for 'About', 'Releases', 'Packages', and 'Languages'.

**Repository:** ernbilen / awesome-machine-learning (Public)  
forked from josephmisiti/awesome-machine-learning

**Navigation:** Code, Pull requests, Actions, Projects, Security, Insights, Settings

**Clone Options:** HTTPS, SSH, GitHub CLI  
URL: `https://github.com/ernbilen/awesome-machir`  
Options: Open with GitHub Desktop (circled), Download ZIP

**File List:**

| File             | Commit Message                                            | Time Ago     |
|------------------|-----------------------------------------------------------|--------------|
| scripts          | Update pull_R_packages.py                                 |              |
| LICENSE          | Rename LICENCE to LICENSE                                 |              |
| README.md        | Fix missing bracket                                       |              |
| Squirrel         | Add Squirrel                                              |              |
| blogs.md         | Add the batch to blogs.md                                 | 9 months ago |
| books.md         | Added Managing ML Projects                                | 2 months ago |
| courses.md       | Add link to Amazon's MLU-Explain                          | last month   |
| events.md        | Included Codementor Events platform in the events section | 3 months ago |
| meetups.md       | Brazil meetup                                             | 5 years ago  |
| ml-curriculum.md | Fix link and appearance in curriculum                     | 4 years ago  |

**Right Sidebar:**

- About:** A curated list of awesome Machine Learning frameworks, libraries and software.
- Releases:** No releases published. [Create a new release](#)
- Packages:** No packages published. [Publish your first package](#)
- Languages:** Python 100.0%



# Git & Github

- You can use browser, GitHub Desktop App, or command line to interact with your repo

The screenshot shows the GitHub web interface for the repository 'ernbilen / awesome-machine-learning'. A red circle highlights the repository name in the top navigation bar. Below the repository name, a dropdown menu is open, showing options to 'Clone' (HTTPS, SSH, GitHub CLI), 'Open with GitHub Desktop' (highlighted with a red circle), and 'Download ZIP'. The repository page also displays a list of files and their commit history, including 'scripts', 'LICENSE', 'README.md', 'Squirrel', 'blogs.md', 'books.md', 'courses.md', 'events.md', 'meetups.md', and 'ml-curriculum.md'.

Search or jump to... / Pull requests Issues Marketplace Explore

ernbilen / awesome-machine-learning Public

forked from josephmisiti/awesome-machine-learning

<> Code Pull requests Actions Projects Security Insights Settings

master 1 branch 0 tags

This branch is up to date with josephmisiti/awesome-machine-learning:master.

josephmisiti Merge pull request josephmisiti#870 from jwilber/patch-1

| File             | Commit Message                                            | Time         |
|------------------|-----------------------------------------------------------|--------------|
| scripts          | Update pull_R_packages.py                                 |              |
| LICENSE          | Rename LICENCE to LICENSE                                 |              |
| README.md        | Fix missing bracket                                       |              |
| Squirrel         | Add Squirrel                                              |              |
| blogs.md         | Add the batch to blogs.md                                 | 9 months ago |
| books.md         | Added Managing ML Projects                                | 2 months ago |
| courses.md       | Add link to Amazon's MLU-Explain                          | last month   |
| events.md        | Included Codementor Events platform in the events section | 3 months ago |
| meetups.md       | Brazil meetup                                             | 5 years ago  |
| ml-curriculum.md | Fix link and appearance in curriculum                     | 4 years ago  |

Go to file Add file Code

Clone

HTTPS SSH GitHub CLI

https://github.com/ernbilen/awesome-machir

Open with GitHub Desktop

Download ZIP

About

A curated list of awesome Machine Learning frameworks, libraries and software.

