

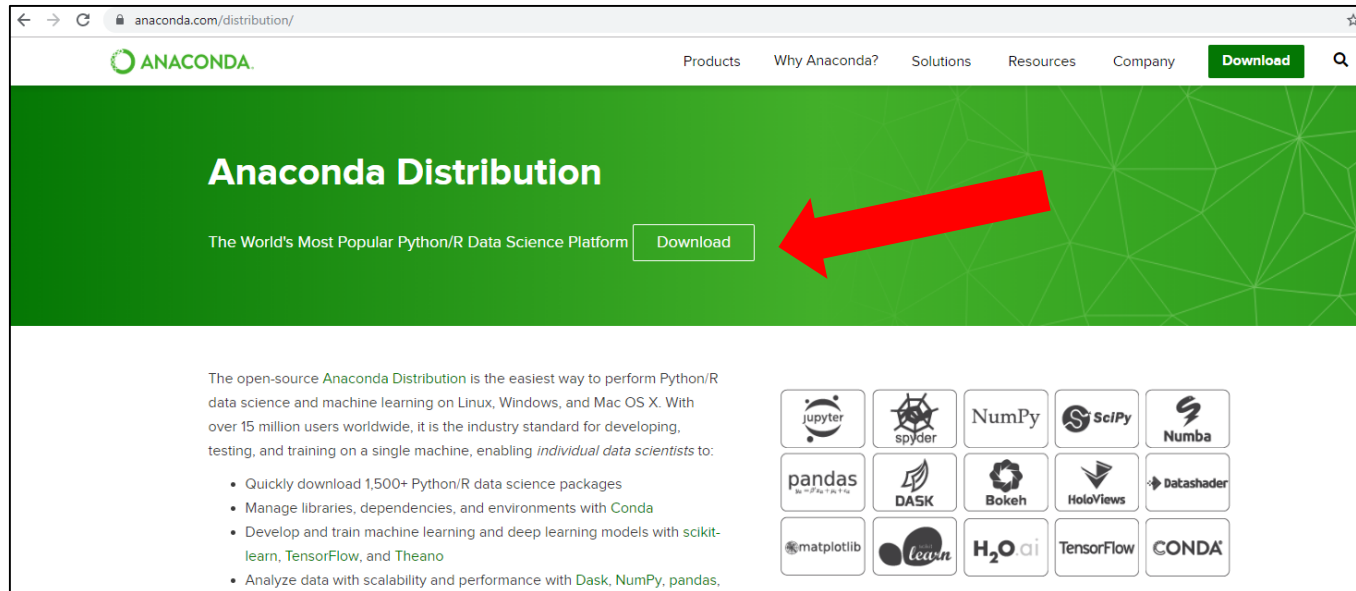
Purpose

- This is an Anaconda installation step-by-step for Windows install on 64-bit p.c.
- The download and install is the same for macOS and Linux.
- This slide deck shows you how to open a terminal window in Windows so don't worry if you are a newbie to Windows terminal commands!



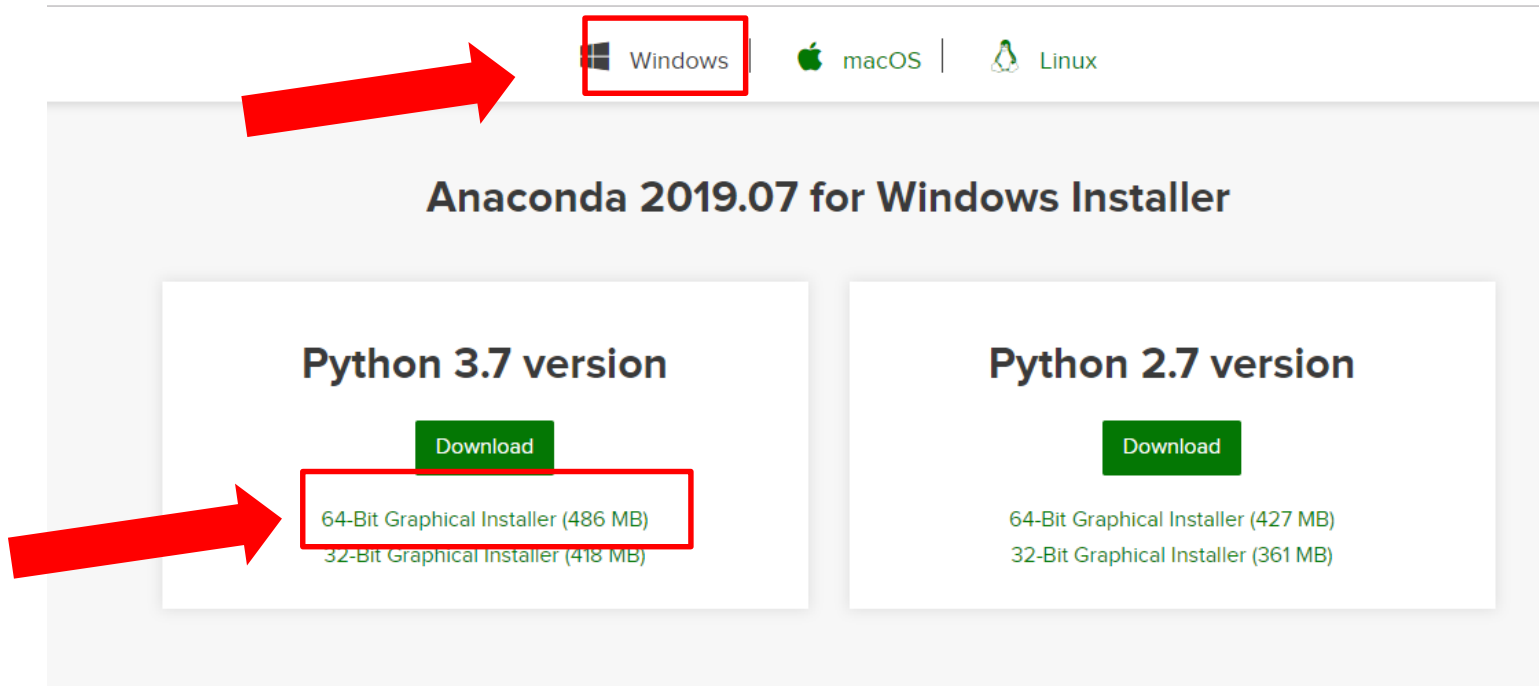
Where can you get Anaconda?

- Go to <https://www.anaconda.com/distribution/>
- Select Download



Start your Anaconda Download

- Select your operating system (Windows, macOS, Linux)
- Select Python 3.7 version with 64-bit installer if you have a 64-bit machine.
- Most likely you will. NOTE: This is for Windows install.

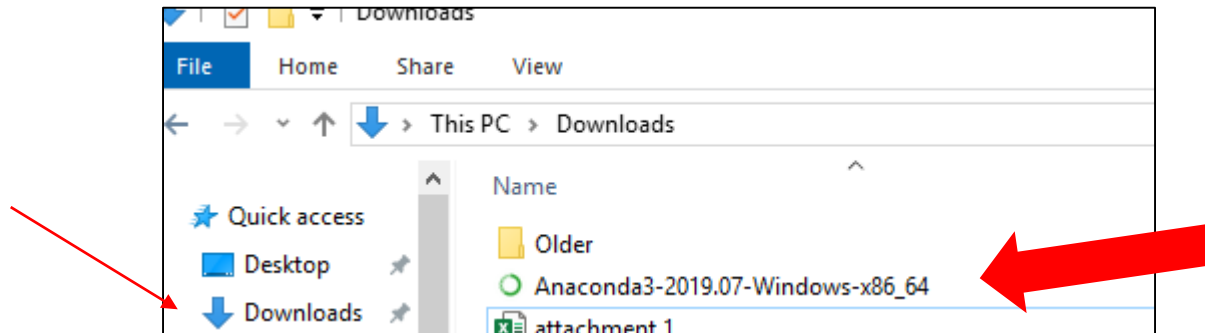
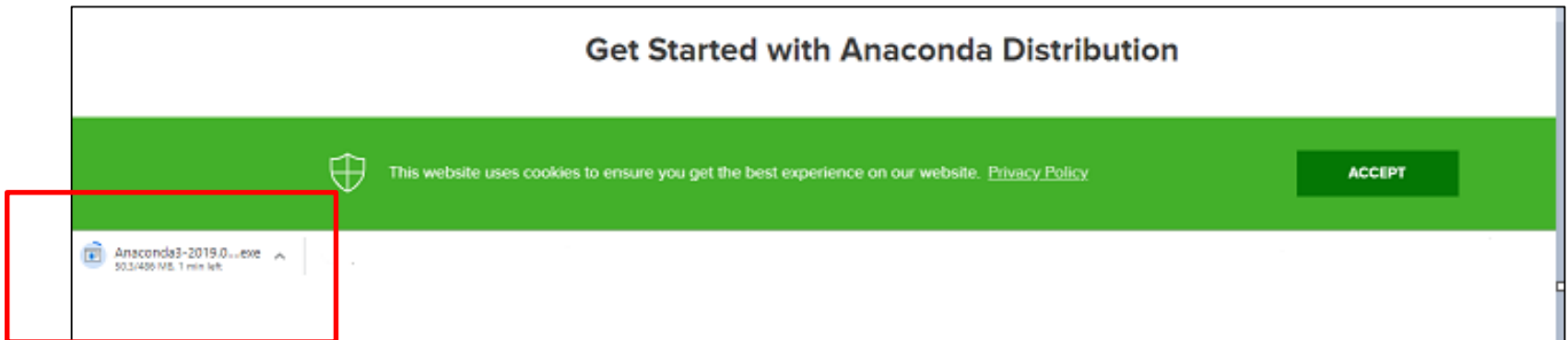


