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# Python Tsunami

Local Installations

# Anaconda

Anaconda is an all-in-one solution for writing and executing python code **locally**, as well as managing packages and environments.

Includes:

- ~ 100 popular packages
- Codings envs Spyder and Jupyter
- Jupyter lab IDE
- A prompt
- Can install many more add-ons



<https://docs.anaconda.com/>

# Anaconda Installation



## ANACONDA DOCUMENTATION

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▼ Anaconda Distribution

Installation

Installing on Windows

Installing on macOS

Installing on Linux

Installing on AWS Graviton2  
(arm64)

Installing on Linux-s390x (IBM  
Z)

Installing on Linux POWER

Installing in silent mode

Installing for multiple users

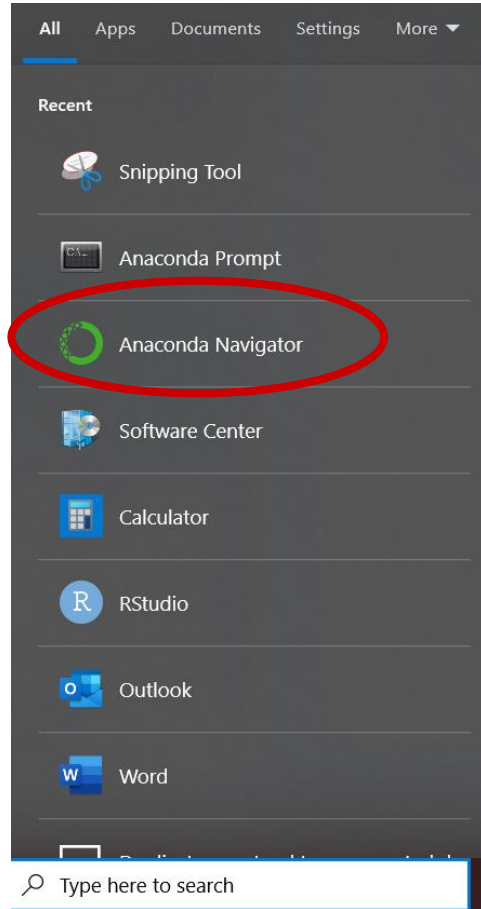
### Windows:

- Download and execute installer

### macOS:

- Download and execute installer OR
- use command line to install

# Anaconda











All applications

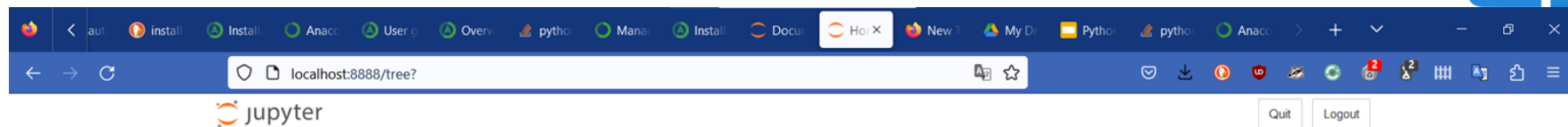
on

base (root)

Channels

 <p>DataSpell</p> <p>DataSpell is an IDE for exploratory data analysis and prototyping machine learning models. It combines the interactivity of Jupyter notebooks with the intelligent Python and R coding assistance of PyCharm in one user-friendly environment.</p> <p>Install</p>	 <p>CMD.exe Prompt</p> <p>0.1.1</p> <p>Run a cmd.exe terminal with your current environment from Navigator activated</p> <p>Launch</p>	 <p>JupyterLab</p> <p>3.5.3</p> <p>An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.</p> <p>Launch</p>	 <p>Jupyter Notebook</p> <p>6.5.2</p> <p>Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.</p> <p>Launch</p>
 <p>Spyder</p> <p>5.4.1</p> <p>Scientific Python Development Environment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features</p> <p>Launch</p>	 <p>Datalore</p> <p>Kick-start your data science projects in seconds in a pre-configured environment. Enjoy coding assistance for Python, SQL, and R in Jupyter notebooks and benefit from no-code automations. Use Datalore online for free.</p> <p>Launch</p>	 <p>IBM Watson Studio Cloud</p> <p>IBM Watson Studio Cloud provides you the tools to analyze and visualize data, to cleanse and shape data, to create and train machine learning models. Prepare data and build models, using open source data science tools or visual modeling.</p> <p>Launch</p>	 <p>ORACLE Cloud Infrastructure</p> <p>Oracle Data Science Service</p> <p>OCI Data Science offers a machine learning platform to build, train, manage, and deploy your machine learning models on the cloud with your favorite open-source tools</p> <p>Launch</p>

# Jupyter



Navigate to where your  
jupyter notebooks are

Click on a notebook to open

Files Running Clusters

Select items to perform actions on them.

