CS – Machine Learning

Overview

- Setting up environment for Machine Learning
- Installing Anaconda
- Jupyter Notebook
- Spyter
- Creating Virtual Environments

Setting up environment for Machine Learning

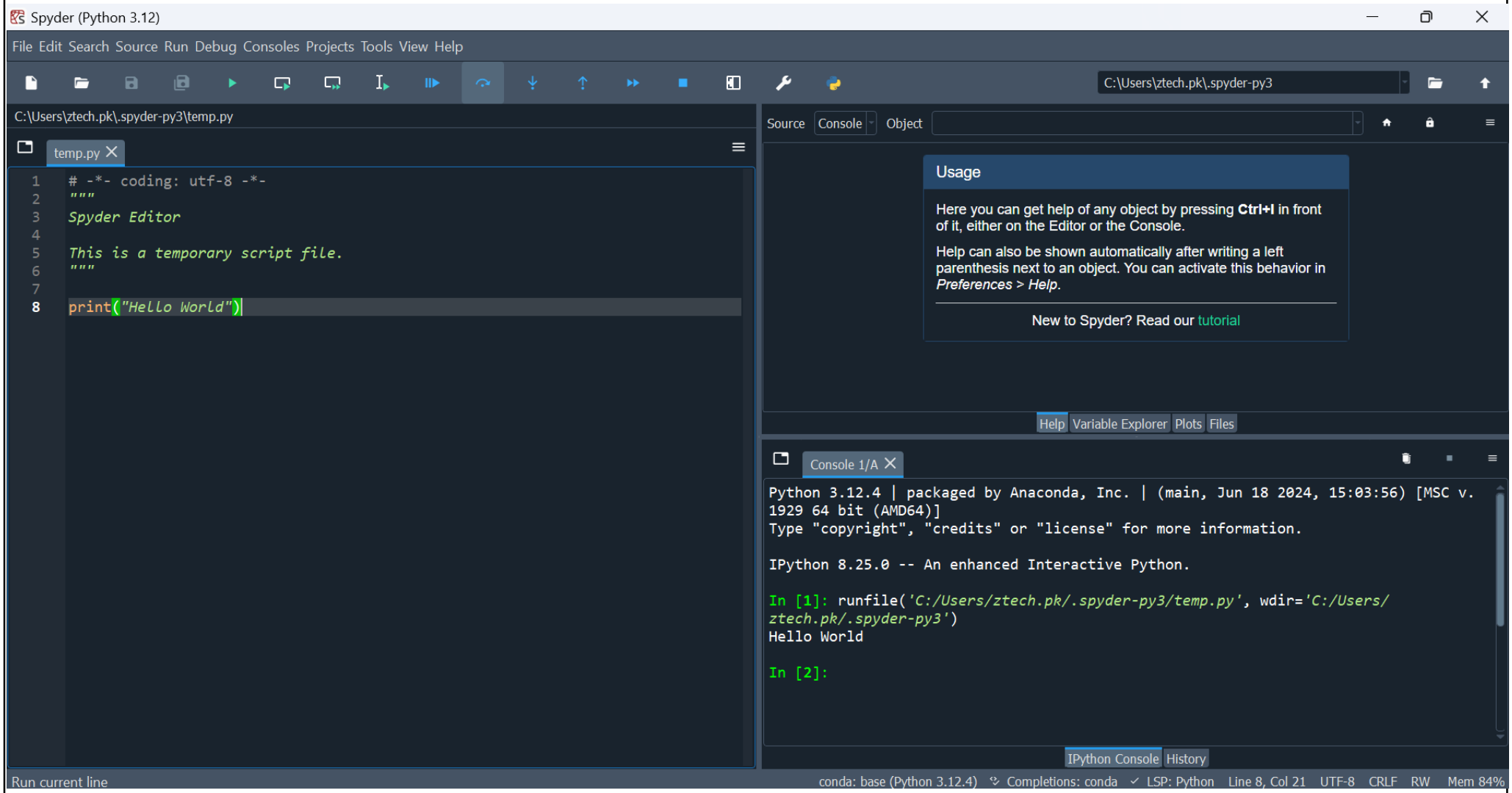
Installing Anaconda

- Tools required for machine learning.
  1. Download anaconda. (https://www.anaconda.com/download)

1. Spyder

- Spyder (Scientific Python Development Environment) is an open-source integrated development environment (IDE) that comes pre-installed with the Anaconda distribution. It is specifically designed for Python and is widely used for scientific computing, data analysis, and machine learning.

