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## Python Installation

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## Python Installation

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If you already have Python 3.10 or 3.11 installed, either through anaconda or on your own, you may skip this document. But make sure you have a virtual environment created for this class.

We are going to set up a virtual environment for use with Python in our class. A virtual environment allows us to keep projects separate, and allows different versions of Python to co-exist cleanly on one machine.

There are two ways we can set it up; directly through Python, or through Anaconda Navigator.

### 1. Directly through Python

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First, download and install the latest Python version 3.11.x from <https://www.python.org/downloads/>.

**Every time** we work on Python, we shall use the command prompt to activate the virtual environment for this class, then start up a notebook in Jupyter Notebook or JupyterLab.

- Start by launching the Command Prompt on your computer.
- For Windows:
  - Press Win + R.
  - Type `cmd` and press Enter.
- For macOS:
  - Use spotlight to search for your terminal and start it.

Here are a few commands that can help you navigate a command line:

Windows	MacOS	
<code>cd</code>	<code>pwd</code>	Print full path of current directory.
<code>dir</code>	<code>ls</code>	List all files in current directory.
<code>cd path</code>	<code>cd path</code>	Change current directory to specified path/folder.
<code>cd ..</code>	<code>cd ..</code>	Change to parent directory.
<code>cd /</code>	<code>cd /</code>	Change to root directory.
<code>-</code>	<code>cd</code>	Change to home directory.
<code>mkdir folder_name</code>	<code>mkdir folder_name</code>	Create new directory in current directory.

### 1.1 Virtual Environment

Navigate to the directory for this class, and run this command on the terminal:

```
python -m venv .
```

Be careful about which python is called by default. Check by pressing tab after typing python in your terminal.

If Python is not in your path, you may have to type the full path:

```
C:/xxxxUser/AppData/Local/Programs/Python/Python311/python.exe for Windows
```

```
/Library/Frameworks/Python.framework/Versions/3.11/bin/python3.11 for MacOS
```

If this completes without error, then you can activate the virtual environment with

```
Scripts activate.bat on Windows
```

```
source bin/activate on MacOS
```

When you are done for the day, you should type

```
deactivate to close the virtual environment.
```

## 1.2 Package Installation

With your virtual environment activated, here is how you can install packages:

```
pip install ipython jupyter jupyterlab xlrd numpy pandas matplotlib scipy statsmodels simply
```

```
pip install nltk mlxtend sklearn opencv-python imgaug gensim pyLDAvis pmdarima
```

## 2. Through Anaconda Navigator

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[Anaconda Navigator](#) is a more "point-and-click" solution to manage software and Python environments with. This guide shows you how install Python, some packages, and Jupyter Notebook with it.

### 2.1 Download and Install Anaconda Navigator

Follow [this](#) link to the download page of Anaconda Navigator. You're likely using a 64-bit computer, so select the appropriate (graphical) installer for your operating system.