Get Started with Anaconda Distribution

@HatchAndrea

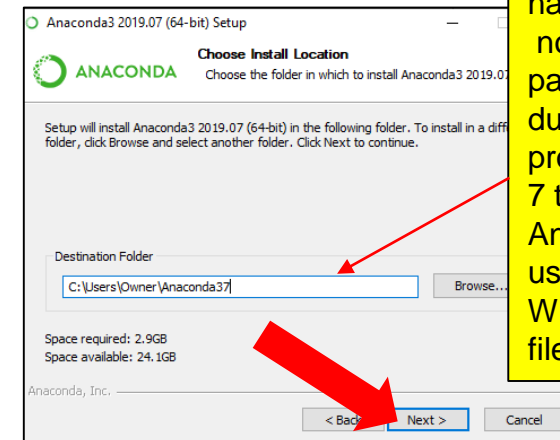
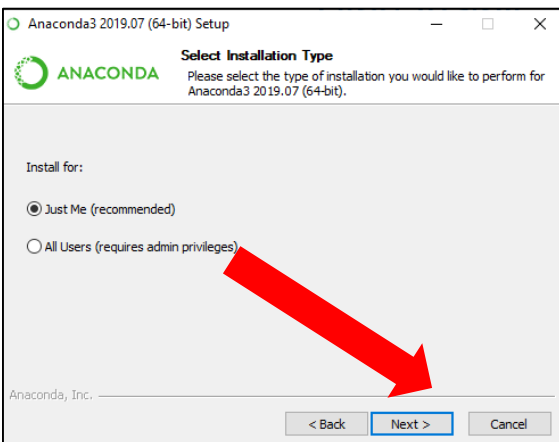
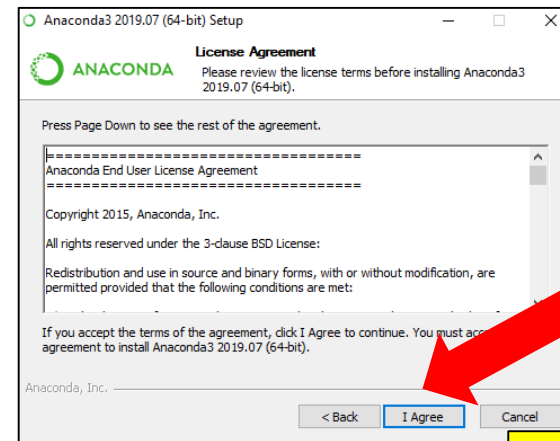
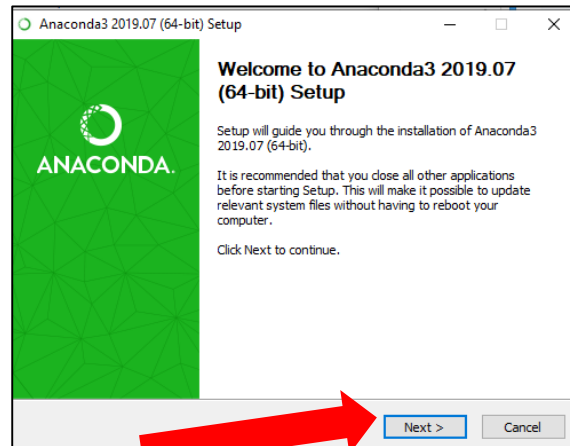
Anaconda File Download - continued

Once you select download you will see the following appear in your browser, bottom left. This is your Anaconda executable file and it will download to your **Downloads** folder.



Start Install

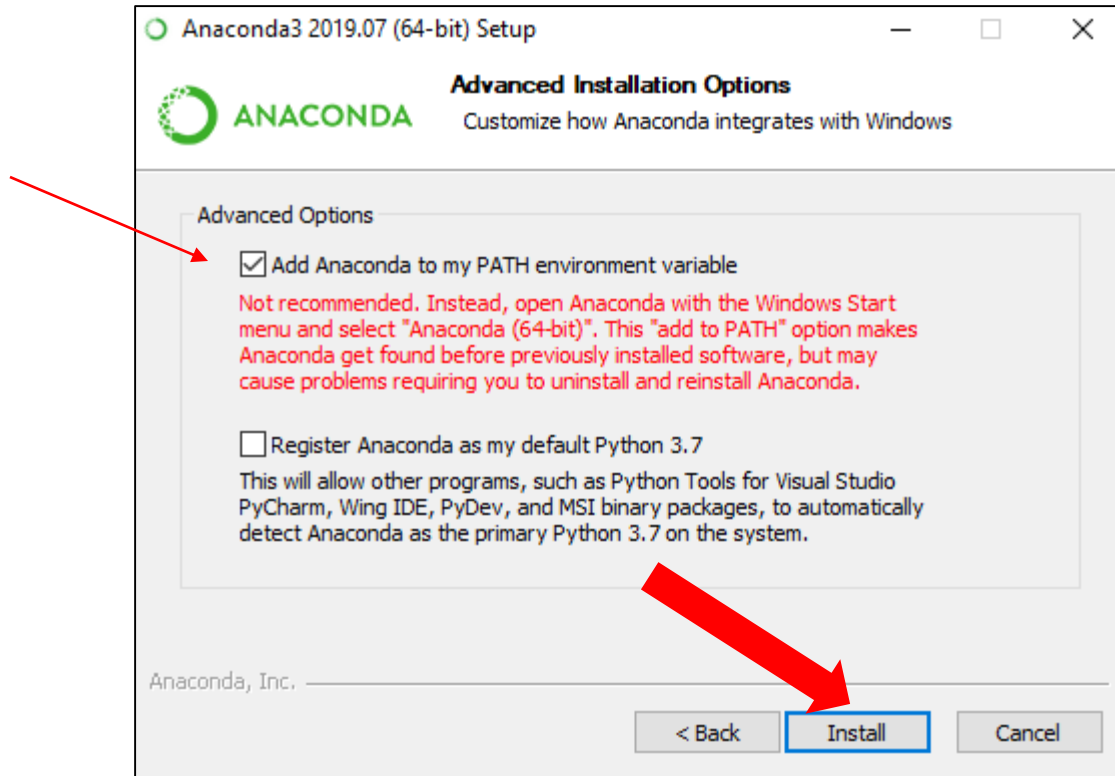
- Select the file you downloaded – and click twice. You will see the following screen and then select Next and I agree on the following screen. See below and follow selections.



Your folder name will be noted here. This path is created during the install process. I added a 7 to the filename: Anaconda37. Generally use the default file path. Write down this file path and save it!

