Setting up the environment

Conda

- Some python applications may need different versions of packages than the ones you are currently using
- The correct way to handle such situations is by using **environments**
- We will use a popular environment manager called **conda**
- Conda is also a package manager (allows you to install additional packages)
- Conda also downloads and installs python for you

Installing conda

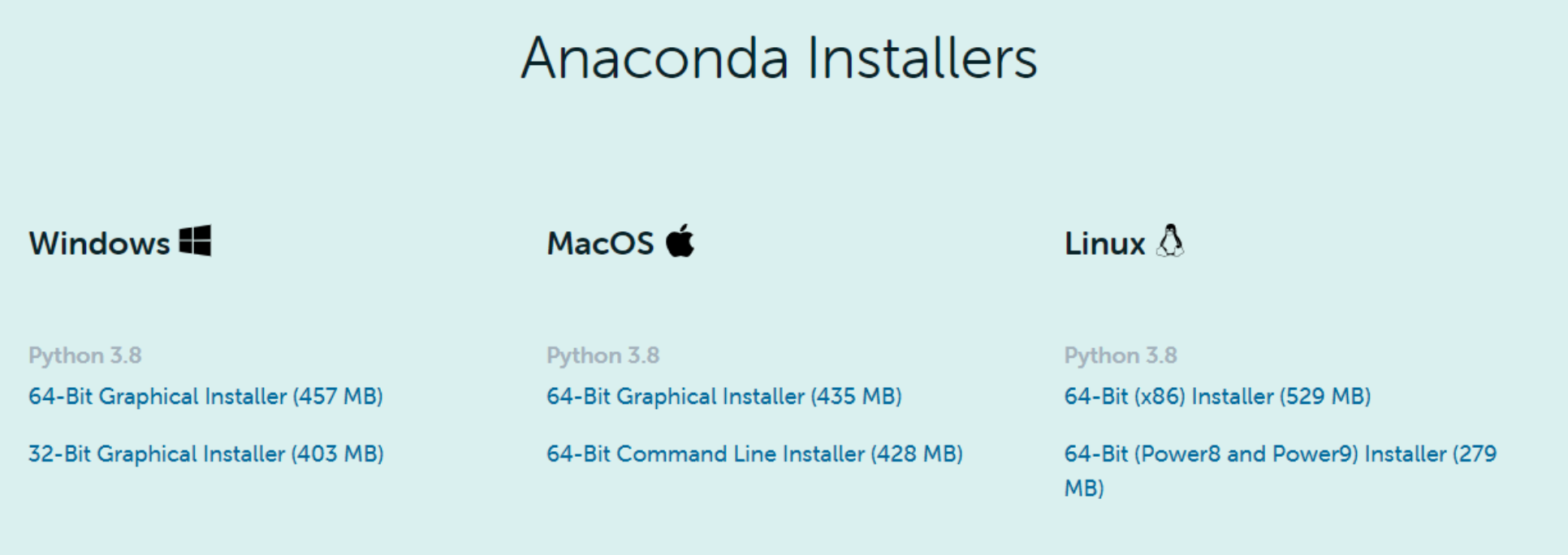
- Conda installer: miniconda / anaconda
    - Miniconda: includes conda (package and environment manager) and few basic packages
    - Anaconda: includes conda, many scientific packages and a GUI
- Platform: multiple OS - 64 / 32 bit
- Python version: install conda for python 3.8 or above

Anaconda

- Anaconda is the most popular Python data science platform
- Anaconda is a distribution of the Python and R programming languages for data science and machine learning related applications
- It also installs the Jupyter Notebook
- Includes a collection of over 1,000 open source data science packages
- Package versions are managed by the package management system conda

