

```
In [1]: #Name: Ishwari Patil
        #Roll No: 52
```

```
In [15]: """
Study of deep learning packages: Tensorflow, Keras, Theano and pyTorch.
Document the distinct features and functionality of the packages
"""
```

```
Out[15]: '\nStudy of deep learning packages: Tensorflow, Keras, Theano and pyTorch.\nD
ocument the distinct features and functionality of the packages\n'
```

```
In [16]: import tensorflow as tf
print(tf.__version__)
print(tf.reduce_sum(tf.random.normal([1000, 1000])))

2.13.0
tf.Tensor(-1304.8826, shape=(), dtype=float32)
```

```
In [17]: from tensorflow import keras
import tensorflow as tf
from keras import datasets
import pandas as pd
# LOAD MNIST DATA
from keras.datasets import mnist
(train_images, train_labels), (test_images, test_labels) = mnist.load_data()
#Check dataset Loaded
train_images.shape, test_images.shape
```

```
Out[17]: ((60000, 28, 28), (10000, 28, 28))
```

```
In [18]: pip install theano
```

```
Requirement already satisfied: theano in c:\users\rasha\appdata\local\program
s\python\python310\lib\site-packages (1.0.5)Note: you may need to restart the
kernel to use updated packages.
```

```
Requirement already satisfied: numpy>=1.9.1 in c:\users\rasha\appdata\local\p
rograms\python\python310\lib\site-packages (from theano) (1.24.3)
Requirement already satisfied: scipy>=0.14 in c:\users\rasha\appdata\local\pr
ograms\python\python310\lib\site-packages (from theano) (1.10.1)
Requirement already satisfied: six>=1.9.0 in c:\users\rasha\appdata\local\pro
grams\python\python310\lib\site-packages (from theano) (1.16.0)
```

```
[notice] A new release of pip is available: 23.1.2 -> 23.2.1
[notice] To update, run: python.exe -m pip install --upgrade pip
```

```
In [1]: import tensorflow as tf
x = tf.constant(5.0, dtype=tf.float64)
y = tf.constant(7.0, dtype=tf.float64)
z = x + y
result = z.numpy()
print(result)
```

12.0

```
In [2]: pip install torch
```

```
Collecting torch
  Using cached torch-2.0.1-cp310-cp310-win_amd64.whl (172.3 MB)
Collecting filelock (from torch)
  Using cached filelock-3.12.2-py3-none-any.whl (10 kB)
Requirement already satisfied: typing-extensions in c:\users\rasha\appdata\local\programs\python\python310\lib\site-packages (from torch) (4.5.0)
Requirement already satisfied: sympy in c:\users\rasha\appdata\local\programs\python\python310\lib\site-packages (from torch) (1.12)
Collecting networkx (from torch)
  Using cached networkx-3.1-py3-none-any.whl (2.1 MB)
Requirement already satisfied: jinja2 in c:\users\rasha\appdata\local\programs\python\python310\lib\site-packages (from torch) (3.1.2)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\rasha\appdata\local\programs\python\python310\lib\site-packages (from jinja2->torch) (2.1.2)
Requirement already satisfied: mpmath>=0.19 in c:\users\rasha\appdata\local\programs\python\python310\lib\site-packages (from sympy->torch) (1.3.0)
Installing collected packages: networkx, filelock, torch
Successfully installed filelock-3.12.2 networkx-3.1 torch-2.0.1
Note: you may need to restart the kernel to use updated packages.
```

```
[notice] A new release of pip is available: 23.1.2 -> 23.2.1
[notice] To update, run: python.exe -m pip install --upgrade pip
```

```
In [3]: import torch
x = torch.tensor(5.0, dtype=torch.float64)
y = torch.tensor(7.0, dtype=torch.float64)
z = x + y
result = z.item()
print(result)
```

12.0

```
In [ ]:
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