## **#Understanding the Data (Sprint-1)**

## TEAM ID:PNT2022TMID23665

```
#Import all Necessary Libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from tensorflow.keras.datasets import mnist
(x train, y train), (x test, y test) = mnist.load data()
x train
array([[[0, 0, 0, ..., 0, 0],
         [0, 0, 0, \ldots, 0, 0, 0]],
        [[0, 0, 0, \ldots, 0, 0, 0],
         [0, 0, 0, \ldots, 0, 0, 0]],
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          [0, 0, 0, \ldots, 0, 0, 0],
          [0, 0, 0, \ldots, 0, 0, 0],
          [0, 0, 0, ..., 0, 0]]], dtype=uint8)
x train.shape
(60000, 28, 28)
one img = x train[0]
one img.shape
(28, 28)
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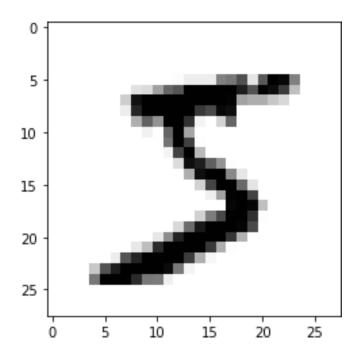
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#plot the single image
plt.imshow(one\_img,cmap='binary')

<matplotlib.image.AxesImage at 0x7f36882992d0>



y\_train
array([5, 0, 4, ..., 5, 6, 8], dtype=uint8)
#categories the data
from tensorflow.keras.utils import to\_categorical
y\_train.shape
(60000,)

```
y example = to categorical(y train)
print(y_example, y_example.shape)
[[0. 0. 0. ... 0. 0. 0.]
 [1. 0. 0. ... 0. 0. 0.]
 [0. 0. 0. ... 0. 0. 0.]
 [0. 0. 0. ... 0. 0. 0.]
 [0. 0. 0. ... 0. 0. 0.]
 [0. 0. 0. 0. ... 0. 1. 0.]] (60000, 10)
y_example[0]
array([0., 0., 0., 0., 0., 1., 0., 0., 0.], dtype=float32)
y cat test = to categorical(y test, num classes=10)
y cat train = to categorical(y train,10)
one img.max(), one img.min()
(255, 0)
x train = x train/255
x_{test} = x_{test/255}
scaled img = x train[0]
scaled_img
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```

## #reshape the scaled data

```
x_train = x_train.reshape(60000,28,28,1)
x_test = x_test.reshape(10000,28,28,1)
```

x train.shape,x test.shape

((60000, 28, 28, 1), (10000, 28, 28, 1))