Installing Anaconda

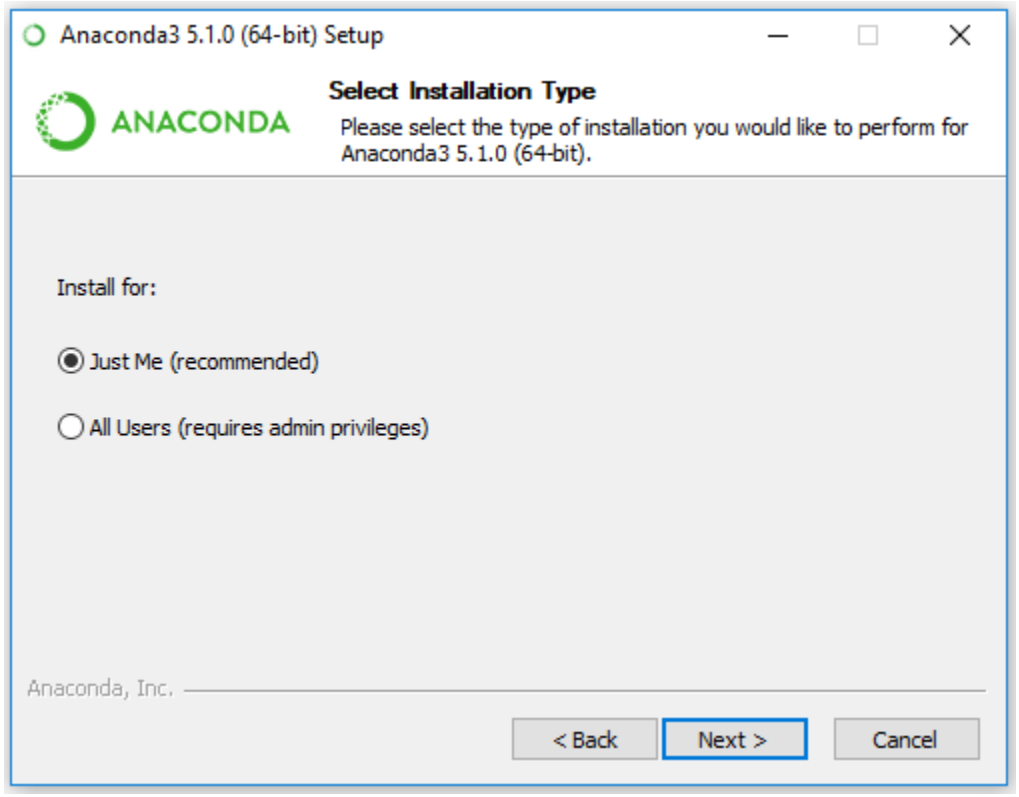
- Go to https://www.anaconda.com/products/individual
- Download the Python 3.x version



