

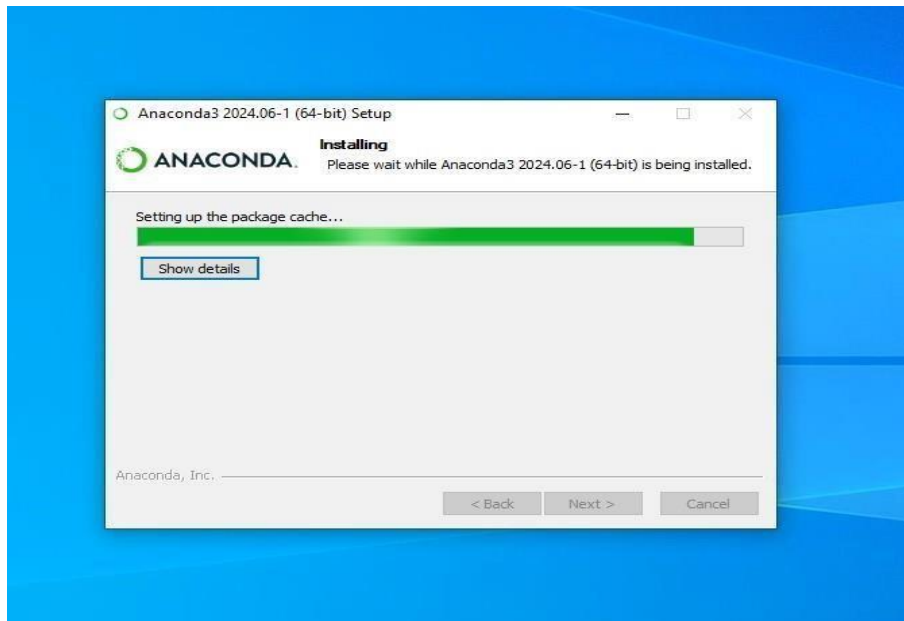
## Experiment No.01

**Title:** Installation of Tensorflow, Keras & many other preinstalled python libraries.

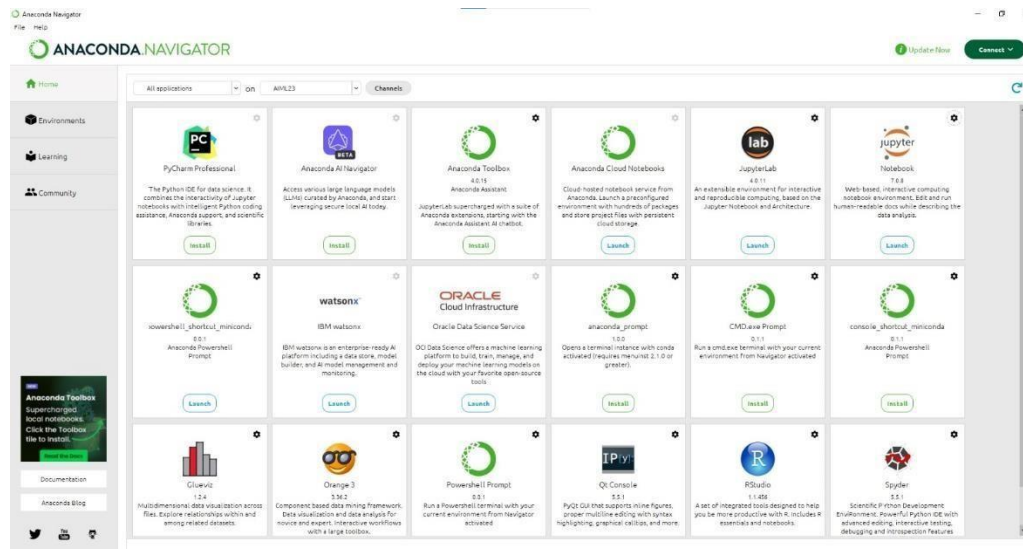
**Aim:** To Install Tensorflow, Keras & other preinstalled python libraries like numpy, pandas.

### Installation of Anaconda Navigator

From the browser, installed Anaconda Navigator, a desktop graphical user interface (GUI) that allows us to launch applications and manage conda packages & environments.