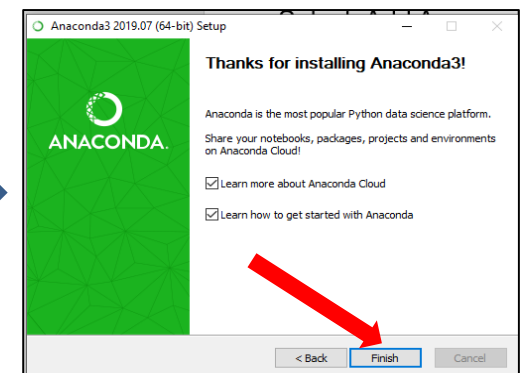
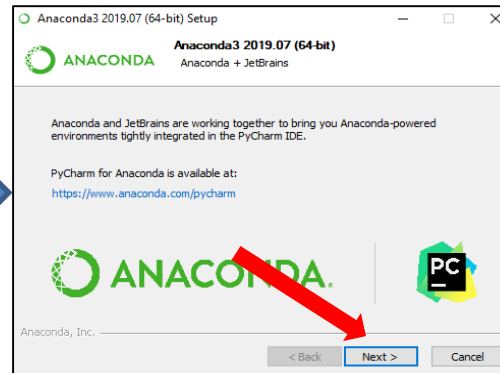
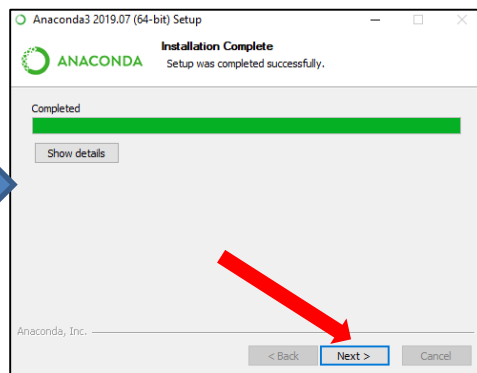
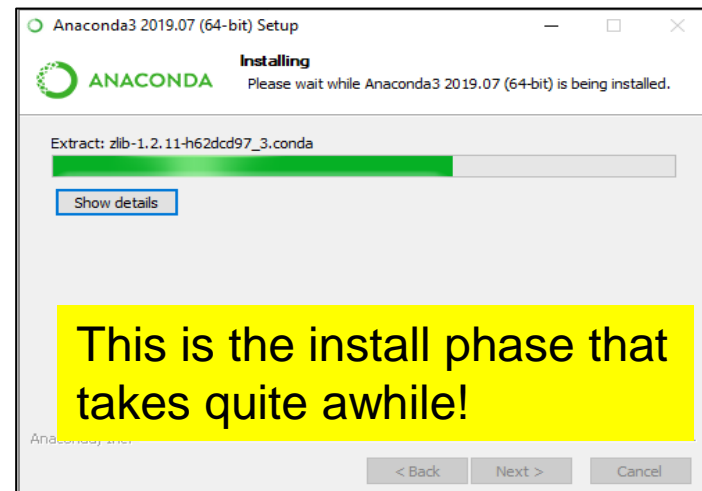
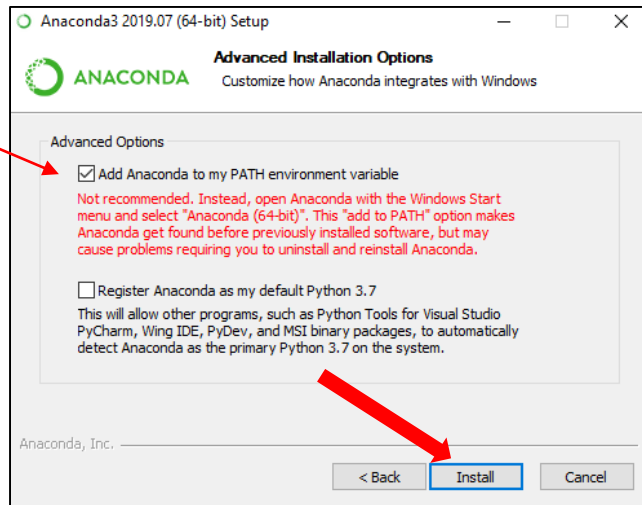
Install - continued

- Select: Add Anaconda to my PATH environment variable. .



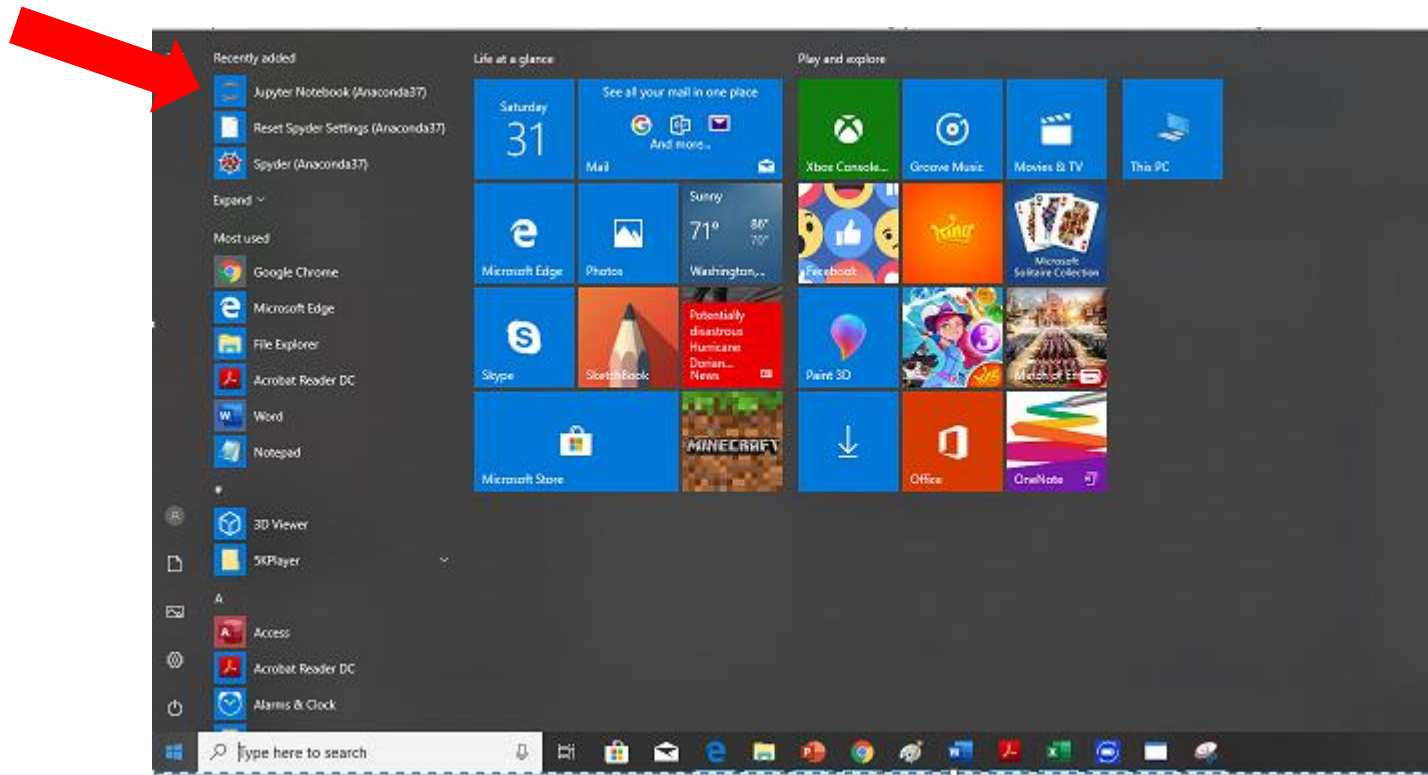
Install - continued

- Select: Add Anaconda to my PATH environment variable. Now wait for the install. This will take quite a long time...



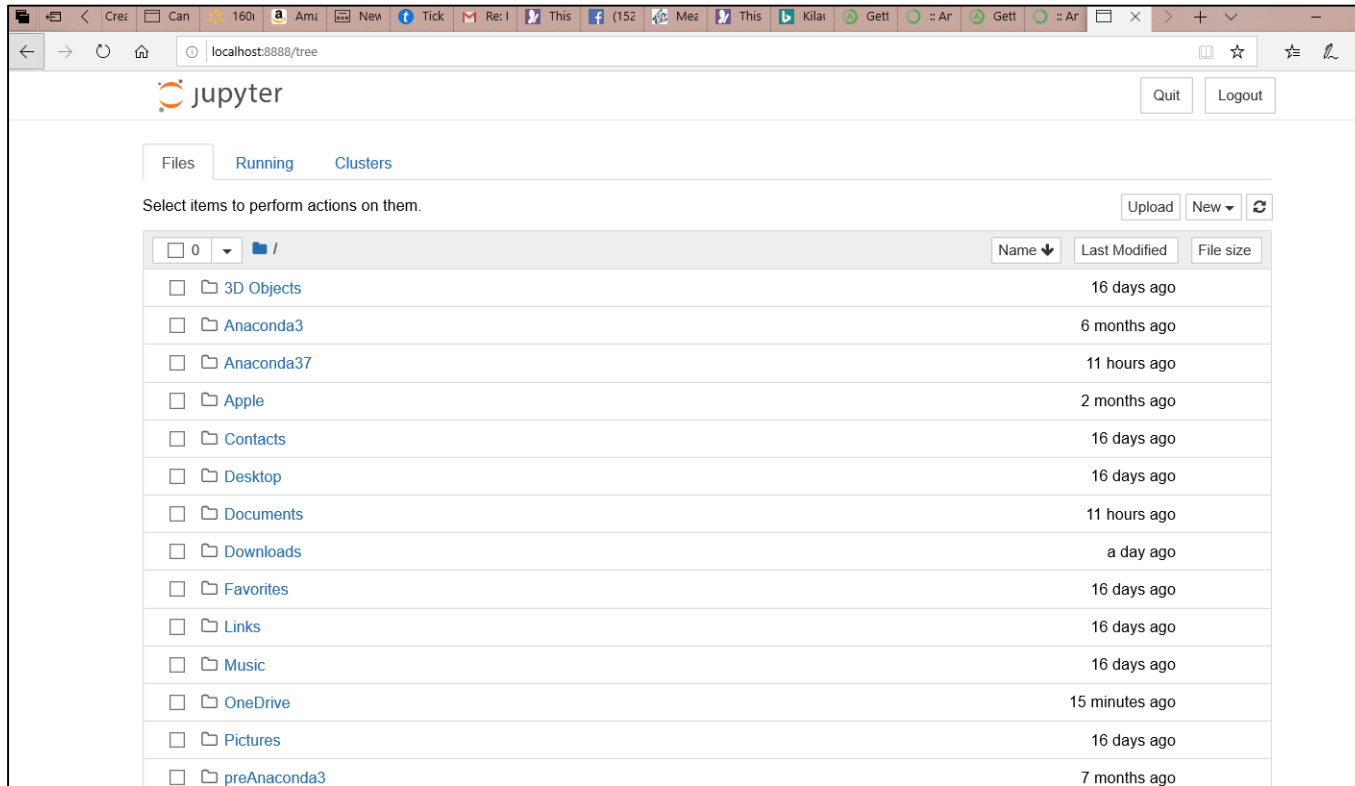
Check for your Anaconda App

- Check your Windows list of applications (bottom left) and you will see Jupyter Notebook 37 at the top of the column since you just installed it.
- Select Jupyter Notebook (Anaconda37).