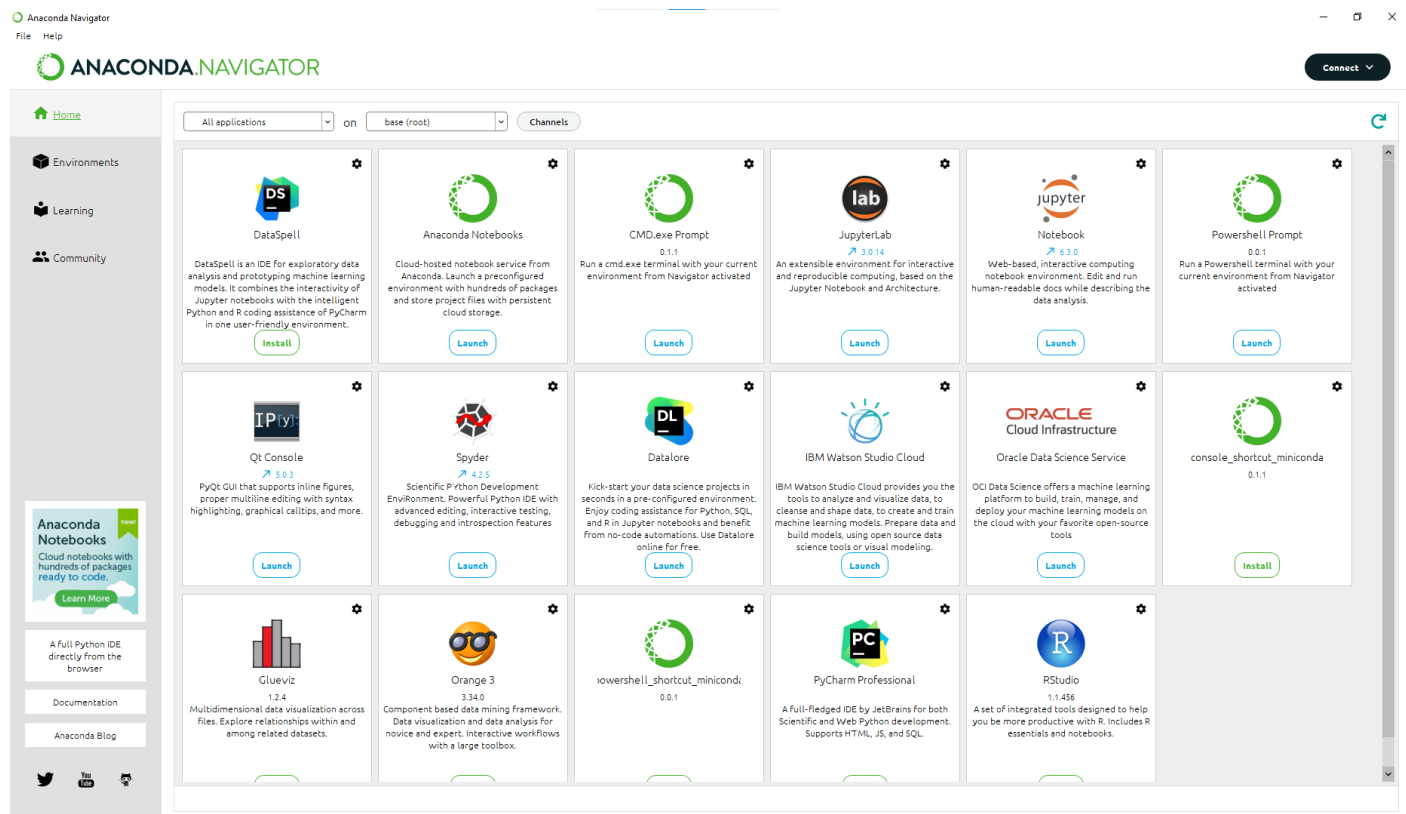
## Anaconda Installers

 Windows	 Mac	 Linux
<b>Python 3.11</b> ⬇ 64-Bit Graphical Installer (893.8 MB)	<b>Python 3.11</b> ⬇ 64-Bit Graphical Installer (593.8 MB) ⬇ 64-Bit Command Line Installer (595.4 MB) ⬇ 64-Bit (M1) Graphical Installer (628.1 MB) ⬇ 64-Bit (M1) Command Line Installer (629.9 MB )	<b>Python 3.11</b> ⬇ 64-Bit (x86) Installer (1010.4 MB) ⬇ 64-Bit (Power8 and Power9) Installer (468.7 MB) ⬇ 64-Bit (AWS Graviton2 / ARM64) Installer (711.9 MB) ⬇ 64-bit (Linux on IBM Z & LinuxONE) Installer (336.1 MB)