Readme

CC0-1.0 license

0 stars

0 watching

13.5k forks

Releases

No releases published

Create a new release

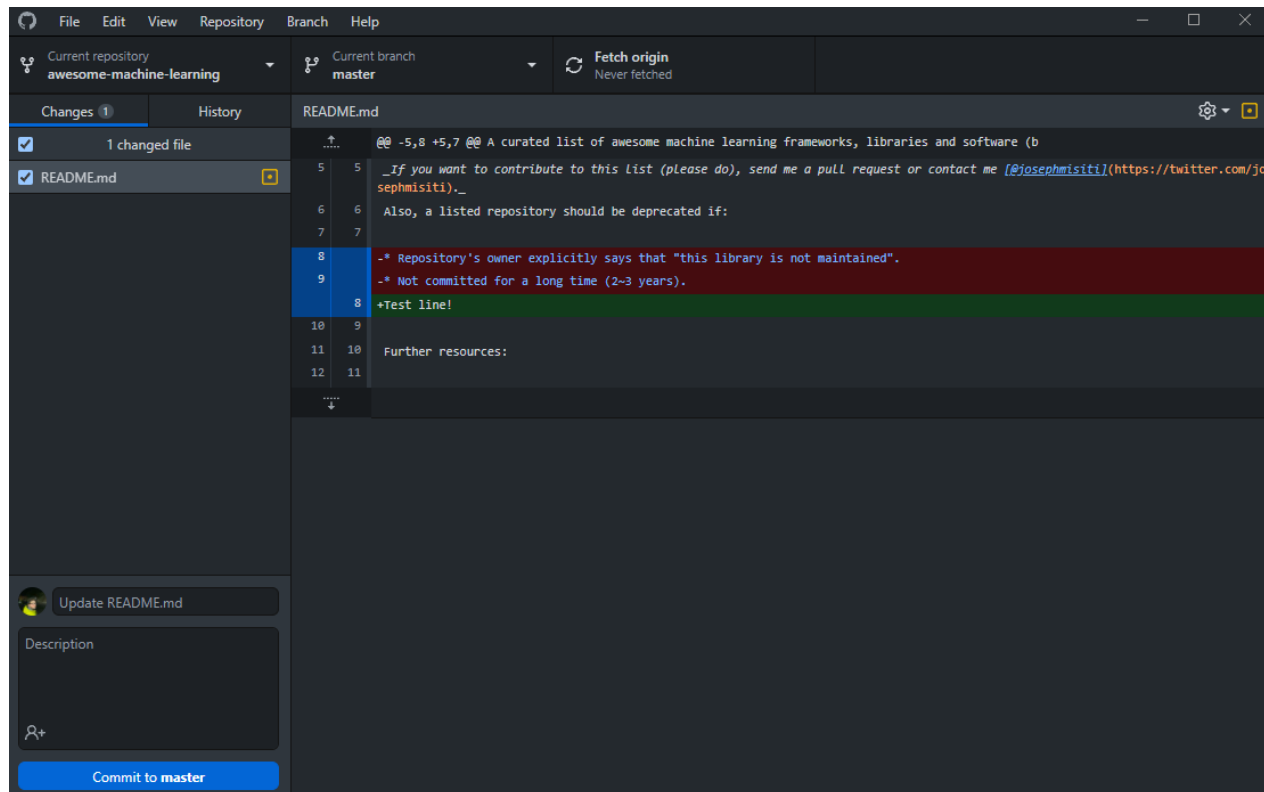
Packages

No packages published