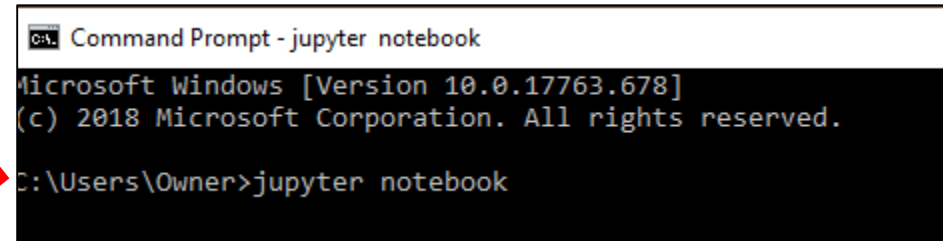
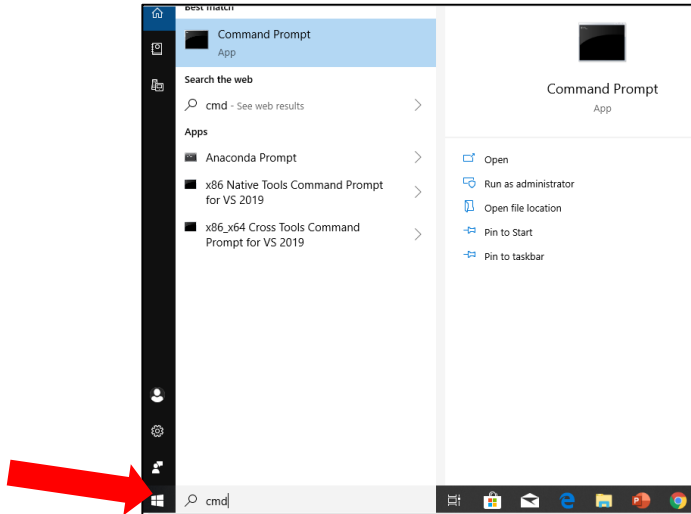
Anaconda running in your browser

- After you select Jupyter notebook in your Start menu you will see the following display in your default browser (see screen shot).
- You can also start Anaconda in any browser. Enter: <http://localhost:8888> Note: you will need a password. See slide xx.
- OR in a terminal window (See next slide).



Running Anaconda from your terminal window

- Open a terminal window. Then type: `jupyter notebook` in the window.



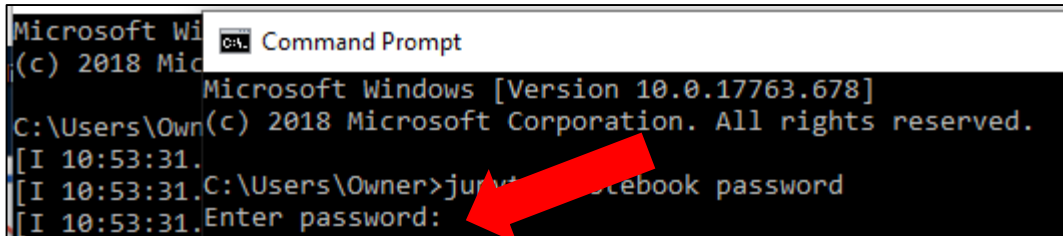
- This is the output you will see in your terminal window. Your default browser will open a Notebook (it will look like slide 10).

```
C:\Users\Owner>jupyter notebook
[I 10:53:31.195 NotebookApp] JupyterLab extension loaded from C:\Users\Owner\Anaconda3\lib\site-packages\jupyterlab
[I 10:53:31.195 NotebookApp] JupyterLab application directory is C:\Users\Owner\Anaconda3\share\jupyter\lab
[I 10:53:31.205 NotebookApp] Serving notebooks from local directory: C:\Users\Owner
[I 10:53:31.210 NotebookApp] The Jupyter Notebook is running at:
[I 10:53:31.210 NotebookApp] http://localhost:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
[I 10:53:31.210 NotebookApp] or http://127.0.0.1:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
[I 10:53:31.210 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 10:53:31.520 NotebookApp]

To access the notebook, open this file in a browser:
    file:///C:/Users/Owner/AppData/Roaming/jupyter/runtime/nbserver-11108-open.html
Or copy and paste one of these URLs:
    http://localhost:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
    or http://127.0.0.1:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
[E 10:53:36.543 NotebookApp] Could not open static file ''
[W 10:53:36.752 NotebookApp] 404 GET /static/components/react/react-dom.production.min.js (::1) 109.61ms referer=http://localhost:8888/tree?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
```

Setting up a Password for Anaconda

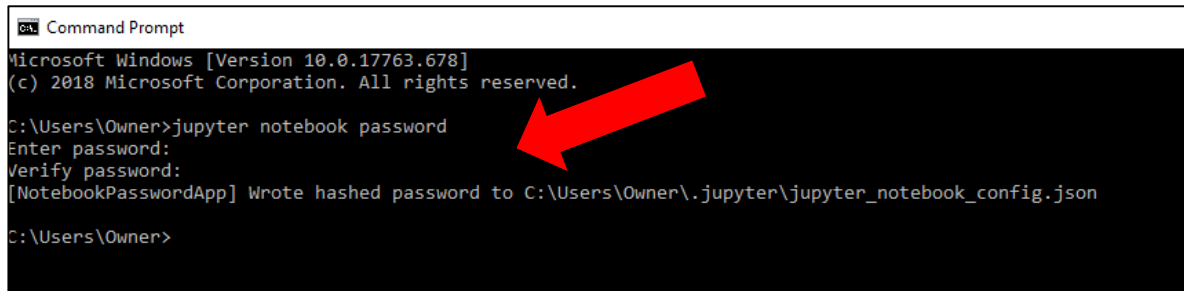
- Open another terminal window using cmd (Windows).
- Type: `jupyter notebook password`



```
Microsoft Windows [Version 10.0.17763.678]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Owner>jupyter notebook password
Enter password:
```

- Enter your password twice and you should see the following:



```
Microsoft Windows [Version 10.0.17763.678]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Owner>jupyter notebook password
Enter password:
Verify password:
[NotebookPasswordApp] Wrote hashed password to C:\Users\Owner\.jupyter\jupyter_notebook_config.json

C:\Users\Owner>
```

Note: Passwords are stores in these configuration files for Windows, OS X and Linux:

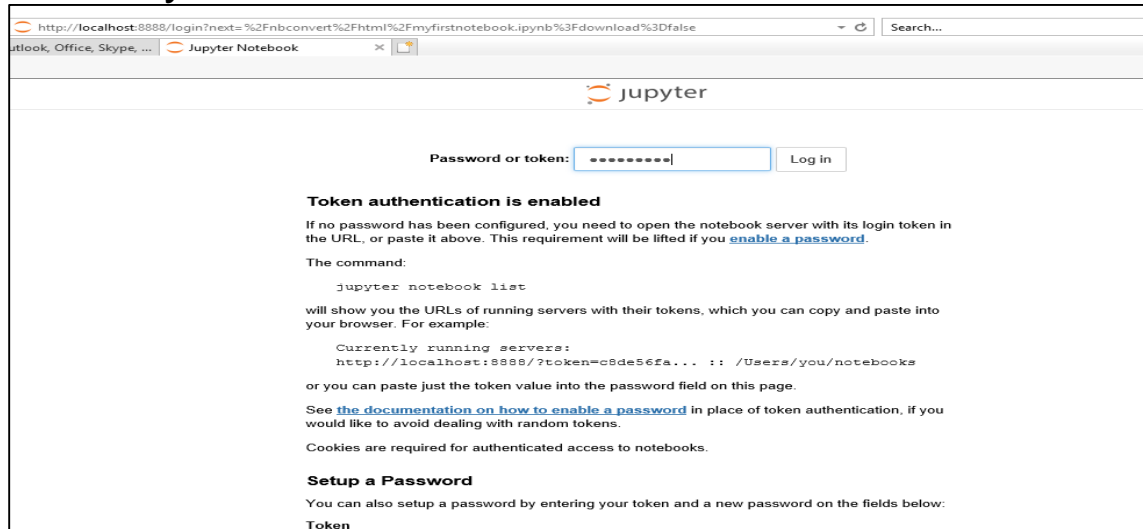
Prerequisite: A notebook configuration file

Check to see if you have a notebook configuration file, `jupyter_notebook_config.py`. The default location for this file is your Jupyter folder located in your home directory:

- Windows: `C:\Users\USERNAME\.jupyter\jupyter_notebook_config.py`
- OS X: `/Users/USERNAME/.jupyter/jupyter_notebook_config.py`
- Linux: `/home/USERNAME/.jupyter/jupyter_notebook_config.py`

Password Page

- You can also enter the token or the entire URL from the output of your jupyter notebook located in your terminal window.