0 /

- 3D Objects
- Contacts
- Desktop
- Documents

localhost:8888/tree/Documents/HeaDS/Courses/Python\_part1/Mar\_2023/PythonTsunami/Visualizations

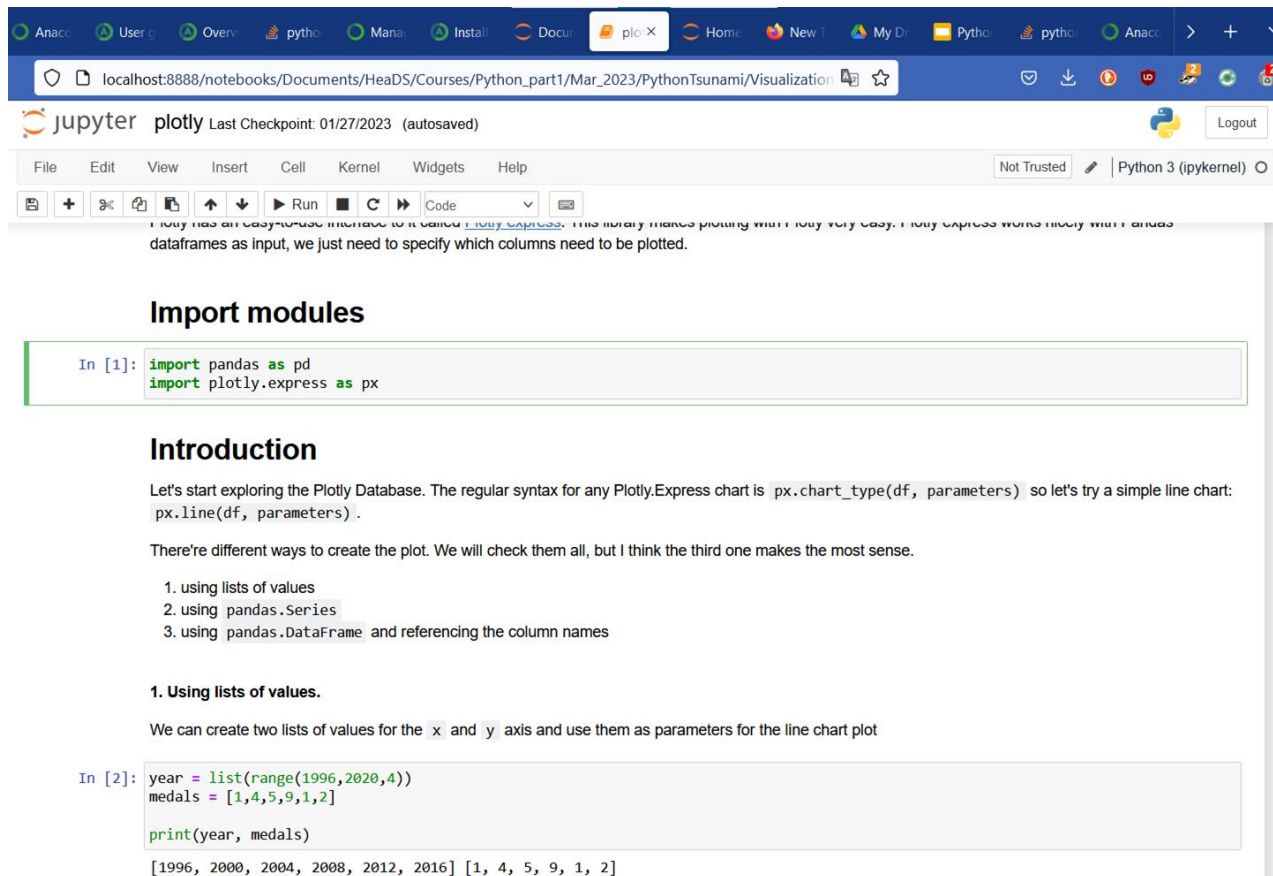
Quit Logout

Files Running Clusters

Select items to perform actions on them.

0 / Documents / HeaDS / Courses / Python\_part1 / Mar\_2023 / PythonTsunami / Visualizations

	Name	Last Modified	File size
	..	seconds ago	
<input type="checkbox"/>	plotly.ipynb	Running an hour ago	4.95 MB
<input type="checkbox"/>	PlotlyExpress_ComprehensiveGuide.ipynb	2 months ago	8.6 MB
<input type="checkbox"/>	Python Tsunami Visualizations.pdf	2 months ago	2.24 MB
<input type="checkbox"/>	Python Tsunami Visualizations.pptx	2 months ago	6.34 MB
<input type="checkbox"/>	Python-plot-tools.png	2 months ago	194 kB
<input type="checkbox"/>	README.md	2 months ago	1.55 kB



localhost:8888/notebooks/Documents/HeaDS/Courses/Python\_part1/Mar\_2023/PythonTsunami/Visualization

jupyter plotly Last Checkpoint: 01/27/2023 (autosaved) Logout

File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (ipykernel)

Plotly has an easy-to-use interface to it called [Plotly Express](https://plotly.com/python/). This library makes plotting with Plotly very easy. Plotly Express works nicely with pandas dataframes as input, we just need to specify which columns need to be plotted.