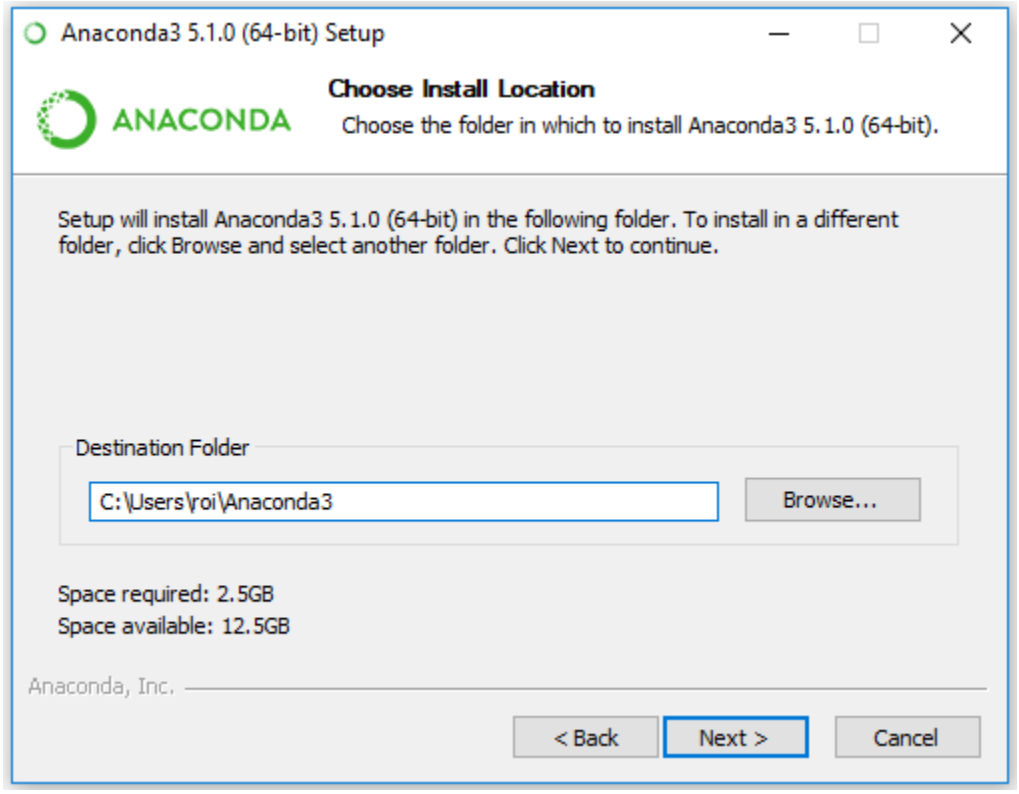
Installing Anaconda

- Double click the executable file to start the installation

Installing Anaconda

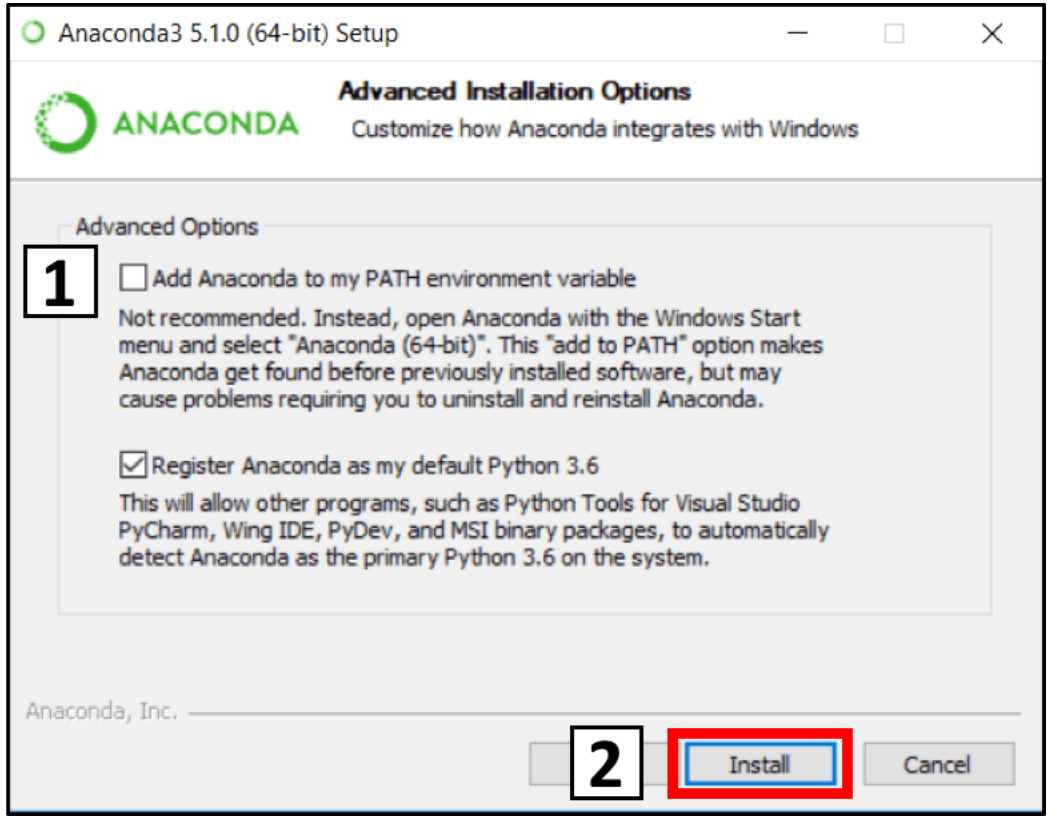


Installing Anaconda

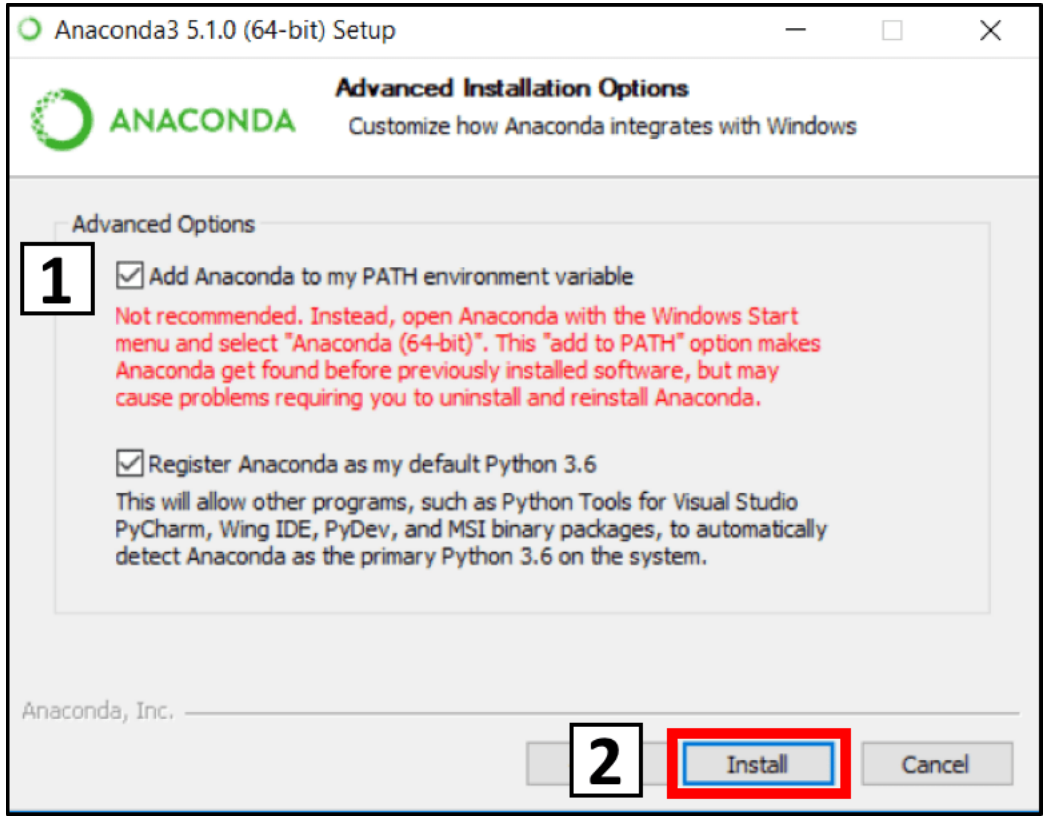


Installing Anaconda

Recommended Approach



Alternative Approach