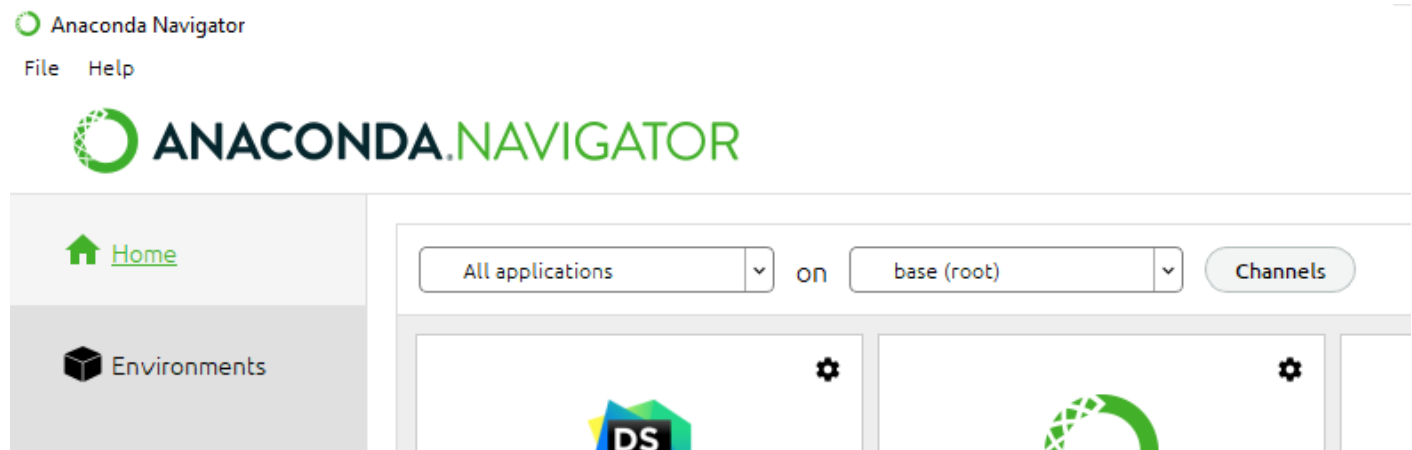
You can follow these [Installation Instructions](#) for more detailed steps.

## 2.2 Set Up a Virtual Environment

After installation, you should see the following:



Anaconda Navigator allows you to install a number of software *through* Navigator itself. This allows you to link installations to certain environments. Namely, the default environment, using Python 3.11, is called `base` :

