#Understanding the Data (Sprint-1)

TEAM ID:PNT2022TMID43750

```
#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, 0, \ldots, 0, 0, 0]],
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          [0, 0, 0, ..., 0, 0, 0]]], dtype=uint8)
x train.shape
(60000, 28, 28)
one_img = x_train[0]
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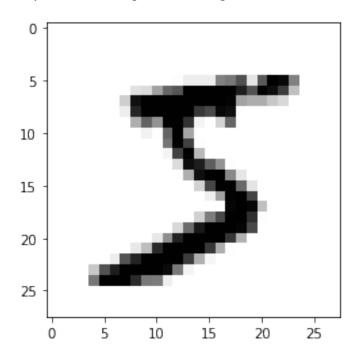
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#plot the single image

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,)

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y example = to categorical(y train)
print(y_example,y_example.shape)
[[0. \ 0. \ 0. \ \dots \ 0. \ 0. \ 0.]
 [1. 0. 0. ... 0. 0. 0.]
 [0. \ 0. \ 0. \ \dots \ 0. \ 0. \ 0.]
 [0. \ 0. \ 0. \ \dots \ 0. \ 0. \ 0.]
 [0. \ 0. \ 0. \ \dots \ 0. \ 0. \ 0.]
 [0. \ 0. \ 0. \ \dots \ 0. \ 1. \ 0.]] (60000, 10)
y_example[0]
array([0., 0., 0., 0., 0., 1., 0., 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]
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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))