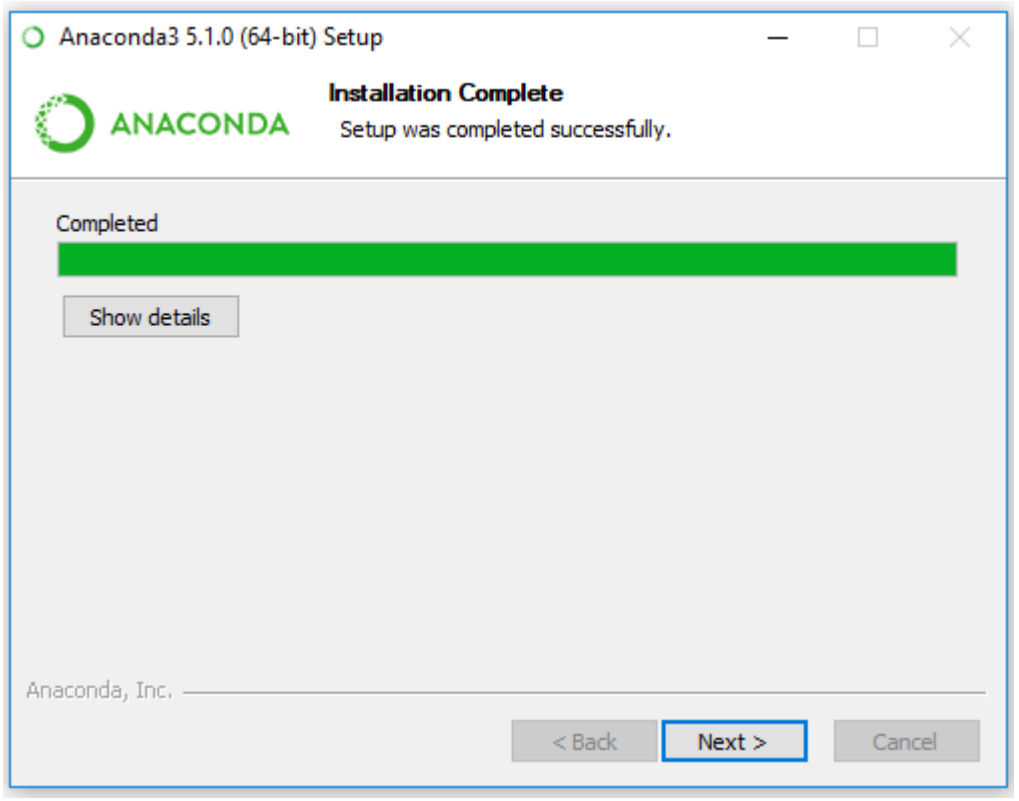


Installing Anaconda

- The recommended approach is to not check the box to add Anaconda to your path. This means you will have to use Anaconda Navigator or the Anaconda Command Prompt (located in the Start Menu under "Anaconda") when you wish to use Anaconda (you can always add Anaconda to your PATH later if you don't check the box)

- If you want to use Anaconda in your command prompt (or git bash, terminal, etc), please use the alternative approach and check the box

Installing Anaconda



Conda

- Miniconda / Anaconda sets up two things for you: **Conda** and the **root environment**