The screenshot shows the Jupyter Password Page in a web browser. The address bar displays the URL: `http://localhost:8888/login?next=%2Fnbconvert%2Fhtml%2Fmyfirstnotebook.ipynb%3Fdownload%3Dfalse`. The page features a "jupyter" logo at the top. Below it, there is a label "Password or token:" followed by a text input field containing several dots and a "Log in" button. The page also contains a section titled "Token authentication is enabled" with instructions on how to use tokens for authentication, including a command to list running servers and a list of currently running servers. At the bottom, there is a section titled "Setup a Password" with instructions on how to set up a password.

http://localhost:8888/login?next=%2Fnbconvert%2Fhtml%2Fmyfirstnotebook.ipynb%3Fdownload%3Dfalse

Search...

utlook, Office, Skype, ... Jupyter Notebook

jupyter

Password or token: Log in

Token authentication is enabled

If no password has been configured, you need to open the notebook server with its login token in the URL, or paste it above. This requirement will be lifted if you [enable a password](#).

The command:

```
jupyter notebook list
```

will show you the URLs of running servers with their tokens, which you can copy and paste into your browser. For example:

```
Currently running servers:
http://localhost:8888/?token=c8de56fa... : /Users/you/notebooks
```

or you can paste just the token value into the password field on this page.

See [the documentation on how to enable a password](#) in place of token authentication, if you would like to avoid dealing with random tokens.

Cookies are required for authenticated access to notebooks.

Setup a Password

You can also setup a password by entering your token and a new password on the fields below:

Token

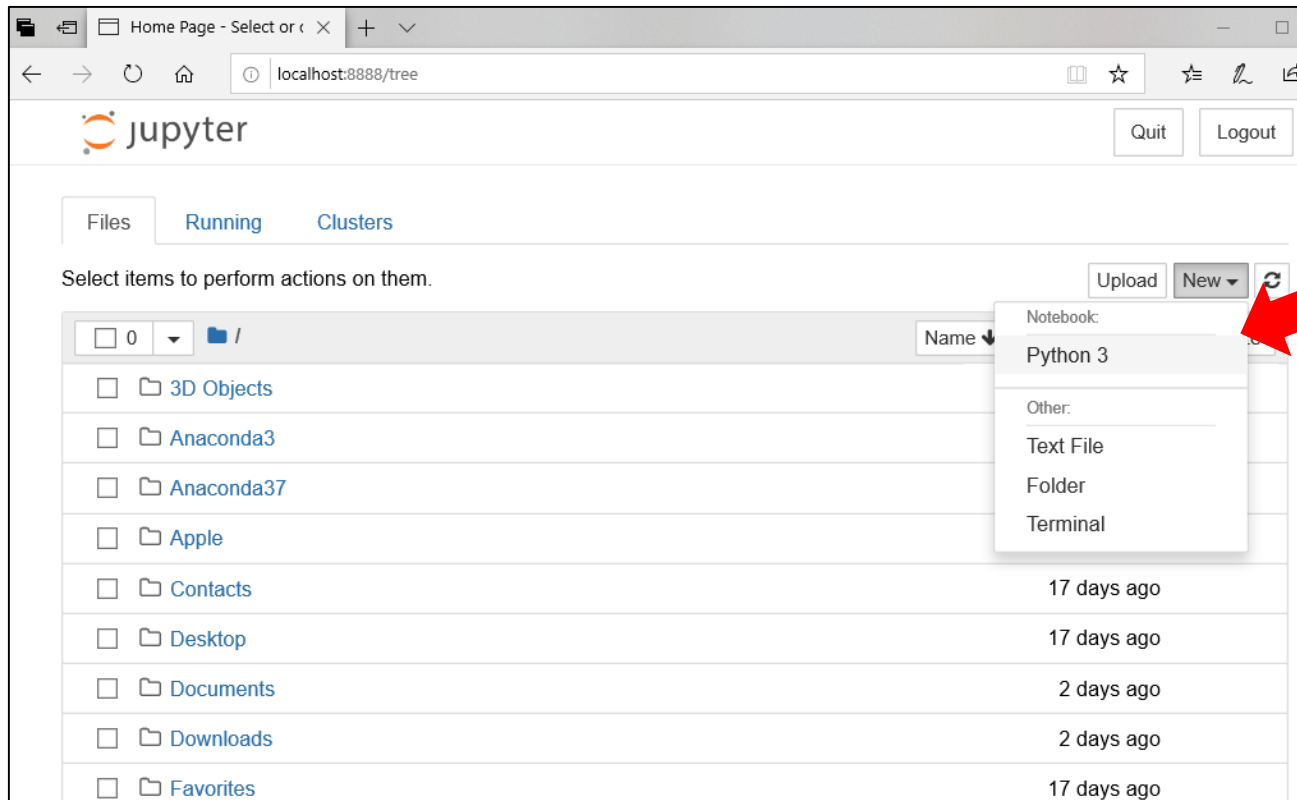
```
C:\Users\Owner>jupyter notebook
[I 10:53:31.195 NotebookApp] JupyterLab extension loaded from C:\Users\Owner\Anaconda37\lib\site-packages\jupyterlab
[I 10:53:31.195 NotebookApp] JupyterLab application directory is C:\Users\Owner\Anaconda37\share\jupyter\lab
[I 10:53:31.205 NotebookApp] Serving notebooks from local directory: C:\Users\Owner
[I 10:53:31.210 NotebookApp] The Jupyter Notebook is running at:
[I 10:53:31.210 NotebookApp] http://localhost:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
[I 10:53:31.210 NotebookApp] or http://127.0.0.1:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
[I 10:53:31.210 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 10:53:31.520 NotebookApp]
```

To access the notebook, open this file in a browser:
file:///C:/Users/Owner/AppData/Roaming/jupyter/runtime/nbserver-11108-open.html

Or copy and paste one of these URLs:
http://localhost:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413
or http://127.0.0.1:8888/?token=ef4c931eb453d9434ad1f449c82966658d5f9b3f82cc3413

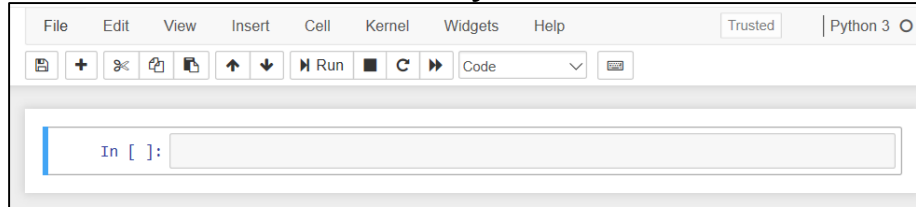
How to open a Notebook


- In the Anaconda display select the New button and Python 3

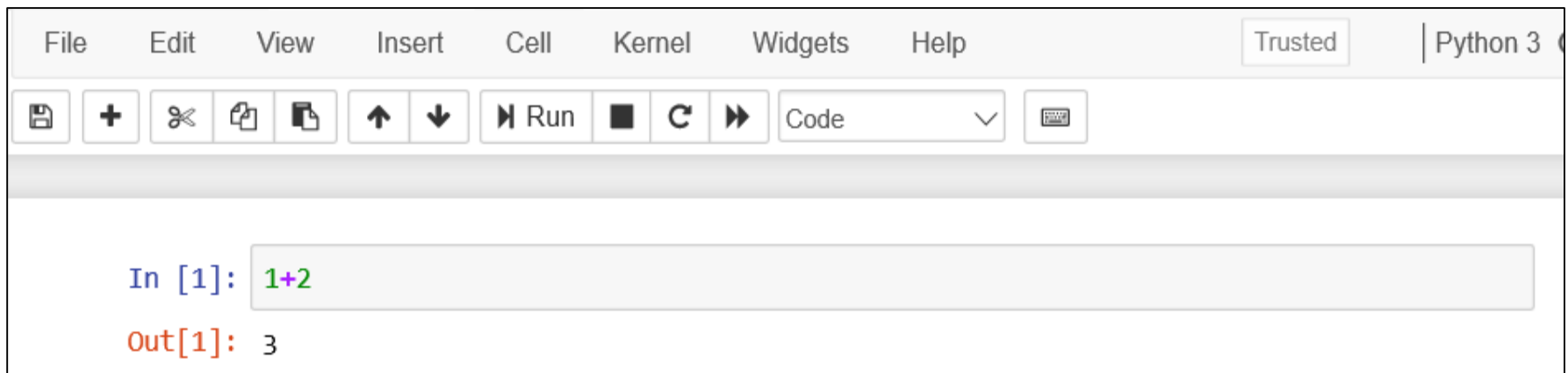


Jupyter Notebook: Try a simple example

- You have input cells in Jupyter notebooks to run your input and show your results. You can also make any field a comments called a Markdown cell.



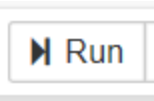
- In the **In** cell you type simple commands one line at a time or an entire function (we'll get to that later).
- Type `1+2` and then select either the run symbol  or Control-Enter
- You will now have an output cell that will display: 3. You have to '*run*' each cell to recognize your input or to print an output.