Publish your first package

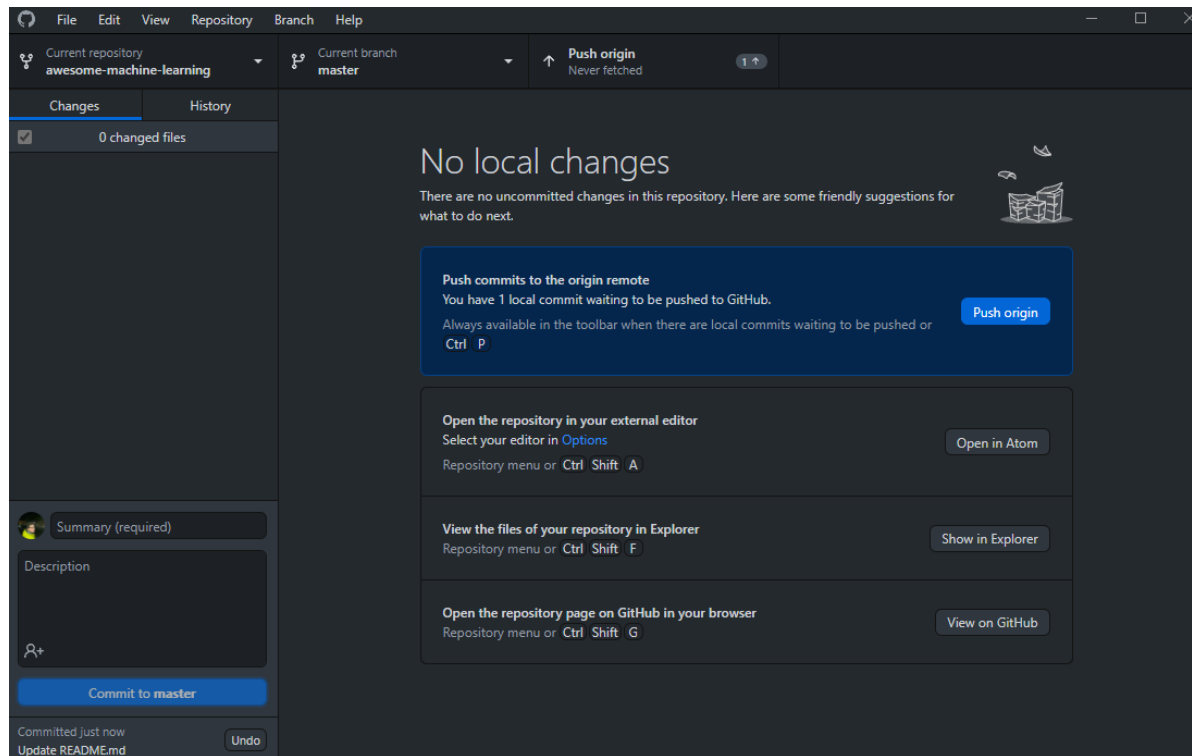
# Git & Github

- Edits will be displayed on the interface, after which you can press “commit to master”, i.e. to your local repository.