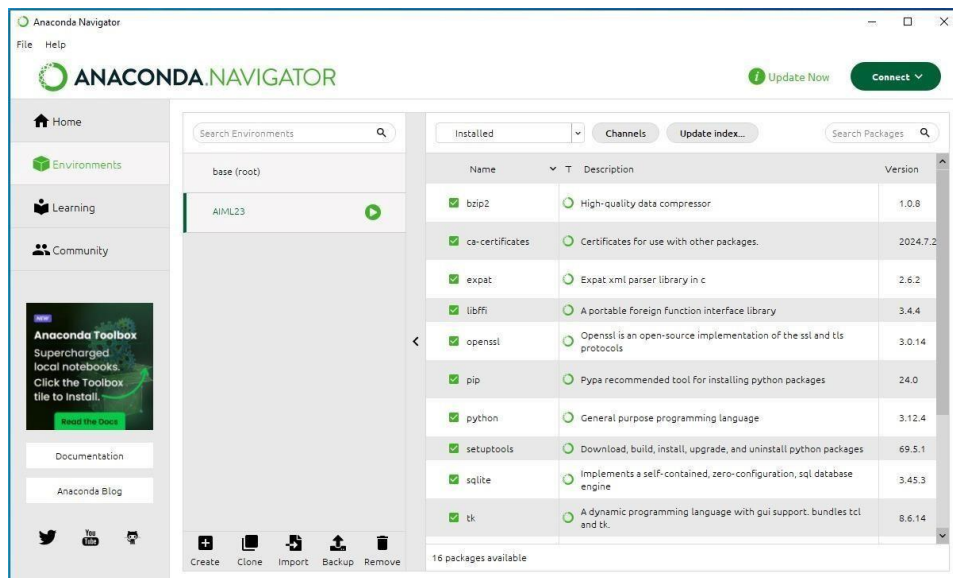


### Interface of Anaconda Navigator



When we launch Jupyter Notebook through Anaconda Navigator, the default environment is “base(root)” is opened.

Now, from “Environments” in the left toggle bar of anaconda navigator, created my own environment named as “AIML23”.

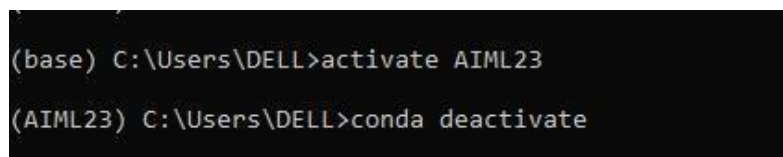


If we have to change our environment, we can change it using the Command Prompt(cmd).

The following commands can be used for this purpose:

From base to required environment: **activate AIML23**

From our environment to base: **conda deactivate**



## Installing Libraries & Packages

**Pandas:** Pandas is a powerful and open-source Python library. The Pandas library is used for data manipulation and analysis. Pandas consist of data structures and functions to perform efficient operations on data.

**Command:** pip install pandas

```
(AIML23) C:\Users\DELL>pip install pandas
Collecting pandas
  Downloading pandas-2.2.2-cp312-cp312-win_amd64.whl.metadata (19 kB)
Requirement already satisfied: numpy>=1.26.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from pandas) (1.26.4)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from pandas) (2024.1)
Collecting tzdata>=2022.7 (from pandas)
  Downloading tzdata-2024.1-py2.py3-none-any.whl.metadata (1.4 kB)
Requirement already satisfied: six>=1.5 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Downloading pandas-2.2.2-cp312-cp312-win_amd64.whl (11.5 MB)
----- 11.5/11.5 MB 43.7 MB/s eta 0:00:00
Downloading tzdata-2024.1-py2.py3-none-any.whl (345 kB)
----- 345.4/345.4 kB 20.9 MB/s eta 0:00:00
Installing collected packages: tzdata, pandas
Successfully installed pandas-2.2.2 tzdata-2024.1
```

**Tensorflow:** It is a free & open-source library for machine learning & artificial intelligence. It can be used across a range of tasks but has a particular focus on training of deep neural networks.