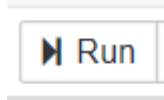
A Python example

- Try this simple Python example

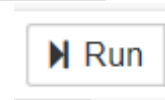
1. In the first cell type: `a=1` then select



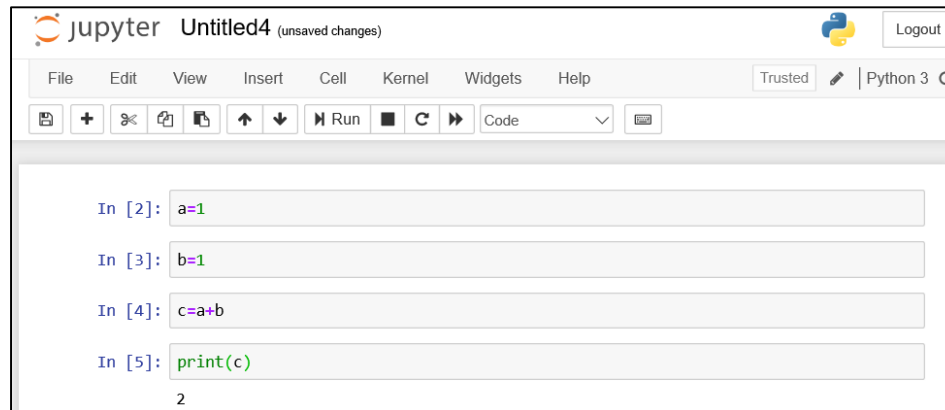
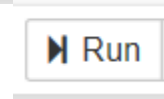
2. In the next cell type `b=1` then select



3. In the third cell type `c=a+b` then select



4. In the fourth cell type `print(c)` then select



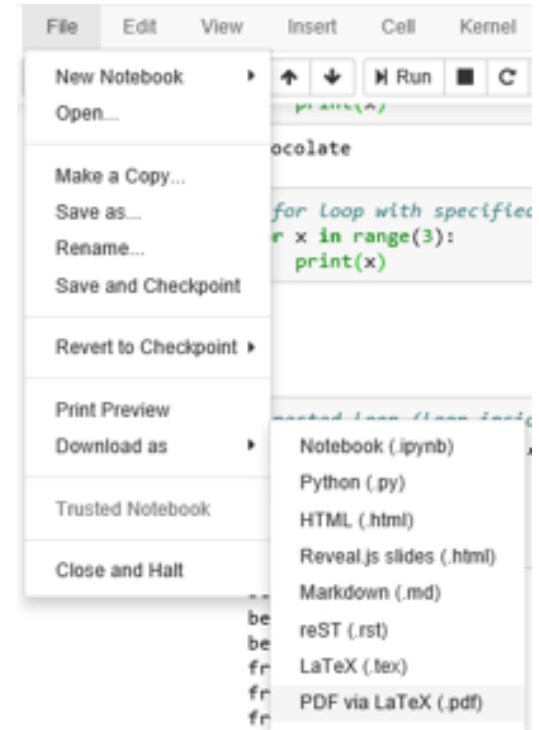
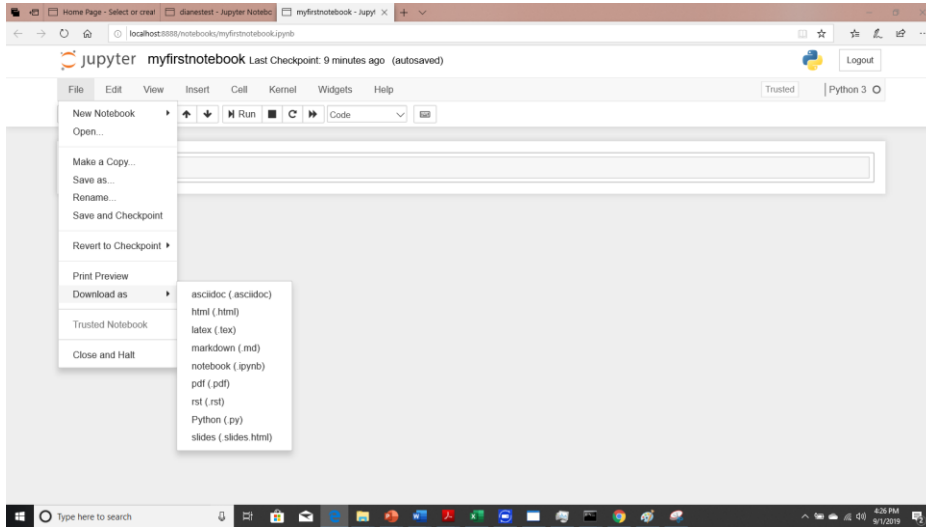
Saving your Notebook File

- Your notebook is currently not saved and does not have an intuitive title.
- Under Files select Rename and name your notebook: myfirstnotebook
- Select Files -> Save and Checkpoint
- Let's close your notebook by selecting Files -> Close and Halt
- You will have a file called MyFirstNotebook.ipynb. This is one of the files you need to submit for homework. The other is a pdf.
- In your Anaconda command prompt hit Control-C this will kill your browser.
- Open terminal window and type jupyter notebook.
- Now you will see your notebook that you created and can select it or open a new notebook by selecting "New" in the righthand corner.

Save your Notebook to PDF

- Select download as:

You should see these options to save your file:



You could use Google, Internet Explorer browsers to **save as a PDF in the Print option**. Microsoft Edge does not have this feature.

OR

- You can download MiKTeX: <https://miktex.org/>

MiKTeX for saving Notebooks as PDF

The image shows a screenshot of the MiKTeX website (miktex.org) in a web browser. The browser's address bar shows 'miktex.org'. The website has a dark blue header with a navigation menu: Home, About, Docs, Downloads, Give Back, Contact, Help. A cookie notice is visible at the top: 'This website uses cookies to personalize content and ads.' with 'Learn More' and 'Accept' buttons.

The main content area is divided into two columns. The left column has a sidebar with 'HomeAway' ads for 'House in Falmouth' and 'House in Falmouth Heights'. The main content area on the left has a 'Welcome' section with the text 'Welcome to the MiKTeX project page!' and links for 'New here? Learn more about MiKTeX...', 'Want to install MiKTeX? Start with a tutorial:', and 'Howto: Install MiKTeX on your Windows computer', 'Howto: Install MiKTeX on your Mac', 'Howto: Install MiKTeX on Linux', and 'Howto: Rollout MiKTeX in your organization'. Below this is an 'Announcements' section with links for 'You can read the archived announcements.' and 'See what is to come next and thereafter.'

The right column shows the 'Install on Windows' page. It has three tabs: 'Installer' (selected), 'Portable Edition', and 'Command-line installer'. The 'Installer' tab has the heading 'Installer' and the text 'To install a basic TeX/LaTeX system on Windows, download and run this installer. Please read the [tutorial](#), if you want step-by-step guidance.'

The download information is as follows:

- Date: 8/3/2019
- File name: basic-miktex-2.9.7152-x64.exe
- Size: 195.11 MB
- SHA-256: 08e5dc604f71da9ae59f8ed46205f571dfdc5e327d3d4d27c2472e70c8375575

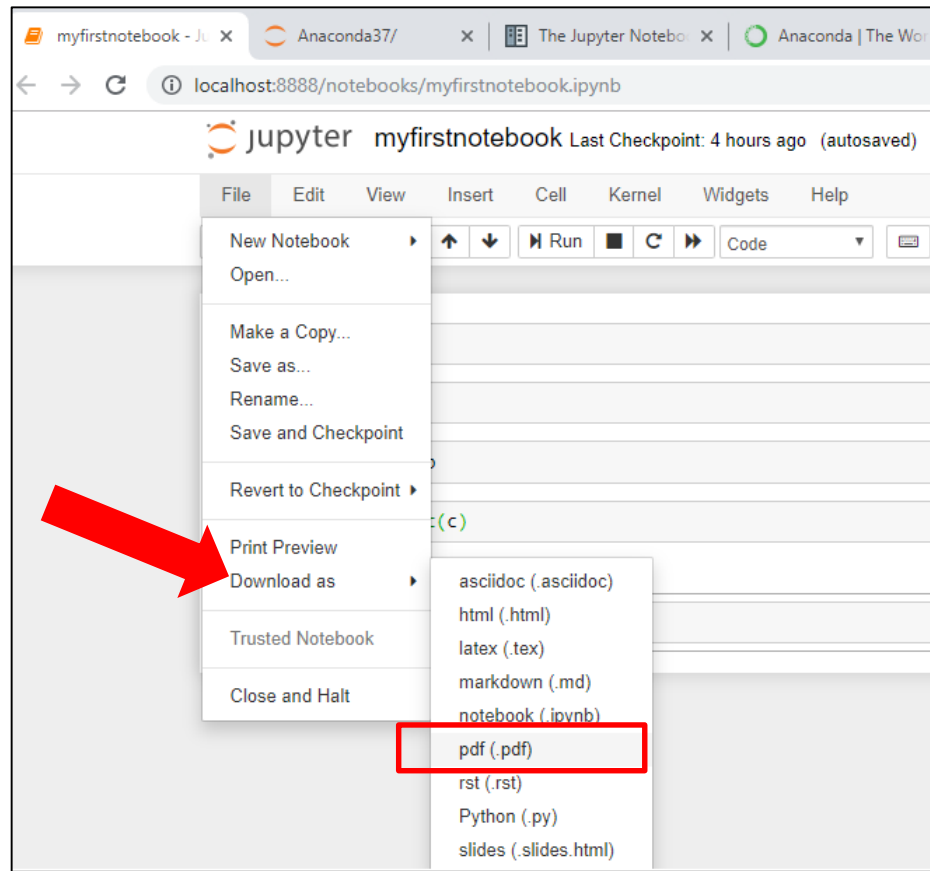
There is a 'Download' button with a download icon.