## Import modules

```
In [1]: import pandas as pd
import plotly.express as px
```

## Introduction

Let's start exploring the Plotly Database. The regular syntax for any Plotly.Express chart is `px.chart_type(df, parameters)` so let's try a simple line chart: `px.line(df, parameters)`.

There're different ways to create the plot. We will check them all, but I think the third one makes the most sense.

1. using lists of values
2. using `pandas.Series`
3. using `pandas.DataFrame` and referencing the column names

### 1. Using lists of values.

We can create two lists of values for the `x` and `y` axis and use them as parameters for the line chart plot

```
In [2]: year = list(range(1996,2020,4))
medals = [1,4,5,9,1,2]
print(year, medals)
```

[1996, 2000, 2004, 2008, 2012, 2016] [1, 4, 5, 9, 1, 2]

## Operate as in colab

- Code cells and text cells
- Run cells with run button or shift+enter
- Output appears below cell



# Environments and packages

Packages are also called libraries. They are bundles of code that contain a certain functionality.

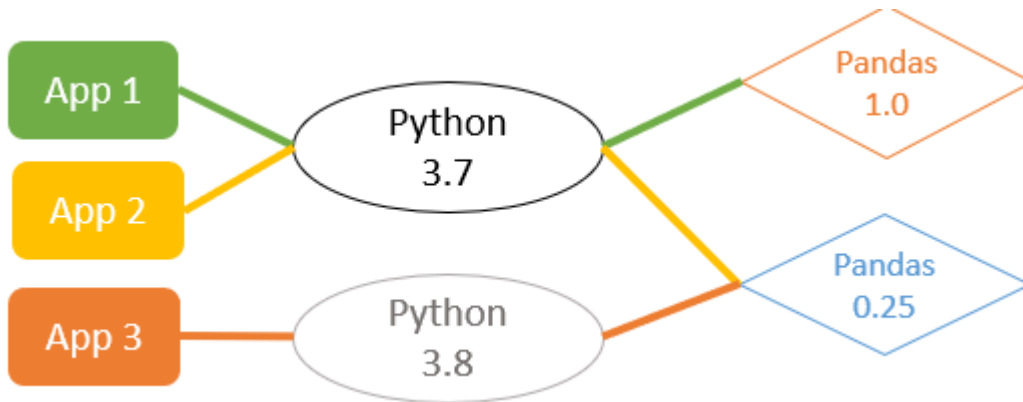
You have already used packages:

```
import pandas as pd  
  
import plotly.express as px
```

Many python packages are under constant development to keep up to date and as such they have versions.

# Packages

Many scientific softwares require **specific versions** of packages installed in order to function (because they were written with that version).



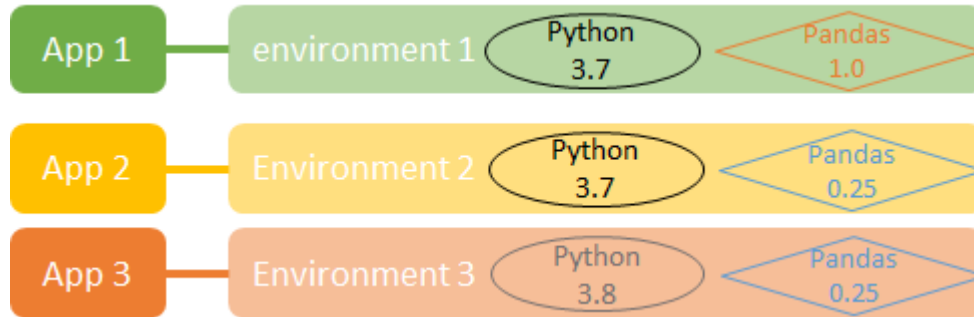
This is where environments come in!

# Environments

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An environment is a collection of specific versions of packages that are compatible to each other.



We use conda to create and manage python environments.

# Conda environments - Navigator

Anaconda Navigator

File Help

ANACONDA.NAVIGATOR

Home

Environments

Learning

Community

Anaconda  
Notebooks

Cloud notebooks with  
hundreds of packages  
ready to code.

Learn More

Documentation

Anaconda Blog



Create

Clone

Import

Backup

Remove

Search Environments

base (root)

Installed

Channels

Update index...

Search Packages

Name

Description

Version



alabaster

Configurable, python 2+3 compatible sphinx theme.