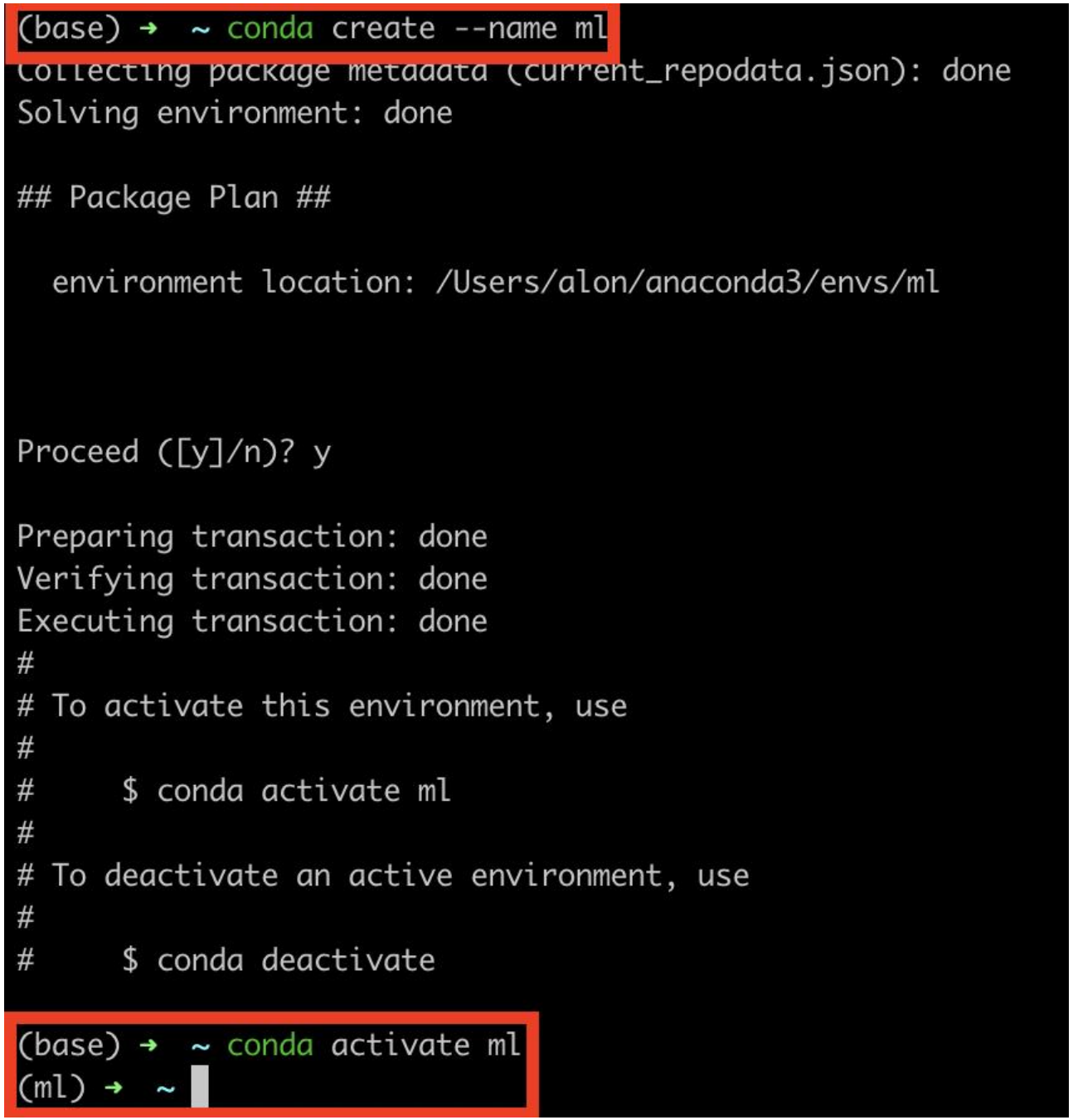
- You can check conda works by typing conda in your shell (command prompt / terminal)

```
(base) ➜  ~ conda
usage: conda [-h] [-V] command ...

conda is a tool for managing and deploying applications, environments and packages.

Options:

positional arguments:
  command
    clean        Remove unused packages and caches.
    config       Modify configuration values in .condarc. This is modeled
                 after the git config command. Writes to the user .condarc
                 file (/Users/alon/.condarc) by default.
    create       Create a new conda environment from a list of specified
                 packages.
    help         Displays a list of available conda commands and their help
                 strings.
    info         Display information about current conda install.
    init         Initialize conda for shell interaction. [Experimental]
    install      Installs a list of packages into a specified conda
                 environment.
    list         List linked packages in a conda environment.
    package      Low-level conda package utility. (EXPERIMENTAL)
    remove       Remove a list of packages from a specified conda environment.
    uninstall    Alias for conda remove.
    run          Run an executable in a conda environment. [Experimental]
    search       Search for packages and display associated information. The
                 input is a MatchSpec, a query language for conda packages.
                 See examples below.
    update       Updates conda packages to the latest compatible version.
    upgrade      Alias for conda update.
```

Creating an envrionment

- You can install packages inside one environment without affecting other environments

- Environments are especially useful if you are working on several projects with different dependencies



Environment management

- You don’t have to use environments (but its recommended)
- If you are missing a package, just google “conda package_name”
- All packages we will use in this course are available through conda