The footer contains the following information:

- © 2019 Christian Schenk
- Packages: [A-Z](#), [Browse](#), [Packaging](#), [Repositories](#)
- Developers: [Build MiKTeX](#)
- Legal: [License](#), [Privacy Policy](#), [Datenschutzerklärung](#)

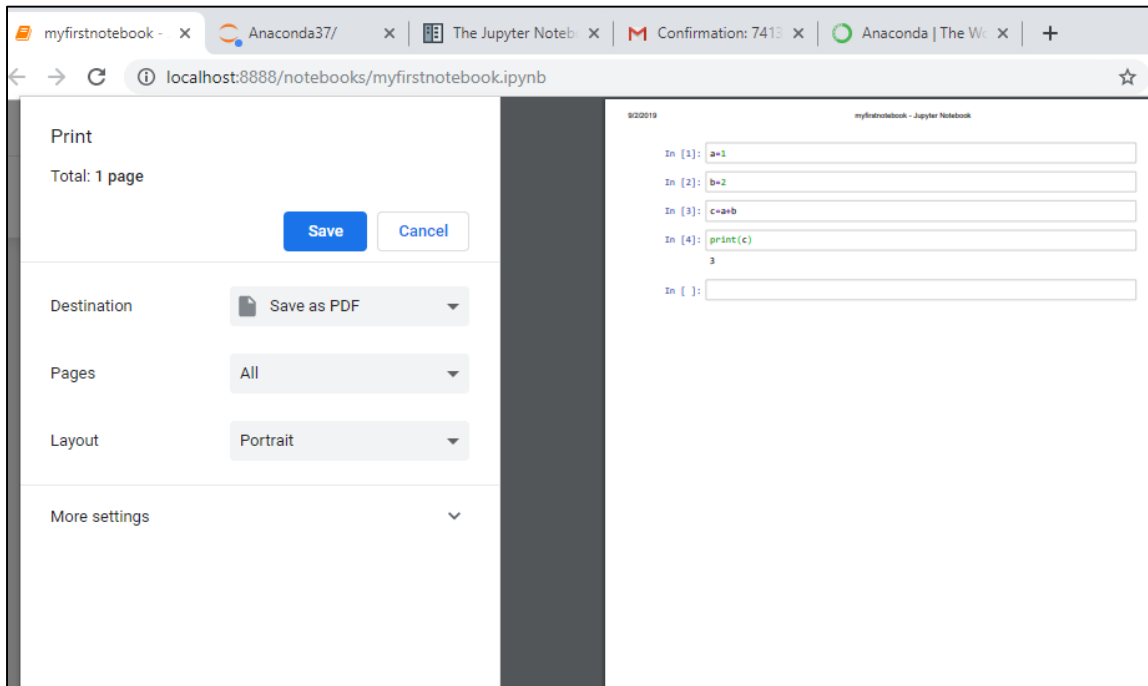
Save as PDF in Anaconda

- After you install MiKTeX you will see the following option in your Notebook under File. Select Download as and then Select



Google Chrome example

- Go to Print in your Chrome browser then select Save with Destination set to Save as PDF.



Open a specific notebook

- In your anaconda window type:
 - `jupyter notebook myfirstnotebook.ipynb`
- This will open the notebook right up that we just created
- Reminder: You can only run one notebook server at a time

```
(base) C:\Users\Owner>jupyter notebook myfirstnotebook.ipynb
[I 12:01:27.676 NotebookApp] The port 8888 is already in use, trying another port.
[I 12:01:27.676 NotebookApp] The port 8889 is already in use, trying another port.
[I 12:01:27.754 NotebookApp] JupyterLab extension loaded from C:\Users\Owner\Anaconda\lib\site
```

Useful commands to check Anaconda Install

- Open an Anaconda prompt (mine is called diane) and type some commands to check conda, python and jupyter notebook versions:

- conda --version (anaconda version)

```
C:\Users\Owner>activate diane  
  
(diane) C:\Users\Owner>conda --version  
conda 4.7.10
```

- python (python version)

```
(diane) C:\Users\Owner>python --version  
Python 3.7.4
```

- jupyter --version (jupyter version)

```
(diane) C:\Users\Owner>jupyter --version  
jupyter core      : 4.5.0  
jupyter-notebook  : 6.0.0  
qtconsole         : 4.5.1  
ipython           : 7.6.1  
ipykernel         : 5.1.1  
jupyter client    : 5.3.1  
jupyter lab       : 1.0.2  
nbconvert         : 5.5.0  
ipywidgets        : 7.5.0  
nbformat          : 4.4.0  
traitlets         : 4.3.2
```

What is conda and conda environment?

- ***What is conda?***

Conda is a powerful package manager and environment manager that you use with command line commands at the Anaconda Prompt for Windows, or in a terminal window for macOS or Linux.

- ***What is a conda environment?***

Conda allows you to create separate **environments** containing files, packages and their dependencies that will not interact with other **environments**. When you begin using **conda**, you already have a default **environment** named **base** . You don't want to put programs into your **base environment**, though. (Note: it is a virtual environment!)

<https://docs.conda.io/projects/conda/en/latest/user-guide/getting-started.html>

Create a conda environment

- Create a new environment for your conda install: (Remember your name of your environment!)
 - `conda create --name foobar python=3.7`

```
(base) C:\Windows\Anaconda>conda create --name foobar python=3.7  
Solving environment: done
```

- Activate your new environment:
 - Windows: `activate foobar` **or** `conda activate foobar`
 - OSX/Linux: `source activate foobar`

```
(base) C:\Windows\Anaconda>activate foobar  
  
(foobar) C:\Windows\Anaconda>
```

- To list all environments:
 - `conda info --envs`

```
(foobar) C:\Windows\Anaconda>conda info --envs  
# conda environments:  
#  
foobar          * C:\Users\Owner\AppData\Local\conda\conda\envs\foobar  
base            C:\Windows\Anaconda
```

- Start jupyter in your environment:

➤ Activate foobar

@HatchAndrea

```
(foobar) c:\Windows\Anaconda>jupyter notebook
```


Another example of checking conda environments

These are my conda environments from previous installs. If you installed Anaconda for the first time you will not have any conda environments!

To view all your conda environments:

>conda info - -envs

```
C:\Users\Owner>conda info --envs
# conda environments:
#
base                    * C:\Users\Owner\Anaconda37
                        C:\Users\Owner\Documents\diane\Anaconda3
                        C:\Users\Owner\Documents\diane\Anaconda3\envs\tensorflow
                        C:\Users\Owner\Documents\diane\Anaconda3\envs\tf
```

Here's how to check your conda path in Windows:

>path

```
C:\Users\Owner>path
PATH=C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\WINDOWS\system32;C:\WINDOWS;C:\WINDOWS\System32\Wbem;C:\WINDOWS\System32\WindowsPowerS
hell\Shell\;C:\WINDOWS\System32\OpenSSH\;C:\Users\Owner\Anaconda37;C:\Users\Owner\Anaconda37\Library\mingw-w64\bin;C:\Users\Owner\Anaconda37\Library\usr
\bin;C:\Users\Owner\Anaconda37\Library\bin;C:\Users\Owner\Anaconda37\Scripts;C:\Users\Owner\Documents\diane\Anaconda3;C:\Users\Owner\Documents\diane\An
aconda3\Library\mingw-w64\bin;C:\Users\Owner\Documents\diane\Anaconda3\Library\usr\bin;C:\Users\Owner\Documents\diane\Anaconda3\Library\bin;C:\Users\Ow
ner\Documents\diane\Anaconda3\Scripts;C:\Users\Owner\Documents\diane\MikTeX\miktex\bin\x64\;C:\Users\Owner\AppData\Local\Programs\Python\Python36-32\Sc
ripts\;C:\Users\Owner\AppData\Local\Programs\Python\Python36-32\;C:\Users\Owner\AppData\Local\Microsoft\WindowsApps;C:\Program Files (x86)\Java;c:\Prog
ram Files (x86)\Microsoft Visual Studio\2019\Community\VC\Tools\MSVC\14.20.27508\bin\Hostx86\x64;c:\Program Files (x86)\Microsoft Visual Studio\2019\Co
mmunity\VC\Tools\MSVC\14.20.27508\bin\Hostx64\x64;C:\Users\Owner\AppData\Local\Programs\MikTeX 2.9\miktex\bin\x64\
```

Did you get this message in the Python interpreter?