**Command:** pip install tensorflow

```
(AIML23) C:\Users\DELL>pip install tensorflow
Collecting tensorflow
  Using cached tensorflow-2.17.0-cp312-cp312-win_amd64.whl.metadata (3.2 kB)
Collecting tensorflow-intel==2.17.0 (from tensorflow)
  Using cached tensorflow_intel-2.17.0-cp312-cp312-win_amd64.whl.metadata (5.0 kB)
Collecting absl-py==1.0.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached absl_py-1.0.0-py3-none-any.whl.metadata (2.2 kB)
Collecting astunparse==1.0.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached astunparse-1.0.0-py2.py3-none-any.whl.metadata (4.4 kB)
Requirement already satisfied: flatbuffers==24.3.25 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (24.3.25)
Collecting gast==0.5.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached gast-0.5.0-py3-none-any.whl.metadata (1.3 kB)
Collecting google-pasta==0.1.1 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached google_pasta-0.1.1-py3-none-any.whl.metadata (314 bytes)
Collecting h5py==3.10.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached h5py-3.10.0-cp312-cp312-win_amd64.whl.metadata (2.5 kB)
Requirement already satisfied: libclang==13.0.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (18.1.1)
Collecting ml-dtypes==0.0.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached ml_dtypes-0.0.0-cp312-cp312-win_amd64.whl.metadata (20 kB)
Collecting opt-einsum==2.3.2 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached opt_einsum-2.3.2-py3-none-any.whl.metadata (6.1 kB)
Requirement already satisfied: packaging in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (24.1)
Requirement already satisfied: protobuf==4.21.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (4.21.0)
Requirement already satisfied: requests==2.21.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (2.21.0)
Requirement already satisfied: setuptools in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (69.5.1)
Requirement already satisfied: six==1.17.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.16.0)
Requirement already satisfied: termcolor==1.1.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (2.4.0)
Requirement already satisfied: typing_extensions==4.0.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (4.11.0)
Requirement already satisfied: wrapt==1.11.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.16.0)
Collecting grpcio==1.65.1 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached grpcio-1.65.1-cp312-cp312-win_amd64.whl.metadata (3.4 kB)
Collecting tensorflow==2.17.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached tensorflow-2.17.0-py3-none-any.whl.metadata (3.6 kB)
Requirement already satisfied: numpy>=1.26.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.26.4)
Requirement already satisfied: tensorflow-intel==2.17.0 (from tensorflow-intel==2.17.0->tensorflow) (0.0.0)
Collecting keras==3.2.0 (from tensorflow-intel==2.17.0->tensorflow)
  Using cached keras-3.2.0-py3-none-any.whl.metadata (5.8 kB)
Requirement already satisfied: numpy==1.26.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.26.4)
Collecting optree (from keras==3.2.0->tensorflow-intel==2.17.0->tensorflow) (0.0.0)
  Using cached optree-0.12.1-py3-none-any.whl.metadata (18 kB)
Collecting optree (from keras==3.2.0->tensorflow-intel==2.17.0->tensorflow) (0.0.0)
  Using cached optree-0.12.1-py3-none-any.whl.metadata (18 kB)
Requirement already satisfied: charset-normalizer==2.2 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from requests==2.21.0->tensorflow-intel==2.17.0->tensorflow) (2.0.4)
Requirement already satisfied: idna==2.10 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from requests==2.21.0->tensorflow-intel==2.17.0->tensorflow) (2.10)
Requirement already satisfied: urllib3==2.1.1 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from requests==2.21.0->tensorflow-intel==2.17.0->tensorflow) (2.1.1)
Requirement already satisfied: certifi==2024.7.4 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from requests==2.21.0->tensorflow-intel==2.17.0->tensorflow) (2024.7.4)
Collecting markdown==2.0 (from tensorflow==2.17.0)
  Using cached markdown-2.0-py3-none-any.whl.metadata (7.0 kB)
Requirement already satisfied: tensorflow-data-server==0.0.0 (from tensorflow==2.17.0)
  Using cached tensorflow_data_server-0.0.0-py3-none-any.whl (7.0 kB)
Collecting werkzeug==1.0.1 (from tensorflow==2.17.0)
  Using cached werkzeug-1.0.1-py3-none-any.whl.metadata (3.7 kB)
Requirement already satisfied: MarkupSafe==2.1.1 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from werkzeug==1.0.1->tensorflow==2.17.0) (2.1.1)
Collecting markdown-it==2.2.0 (from rich-markdown==2.1.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from rich->keras) (3.0.0)
  Using cached markdown_it-2.2.0-py3-none-any.whl.metadata (2.0 kB)
Requirement already satisfied: pygments==2.13.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from rich-markdown==2.1.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from rich->keras) (2.15.1)
Requirement already satisfied: tensorflow==2.17.0-cp312-cp312-win_amd64.whl (2.0 kB)
  Using cached tensorflow-2.17.0-cp312-cp312-win_amd64.whl (385.2 MB)
  Using cached absl_py-1.0.0-py3-none-any.whl (133 kB)
  Using cached astunparse-1.0.3-py2.py3-none-any.whl (12 kB)
  Using cached gast-0.5.0-py3-none-any.whl (21 kB)
  Using cached google_pasta-0.2.0-py3-none-any.whl (57 kB)
  Using cached grpcio-1.65.1-cp312-cp312-win_amd64.whl (4.1 MB)
```

**Keras:** Keras is an open-source library that provides a Python interface for ANN's.

**Command:** pip install keras

```
(AIML23) C:\Users\DELL>pip install keras
Requirement already satisfied: keras in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (3.4.1)
Requirement already satisfied: absl-py in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (2.1.0)
Requirement already satisfied: numpy in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (1.26.4)
Requirement already satisfied: rich in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (13.7.1)
Requirement already satisfied: mmcv in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (0.0.0)
Requirement already satisfied: h5py in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (3.11.0)
Requirement already satisfied: optree in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (0.12.1)
Requirement already satisfied: ml-dtypes in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (0.4.0)
Requirement already satisfied: packaging in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from keras) (24.1)
Requirement already satisfied: typing_extensions==4.5.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from optree->keras) (4.11.0)
Requirement already satisfied: markdown-it==2.2.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from rich->keras) (3.0.0)
Requirement already satisfied: pygments==2.0.0 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from rich->keras) (2.15.1)
Requirement already satisfied: mdurl==0.1 in c:\users\dell\anaconda3\envs\aiml23\lib\site-packages (from markdown-it==2.2.0->rich->keras) (0.1.2)
```

**NumPy:** NumPy stands for Numerical Python. It is a Python library used for working with arrays.

**Command:** pip install numpy

```
C:\Users\solap>pip install numpy
Requirement already satisfied: numpy in c:\users\solap\appdata\local\programs\python\python310\lib\site-packages (1.23.5)

[notice] A new release of pip is available: 24.0 -> 24.2
[notice] To update, run: python.exe -m pip install --upgrade pip
```

### **Conclusion:**

I have installed Anaconda Navigator, learned to create my own environment, installed the libraries like numpy, pandas.