0.7.12



anaconda-client

Anaconda.org command line client

1.11.1



anaconda-project

Tool for encapsulating

0.11.1



anyio

High level compatibility

3.5.0



appdirs

A small python module

1.4.4



argon2-cffi

The secure argon2 password

21.3.0



argon2-cffi-bindings

Low-level python cffi bindings for argon2

21.2.0



arrow

Better dates & times for python

1.2.3



astroid

A abstract syntax tree for python with inference support.

2.14.2



astropy

Community-developed python library for astronomy

5.1



asttokens

The asttokens module annotates python abstract syntax trees (asts) with the positions of tokens and text in the source code that generated them.

2.0.5



atomicwrites

Atomic file writes

1.4.0



attrs

Attrs is the python package that will bring back the joy of writing classes by relieving you from the drudgery of implementing object protocols (aka dunder methods).

22.1.0



automat

Self-service finite-state machines for the programmer on the go

20.2.0



autopep8

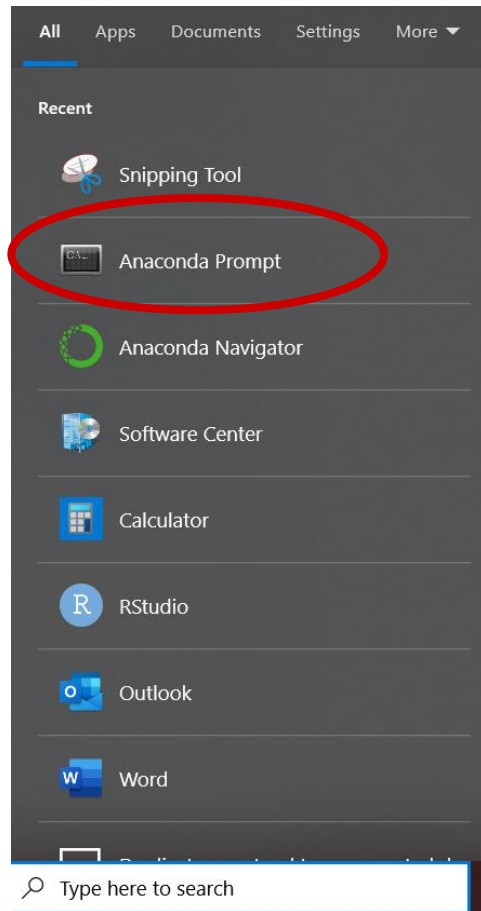
A tool that automatically formats python code to conform to the pep 8 style guide

1.6.0

The click adventure from  
inside the navigator

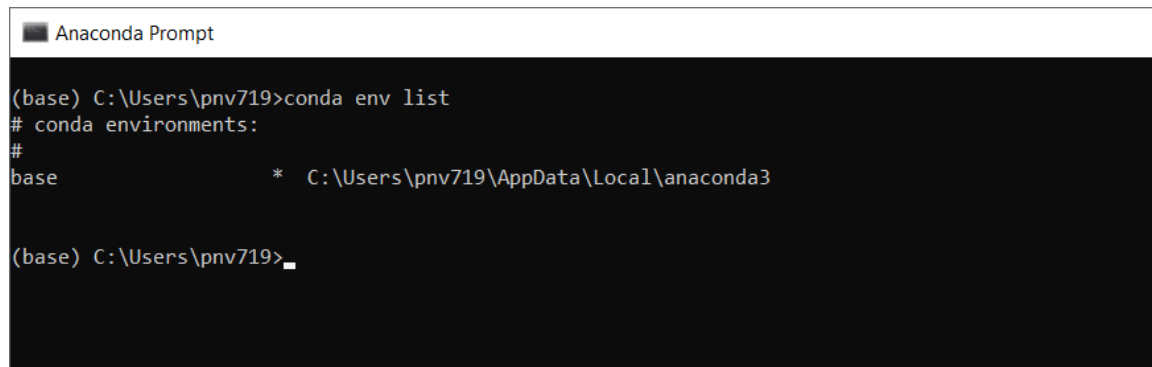


# Conda environments - command line



The prompt lets you create and manage environments via the command line.

On Mac, use the terminal instead.



```

Anaconda Prompt

(base) C:\Users\pnv719>conda env list
# conda environments:
#
base                  *  C:\Users\pnv719\AppData\Local\anaconda3

(base) C:\Users\pnv719>
```

# Managing environments

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Create an (empty) environment:

```
conda create --name my_env
```

Create an env with specific packages installed:

```
conda create -n my_env python=3.9 scipy=0.17.3
```

Activate (load) an environment:

```
conda activate my_env
```

Install a package (into a specific env):

```
conda install scipy=0.17.3 (-n my_env)
```

<https://docs.conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html>  
<https://docs.anaconda.com/anaconda/user-guide/tasks/install-packages/>

# Dataset Exercise

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**I'm looking for someone to share in an adventure**