**TEAM ID:PNT2022TMID43906**

**Importing The Required Libraries**

import pandas as pd

import numpy as np

import seaborn as sns

from keras.datasets import mnist

from keras.layers import Dense, Flatten, MaxPooling2D, Dropout

from keras.layers.convolutional import Conv2D

from keras.models import Sequential

from tensorflow.keras.utils import to\_categorical

import cv2

**Loading The Data**

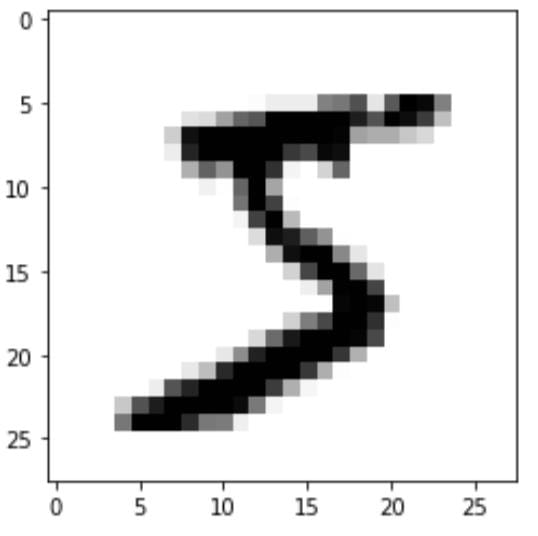
(X\_train, y\_train), (X\_test, y\_test) = mnist.load\_data()

**Analyzing The Data**

plt.imshow(X\_train[0], cmap="binary")

plt.show()

print (y\_train[0])



**Reshaping The Data**

print("---Before reshaping the Data---")

print("Shape of X\_train: {}".format(X\_train.shape))

print("Shape of y\_train: {}".format(y\_train.shape))

print("Shape of X\_test: {}".format(X\_test.shape))

print("Shape of y\_test: {}".format(y\_test.shape))

print("-----------------------------------------")

print()

print("---After reshaping the Data---")

X\_train = X\_train.reshape(60000, 28, 28, 1)

X\_test = X\_test.reshape(10000, 28, 28, 1)

print("Shape of X\_train: {}".format(X\_train.shape))

print("Shape of y\_train: {}".format(y\_train.shape))

print("Shape of X\_test: {}".format(X\_test.shape))

print("Shape of y\_test: {}".format(y\_test.shape))

print("-----------------------------------------")

---Before reshaping the Data---

Shape of X\_train: (60000, 28, 28, 1)

Shape of y\_train: (60000,)

Shape of X\_test: (10000, 28, 28, 1)

Shape of y\_test: (10000,)

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---After reshaping the Data---

Shape of X\_train: (60000, 28, 28, 1)

Shape of y\_train: (60000,)

Shape of X\_test: (10000, 28, 28, 1)

Shape of y\_test: (10000,)

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**Applying One Hot Encoding**

y\_train = to\_categorical(y\_train)

y\_test = to\_categorical(y\_test)

print("Shape of y\_train: {}".format(y\_train.shape))

print("Shape of y\_train: {}".format(y\_test.shape))

Shape of y\_train: (60000, 10)

Shape of y\_train: (10000, 10)