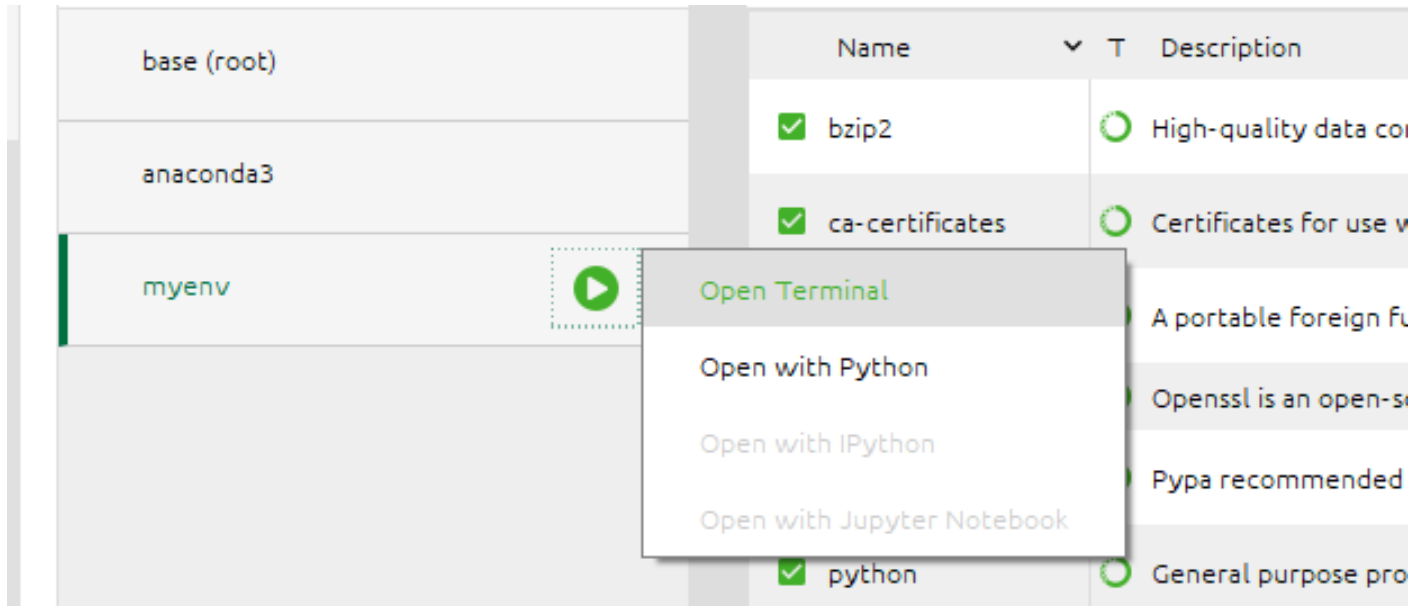


Jupyter Notebook and JupyterLab are already installed with `base` , but let us instead create and activate our own environment `myenv` . First, head to the Environments tab on the left of the screen. You should see the following:



## 2.3 Install Packages in myenv

Some of the packages we need, as well as Jupyter Notebook and JupyterLab, will not be installed by default in `myenv`. To do so, first click on the play button next to `myenv`, and open a terminal window with the environment activated by clicking "Open Terminal":



Copy-and-paste the following into the terminal:

```
pip install ipython jupyter jupyterlab xlrd numpy pandas matplotlib scipy statsmodels simpy
pip install nltk mlxtend sklearn opencv-python imgaug gensim pyLDAvis pmdarima
```