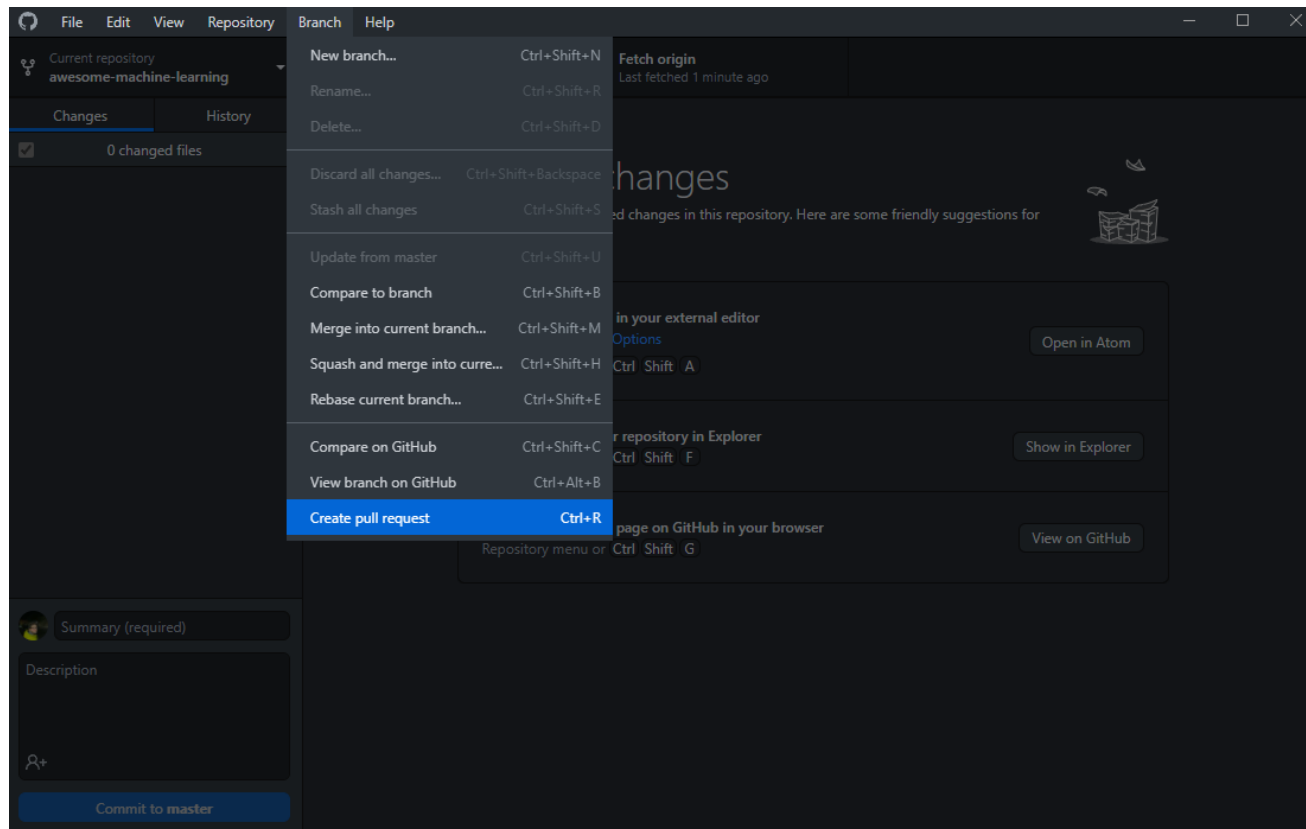
# Git & Github

- You are now ready to “push commits to the origin remote”, this time to your “cloud” repository.



# Git & Github

- To send your changes to the owner of the original repo, click on “create pull request”.





# Git & Github

- You can write a comment and explain your reasoning in updating the code on this screen.

## Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).

 base repository: josephmisiti/awesome-machin...  
base: master

 head repository: ernbilen/awesome-machine-le...  
compare: master



✓ Able to merge. These branches can be automatically merged.

Discuss and review the changes in this comparison with others. [Learn about pull requests](#) [Create pull request](#)

→ 1 commit      1 file changed      1 contributor

Commits on Aug 13, 2022

Update README.md  
ernbilen committed 6 minutes ago

 f41781c 

Showing 1 changed file with 1 addition and 2 deletions.

Split Unified

3 README.md

@@ -5,8 +5,7 @@ A curated list of awesome machine learning frameworks, libraries and software (b

5 \_If you want to contribute to this list (please do), send me a pull request or contact me [[@josephmisiti](#)]

6 (https://twitter.com/josephmisiti).\_  
6 Also, a listed repository should be deprecated if:  
7  
8 - \* Repository's owner explicitly says that "this library is not maintained".  
9 - \* Not committed for a long time (2-3 years).  
10  
11 Further resources:  
12

5 \_If you want to contribute to this list (please do), send me a pull request or contact me [[@josephmisiti](#)]

6 (https://twitter.com/josephmisiti).\_  
6 Also, a listed repository should be deprecated if:  
7  
8 + Test line!  
9  
10 Further resources:  
11

# Git & Github: command line

- After setting your own local repo via “fork” or “clone”
  - add files (only for command line) `>git add --all`
  - commit `>git commit -m “descriptive message”`
    - You can run `>git status` to check what files are changed
  - push `>git push`
  - pull request `>git pull`

For more git commands:

<https://about.gitlab.com/images/press/git-cheat-sheet.pdf>

# Github Classroom

- We will use Github Classroom to make things more efficient and easier. (free service)
- ~~After setting your own local repo via “fork” or “clone”~~
  - You will receive an invitation email for each assignment.
  - Accepting the invitation automatically forks my repo and creates your own local clone repo.
  - You can work on your assignment in your local repo, do any edits.

# Github Classroom

- Once you have your local repo, you can use the Github Desktop app, or any browser to upload your assignment via
  - commit
  - push
  - ~~– pull request:~~ Also automated. Once you push your files to your local repo, everything gets delivered automatically.



# We are done! Any questions?



We are done! Any questions?



I contribute  
to open source  
projects on GitHub



Professional  
**README** writer