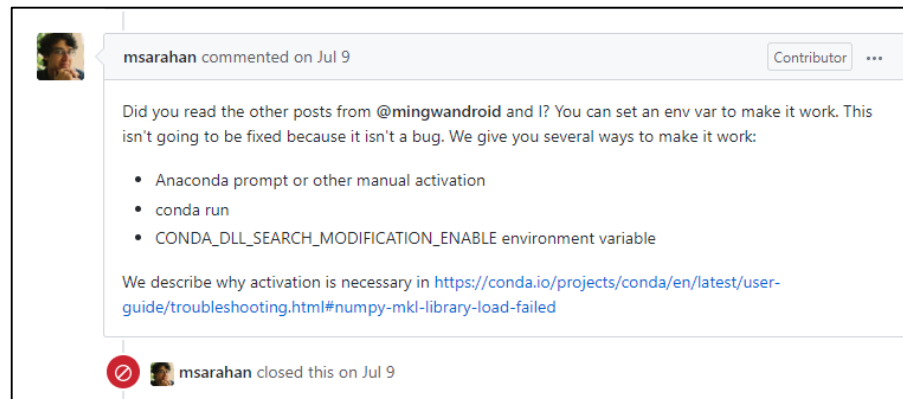
```
C:\Users\Owner>python
Python 3.7.3 (default, Apr 24 2019, 15:29:51) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32

Warning:
This Python interpreter is in a conda environment, but the environment has
not been activated. Libraries may fail to load. To activate this environment
please see https://conda.io/activation

Type "help", "copyright", "credits" or "license" for more information.
>>>
```

- It is not a bug. You can just run >jupyter notebook and you will be fine.
- It will go away when you set up your conda environment to 'fix this'.

<https://github.com/conda/conda/issues/8487>



Let's check Python to see if the warning message goes away

- Make sure you activate your environment
- Enter >python
- The message is no longer there.

```
C:\Users\Owner>conda activate diane  
  
(diane) C:\Users\Owner>python  
Python 3.7.4 (default, Aug  9 2019, 18:34:13) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32  
Type "help", "copyright", "credits" or "license" for more information.  
>>>
```

- Notice when I open another window and check Python it is there. This is because We are running Python outside of the conda environment that I just created.

```
Microsoft Windows [Version 10.0.17763.678]  
(c) 2018 Microsoft Corporation. All rights reserved.  
  
C:\Users\Owner>python  
Python 3.7.3 (default, Apr 24 2019, 15:29:51) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32  
  
Warning:  
This Python interpreter is in a conda environment, but the environment has  
not been activated. Libraries may fail to load. To activate this environment  
please see https://conda.io/activation  
  
Type "help", "copyright", "credits" or "license" for more information.  
>>>
```

Conda update message

- If you get the following message... A newer version of conda exists.... Just allow this to continue and enter y

```
C:\Users\Owner>conda create --name diane python=3.7
Collecting package metadata (current_repodata.json): done
Solving environment: done

==> WARNING: A newer version of conda exists. <==
current version: 4.7.10
latest version: 4.7.11

Please update conda by running

$ conda update -n base -c defaults conda

## Package Plan ##

environment location: C:\Users\Owner\Anaconda37\envs\diane

added / updated specs:
- python=3.7

The following packages will be downloaded:
```

package	build	
ca-certificates-2019.5.15	1	166 KB
certifi-2019.6.16	py37_1	156 KB
pip-19.2.2	py37_0	1.9 MB
python-3.7.4	h5263a28_0	18.2 MB
Total:		20.4 MB

```
Proceed ([y]/n)? y

Downloading and Extracting Packages
pip-19.2.2 1.9 MB
python-3.7.4 18.2 MB
certifi-2019.6.16 156 KB
ca-certificates-2019 166 KB
Preparing transaction: done
Verifying transaction: done
Executing transaction: done

# To activate this environment, use
#
# $ conda activate diane
#
# To deactivate an active environment, use
#
# $ conda deactivate
```

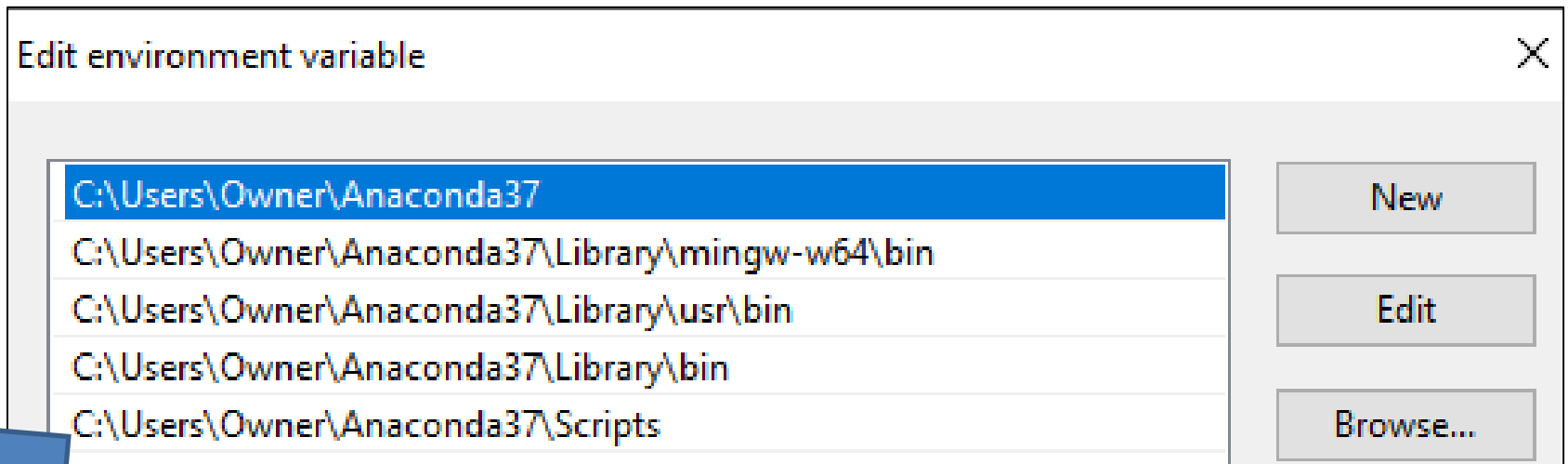
Moral of the Python warning message

1. It is not an error message (just a warning) so don't worry!
2. Activate your conda environment to run your Jupyter notebook.

Note: If you forget it's ok! You can still run jupyter notebook without issues but the point of having a conda environment is to add modules specific to that version of conda that you installed for that particular conda environment!

My Python path names

- Make sure you have similar paths set up for your env variables in this order.



It is important to have the Scripts path!

Conda base environment

- Are you activating conda from the base?

```
C:\Users\Owner>conda info --envs
# conda environments:
#
base                * C:\Users\Owner\Anaconda3
diane                C:\Users\Owner\Anaconda3\envs\diane
                     C:\Users\Owner\Documents\diane\Anaconda3
                     C:\Users\Owner\Documents\diane\Anaconda3\envs\tensorflow
                     C:\Users\Owner\Documents\diane\Anaconda3\envs\tf

C:\Users\Owner>conda activate base
(base) C:\Users\Owner>
```

- And then running your jupyter notebook?

```
C:\Users\Owner>conda activate base
(base) C:\Users\Owner>jupyter notebook
[I 21:19:10.193 NotebookApp] JupyterLab extension loaded from C:\Users\Owner\Anaconda3\lib\site-packages\jupyterlab
[I 21:19:10.193 NotebookApp] JupyterLab application directory is C:\Users\Owner\Anaconda3\share\jupyter\lab
[I 21:19:10.200 NotebookApp] Serving notebooks from local directory: C:\Users\Owner
[I 21:19:10.201 NotebookApp] The Jupyter Notebook is running at:
[I 21:19:10.201 NotebookApp] http://localhost:8888/
[I 21:19:10.202 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[E 21:19:13.242 NotebookApp] Could not open static file ''
[W 21:19:14.306 NotebookApp] 404 GET /static/components/react/react-dom.production.min.js (::1) 65.44ms referer=http://locall
```

- **Please DONT! set up your own conda environment in base!** You should never use base for installing modules. <https://stackoverflow.com/questions/51526503/why-does-base-appear-in-my-anaconda-command-prompt>

Managing environments

Conda allows you to **create** separate environments containing files, packages and their dependencies that will not interact with other environments.

When you begin using conda, you already have a default environment named **base**. You don't want to put programs into your base environment, though.

Create separate environments to keep your programs isolated from each other.

Useful References

- Jupyter documentation:

<https://jupyter-notebook.readthedocs.io>

- Another Jupyter Notebook tutorial:

<https://www.dataquest.io/blog/jupyter-notebook-tutorial/>

- Jupyter Notebook Shortcuts:

<https://towardsdatascience.com/jupyter-notebook-shortcuts-bf0101a98330>

- Conda:

<https://docs.conda.io/projects/conda/en/latest/user-guide/getting-started.html>

- Conda cheat sheet:

<https://docs.conda.io/projects/conda/en/latest/user-guide/cheatsheet.html>