Getting Started with Python

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Overview: Python

- Python is a scripting language like **Perl**, **R**, **PHP**
- Python is easy to install, and can be installed on different operating systems (Windows, Mac or Linux)
- Ideal for text and data processing, it offers powerful libraries for computation using large-scale data
- Nowadays, python-based software and tools (e.g. PyTorch) are being heavily used in machine and deep learning and AI solutions

Overview: Python

- Note that Python is constantly evolving
- We will using the latest version of Python
- Beware:
  - Python 2 was in use from 2000. Python 3 is in use since 2008.
  - Python follows a yearly release cycle. New versions come out in autumn and are usually supported for 3 to 4 years.

Overview: Jupyter Notebook

- Jupyter has support for over 40 different programming languages and Python is one of them. Python is a requirement for installing the Jupyter Notebook itself.
- 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. It is also used for data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more.

Installing Anaconda

- Anaconda is a free and open source distribution of the Python programming languages for data science and machine learning related applications (large-scale data processing, predictive analytics, scientific computing), that aims to simplify package management and deployment
- Anaconda contains Jupyter.
- Open https://docs.anaconda.com/anaconda/install/
- Python libraries included in Anaconda include NumPy, pandas, etc
- You can install it in Windows / Mac / Linux

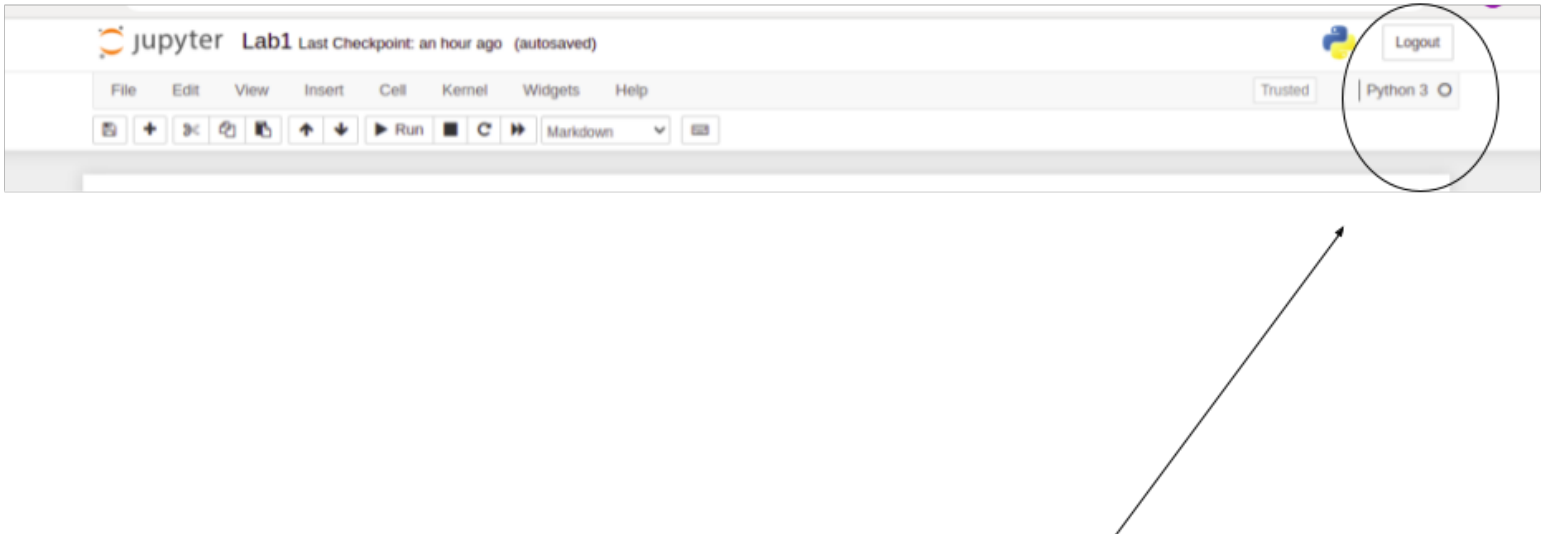
Starting with Jupyter Notebook

- Open **Jupyter Notebook** [type in Windows start menu]
- Once opened, you can see Notebook Dashboard
- Dashboard will show you only to the files and sub-folders contained within Jupyter's start-up directory
- In Linux you can launch Jupyter Notebook by jupyter notebook

Starting with Jupyter Notebook

- Click the “New” drop-down button in the top-right and select “Python 3”
- “New” $\rightarrow$ Python 3

test.ipynb



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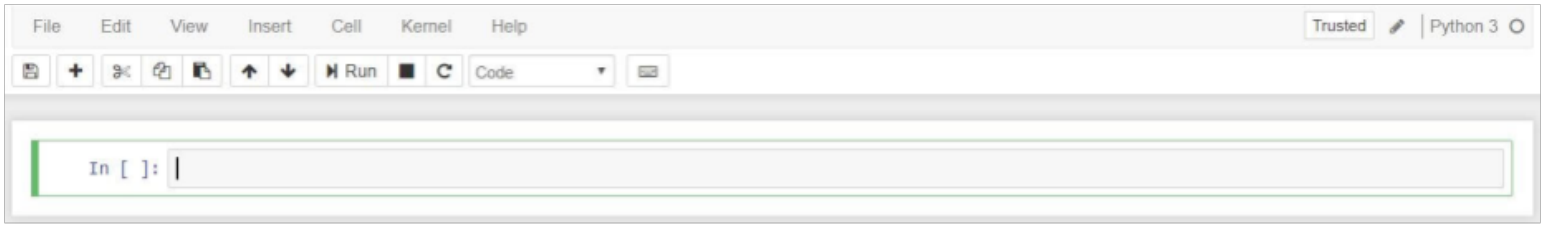
Starting with Jupyter Notebook

- Then Jupyter Notebook will open in new tab
- You will see the new file Untitled.ipynb
- Change the name of the file, say with **test**
- **test.ipynb** file is a text file that describes the contents of your notebook in a format called **JSON**

test.ipynb



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Starting with Jupyter Notebook

- A **kernel** is an engine that executes the code contained in a notebook document (e.g. test.ipynb)
- A **cell** is a container for text (code) to be displayed in the notebook
- Code to be executed by the notebook's kernel
- Type in cell: print ("This is my first code in Python")
- To execute this code; press **Run** button

Starting with Jupyter Notebook

- When you press button **Run**, you run the code in cell, i.e. *print ("This is my first code in Python")*
- Thereafter, program's output is displayed below and the label to its left will have changed from In [ ] to In [1]
- The label number indicates when the cell was executed on the kernel – in your case the cell was executed once
- If you execute the code of that cell again (press **Run** again), the label number will be [2] and so on ...
- You can click **Insert** and select **Insert Cell Below** to create a new code cell
- You can delete a **cell** from **Edit** and **Delete Cell**

Starting with Python

- Python.org `https://www.python.org/`
- Python Tutorials: `https://docs.python.org/3.8/tutorial/index.html`
- Python Tutorials `jupyter.org`
- Jupyter Notebook Documentation: `https://jupyter-notebook.readthedocs.io/en/stable`