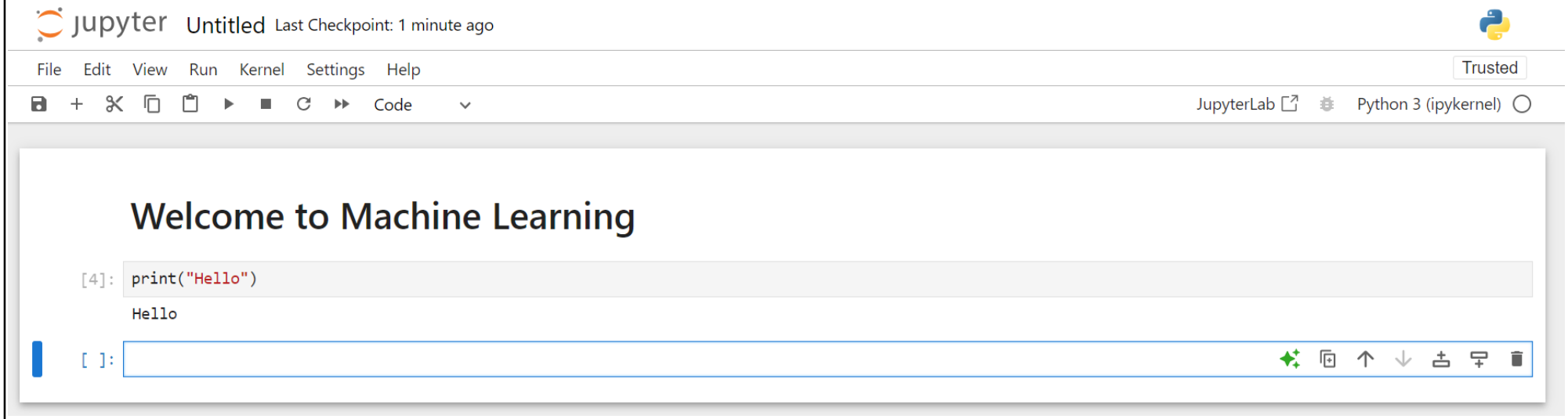
1. Spyder


Spyder (Python 3.12)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\ztech.pk\.spyder-py3
C:\Users\ztech.pk\.spyder-py3\temp.py
temp.py
1 # -*- coding: utf-8 -*-
2 """
3 Spyder Editor
4
5 This is a temporary script file.
6 """
7
8 print("Hello World")
Source Console Object
Usage
Here you can get help of any object by pressing Ctrl+I in front of it, either on the Editor or the Console.
Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in Preferences > Help.
New to Spyder? Read our tutorial
Help Variable Explorer Plots Files
Console 1/A
Python 3.12.4 | packaged by Anaconda, Inc. | (main, Jun 18 2024, 15:03:56) [MSC v. 1929 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 8.25.0 -- An enhanced Interactive Python.
In [1]: runfile('C:/Users/ztech.pk/.spyder-py3/temp.py', wdir='C:/Users/ztech.pk/.spyder-py3')
Hello World
In [2]:
IPython Console History
Run current line
conda: base (Python 3.12.4) Completions: conda LSP: Python Line 8, Col 21 UTF-8 CRLF RW Mem 84%

2. Jupyter

Jupyter Notebook is an open-source web application included in the Anaconda distribution that allows you to create and share documents containing live code, equations, visualizations, and narrative text. It is widely used for data science, machine learning, academic research, and exploratory programming.

2. Jupyter


jupyter Untitled Last Checkpoint: 1 minute ago
File Edit View Run Kernel Settings Help
Trusted
Code
JupyterLab
Python 3 (ipykernel)
Welcome to Machine Learning
[4]: print("Hello")
Hello
[ ]:

3. Google Collab

- Google Colab (Colaboratory) is a free cloud-based platform by Google that allows users to write and execute Python code through their web browser. It's especially popular for data science, machine learning, and deep learning projects.
- Visit the following url:
  - https://colab.google/

Advantages of Google Collab

Free Access to GPUs/TPUs: Colab offers access to powerful hardware like GPUs and TPUs, which can speed up the computation, especially for AI and ML tasks.

Pre-installed Libraries: It comes pre-loaded with several popular Python libraries, such as TensorFlow, PyTorch, NumPy, pandas, and Matplotlib, making it easy to start coding without the need for installation.

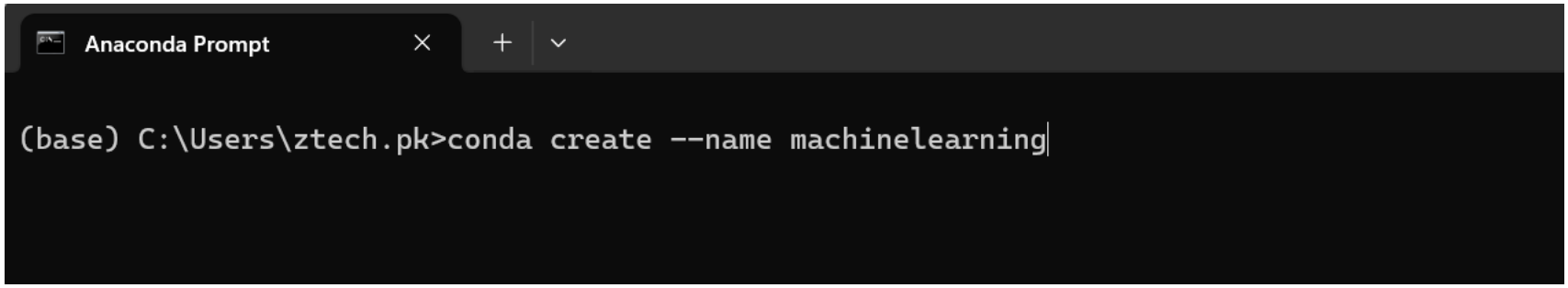
Jupyter Notebook Environment: Google Colab operates like a Jupyter notebook, a popular tool for interactive code development. You can write code, add text, create plots, and display results in an organized, interactive manner.

4. Virtual Environment

A **virtual environment** in Python is an isolated environment that allows you to manage dependencies (libraries, packages, etc.) for a specific project, separate from the system-wide Python installation or other projects. This helps avoid version conflicts and ensures that each project has its own set of libraries and versions.

Creating Virtual Environment

Open anaconda prompt and run the following command.



To activate your environment, run the following command.

- **conda activate machinelearning**

To deactivate your environment, run the following command.

- **conda deactivate**

Now, let's install jupyter notebook in **machinelearning** environment

- **conda install anaconda::jupyter**

After successful installation, type the following command to open jupyter notebook from cmd (anaconda prompt)

- **jupyter notebook**

Now if you want to install a library e.g. numpy, type the following command.

- **conda install numpy**

Creating Virtual Environment

To delete the environment, type the following command.

- conda remove –name machinelearning --all

Thank You