Title: **Assignment 1: Study of Deep learning Packages: Tensorflow, Keras, Theano and PyTorch. Document the distinct features and functionality of the packages.**

```python
import numpy as np
```

1. Tensorflow

```
!pip install tensorflow
```

```
Collecting tensorflow
  Downloading tensorflow-2.13.1-cp38-cp38-win_amd64.whl (1.9 kB)
  Downloading tensorflow-2.13.0-cp38-cp38-win_amd64.whl (1.9 kB)
Collecting tensorflow-intel==2.13.0
  Downloading tensorflow_intel-2.13.0-cp38-cp38-win_amd64.whl (276.5 MB)
Collecting astunparse>=1.6.0
  Downloading astunparse-1.6.3-py2.py3-none-any.whl (12 kB)
Requirement already satisfied: h5py>=2.9.0 in c:\users\mange\anaconda3\lib\site-packages (from tensorflow-intel==2.13.0->tensorflow) (2.10.0)
Collecting numpy<=1.24.3,>=1.22
  Downloading numpy-1.24.3-cp38-cp38-win_amd64.whl (14.9 MB)
Collecting tensorflow-io-gcs-filesystem>=0.23.1
  Downloading tensorflow_io_gcs_filesystem-0.31.0-cp38-cp38-win_amd64.whl (1.5 MB)
Collecting termcolor>=1.1.0
  Downloading termcolor-2.4.0-py3-none-any.whl (7.7 kB)
Requirement already satisfied: wrapt>=1.11.0 in c:\users\mange\anaconda3\lib\site-packages (from tensorflow-intel==2.13.0->tensorflow) (1.12.1)
Collecting libclang>=13.0.0
  Downloading libclang-18.1.1-py2.py3-none-win_amd64.whl (26.4 MB)
Requirement already satisfied: setuptools in c:\users\mange\anaconda3\lib\site-packages (from tensorflow-intel==2.13.0->tensorflow) (52.0.0.post2021012
```

2. Keras

```python
from keras import datasets
# Load MNIST datasets from keras
(train_images, train_labels), (test_images, test_labels) = datasets.mnist.load_data()
```

```python
train_images.shape
```

```
(60000, 28, 28)
```

```python
test_images.shape
```

```
(10000, 28, 28)
```

3. Theano

```
!pip install Theano
```

```
Requirement already satisfied: Theano in c:\users\prave\appdata\local\programs\python\python310\lib\site-packages (1.0.5)
Requirement already satisfied: numpy>=1.9.1 in c:\users\prave\appdata\local\programs\python\python310\lib\site-packages (from Theano) (1.25.2)
Requirement already satisfied: scipy>=0.14 in c:\users\prave\appdata\local\programs\python\python310\lib\site-packages (from Theano) (1.9.3)
Requirement already satisfied: six>=1.9.0 in c:\users\prave\appdata\local\programs\python\python310\lib\site-packages (from Theano) (1.16.0)
```

4. PyTorch

```
!pip3 install torch torchvision torchaudio --extra-index-url https://download.pytorch.org/whl/cu115
```

```
Looking in indexes: https://pypi.org/simple, https://download.pytorch.org/whl/cu115
Requirement already satisfied: torch in c:\users\prave\appdata\local\programs\python\python310\lib\site-packages (2.1.0)
Requirement already satisfied: torchvision in c:\users\prave\appdata\local\programs\python\python310\lib\site-packages (0.16.0)
Collecting torchaudio
  Obtaining dependency information for torchaudio from https://files.pythonhosted.org/packages/6b/ba/0e26883fd90f280452bed7edc7906ef9253255f395702751f65
fa02afb5c/torchaudio-2.1.0-cp310-cp310-win_amd64.whl.metadata
```

```python
import torch
import torch.nn as nn
```

```python
print(torch.__version__)
```

```
2.1.0+cpu
```

```python
torch.cuda.is_available()
```

```
False
```