- For now, make sure the following packages are installed in the new environment you just created:
  - jupyter
  - numpy
  - pandas
  - matplotlib

IDE (integrated development environment)

- **Sublime**
- **Visual Studio Code**
- PyCharm
- Atom
- Spyder

- You are free to use any development environment / code editor you want
- All debugging and development can be performed from Jupyter Notebook

Jupyter notebook

- “The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more”

- conda install jupyter

Jupyter notebook

- After installing jupyter, you can activate it by running
- $ jupyter notebook
- This will create a local server on your machine which you can access from your browser, usually from http://localhost:8888

Jupyter notebook

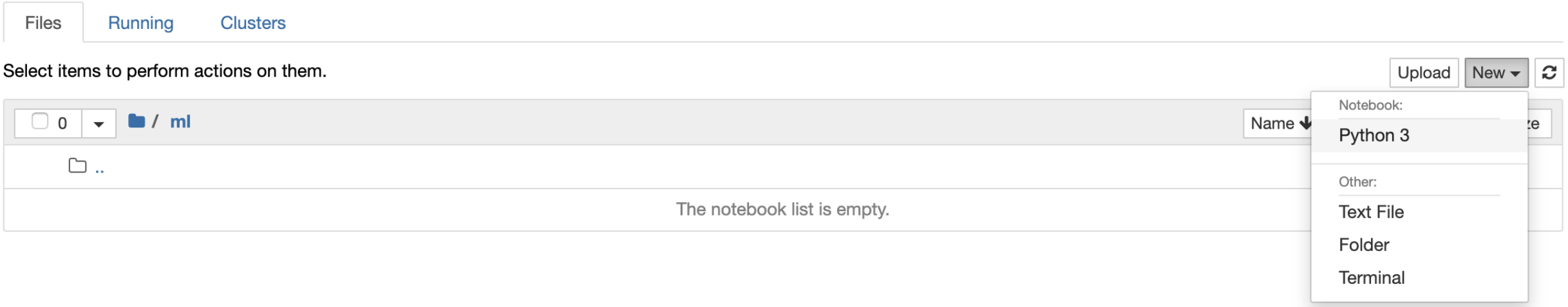
- Make sure jupyter is installed properly by running ’jupyter notebook’

```
(ml) ➜  ~ jupyter notebook
[I 13:10:47.754 NotebookApp] [nb_conda_kernels] enabled, 2 kernels found
[I 13:10:48.207 NotebookApp] [jupyter_nbextensions_configurator] enabled 0.4.1
[I 13:10:48.331 NotebookApp] [nb_conda] enabled
[I 13:10:48.331 NotebookApp] Serving notebooks from local directory: /Users/alon
[I 13:10:48.331 NotebookApp] The Jupyter Notebook is running at:
[I 13:10:48.331 NotebookApp] http://localhost:8888/?token=10286d9947059e84baa6bc930efea5865ff3273ad2b77550
[I 13:10:48.331 NotebookApp]  or http://127.0.0.1:8888/?token=10286d9947059e84baa6bc930efea5865ff3273ad2b77550
[I 13:10:48.331 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 13:10:48.339 NotebookApp]

    To access the notebook, open this file in a browser:
        file:///Users/alon/Library/Jupyter/runtime/nbserver-59173-open.html
    Or copy and paste one of these URLs:
        http://localhost:8888/?token=10286d9947059e84baa6bc930efea5865ff3273ad2b77550
     or http://127.0.0.1:8888/?token=10286d9947059e84baa6bc930efea5865ff3273ad2b77550
```

Jupyter notebook

- The notebook should open automatically. Otherwise, copy and paste the link from the console to your browser (Google Chrome works best)

- Create a new notebook



Jupyter notebook

- Type the following into the first cell and press ‘shift+enter’ to run:
  - import numpy as np
  - import pandas as pd
  - import matplotlib.pyplot as plt

- If the cell run without errors, you should see the following