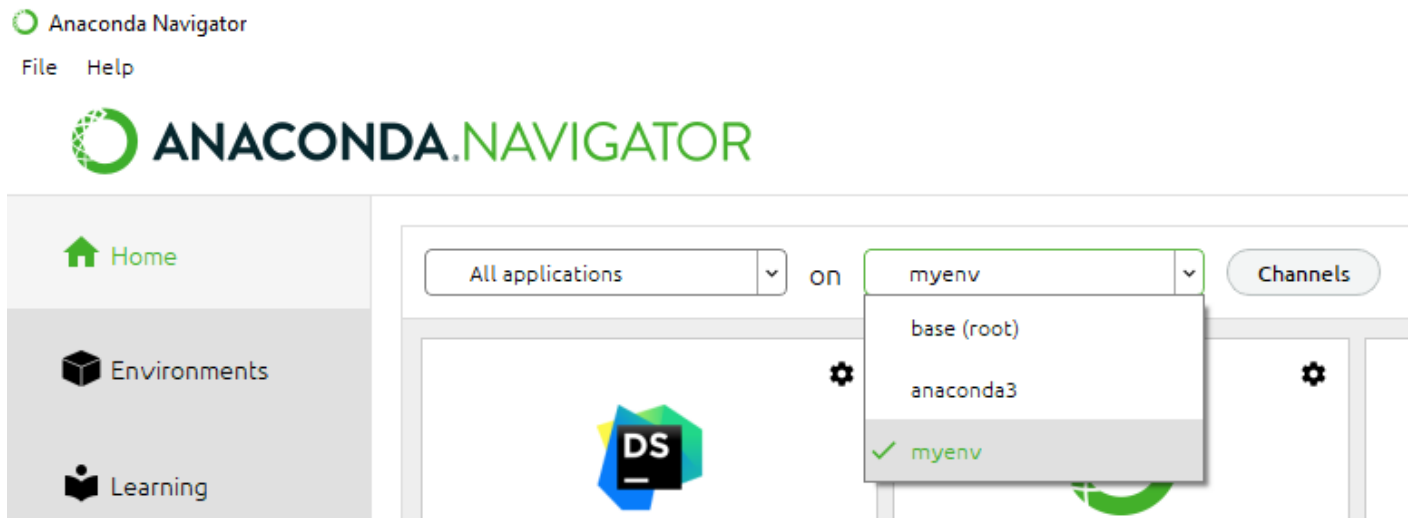
```
C:\WINDOWS\system32\cmd.exe - pip install ipython jupyter jupyterlab xlrd numpy pandas matplotlib scipy statsmodels simpy
Downloading comm-0.1.4-py3-none-any.whl (6.6 kB)
Using cached json5-0.9.14-py2.py3-none-any.whl (19 kB)
Downloading jsonschema-4.18.6-py3-none-any.whl (83 kB)
----- 83.2/83.2 kB 4.6 MB/s eta 0:00:00
Using cached jupyter_client-8.3.0-py3-none-any.whl (103 kB)
Downloading jupyter_events-0.7.0-py3-none-any.whl (18 kB)
Using cached jupyterlab_widgets-3.0.8-py3-none-any.whl (214 kB)
Downloading MarkupSafe-2.1.3-cp311-cp311-win_amd64.whl (17 kB)
Using cached mistune-3.0.1-py3-none-any.whl (47 kB)
Using cached nbclient-0.8.0-py3-none-any.whl (73 kB)
Downloading nbformat-5.9.2-py3-none-any.whl (77 kB)
----- 77.6/77.6 kB 2.1 MB/s eta 0:00:00
Downloading platformdirs-3.10.0-py3-none-any.whl (17 kB)
Using cached pyzmq-25.1.0-cp311-cp311-win_amd64.whl (1.1 MB)
Using cached requests-2.31.0-py3-none-any.whl (62 kB)
Using cached pywinpty-2.0.11-cp311-none-win_amd64.whl (1.4 MB)
Using cached widgetsnbextension-4.0.8-py3-none-any.whl (2.3 MB)
Downloading nest_asyncio-1.5.7-py3-none-any.whl (5.3 kB)
Downloading overrides-7.4.0-py3-none-any.whl (17 kB)
Using cached prometheus_client-0.17.1-py3-none-any.whl (60 kB)
Using cached websocket_client-1.6.1-py3-none-any.whl (56 kB)
Downloading certifi-2023.7.22-py3-none-any.whl (158 kB)
----- 158.3/158.3 kB 4.6 MB/s eta 0:00:00
Downloading charset_normalizer-3.2.0-cp311-cp311-win_amd64.whl (96 kB)
----- 96.6/96.6 kB 5.4 MB/s eta 0:00:00
Using cached jsonschema_specifications-2023.7.1-py3-none-any.whl (17 kB)
Using cached PyYAML-6.0.1-cp311-cp311-win_amd64.whl (144 kB)
Downloading referencing-0.30.2-py3-none-any.whl (25 kB)
Using cached rpds_py-0.9.2-cp311-none-win_amd64.whl (180 kB)
Using cached urllib3-2.0.4-py3-none-any.whl (123 kB)
```

After package installation, navigate back to the Home screen and click "Install" in the Jupyter Notebook or JupyterLab box to install it.

You're now good to go for the rest of the course.

## 2.4 Done!

Whenever you now open Anaconda Navigator, you can activate `myenv` by selecting it from the dropdown list on the top left of the welcome screen:



We hope you make good use of Anaconda Navigator. If you face any issues, [stackoverflow](#) is always a good resource; otherwise, we're there!

### 3. References and Links

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1. [Python download](#)
2. [Python documentation](#)
3. [Jupyter Notebook documentation](#)
4. [JupyterLab documentation](#)
5. [Anaconda installation](#) (updated from an earlier version by Ang Yi Zhe)
6. [Python resources](#) (also by Ang Yi Zhe)