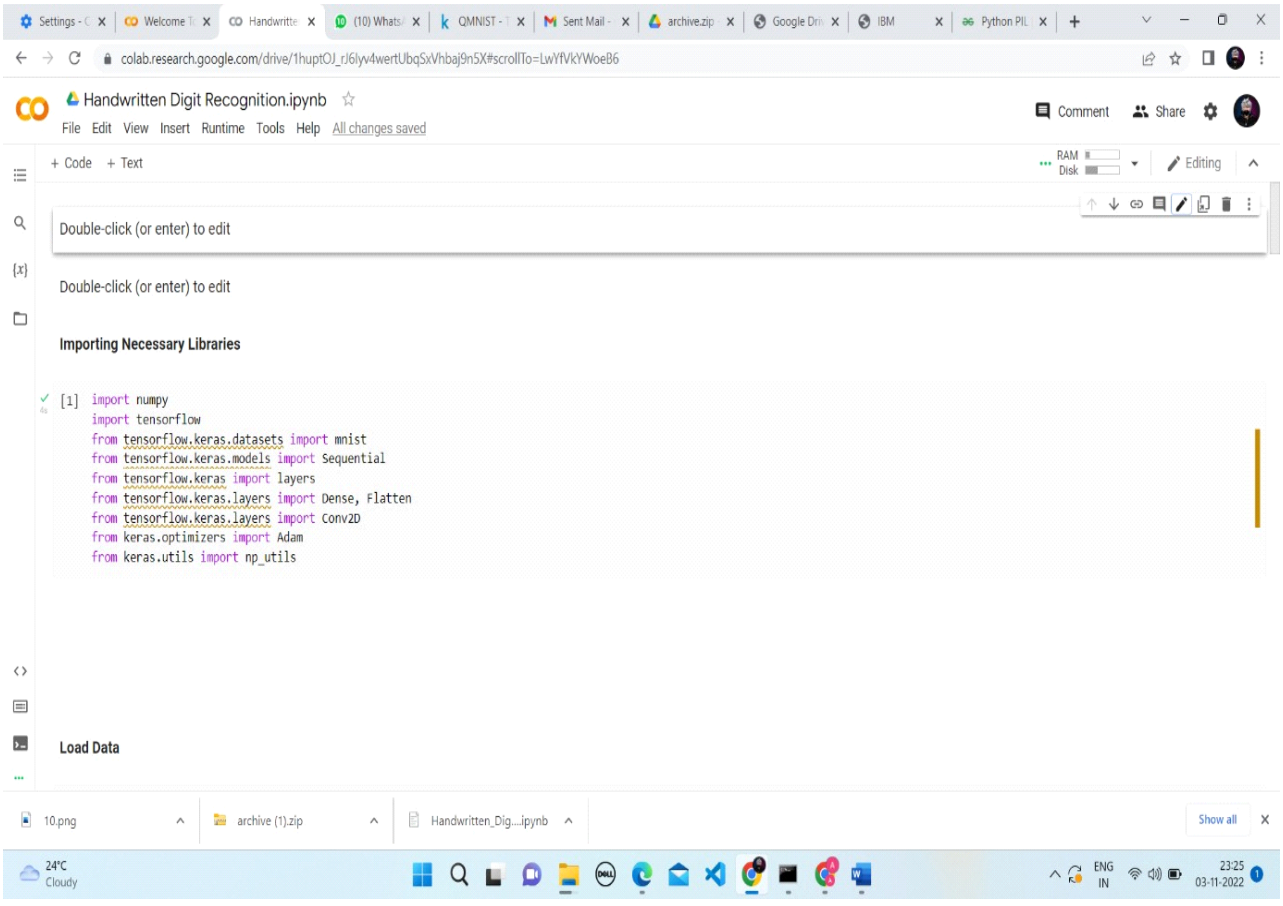
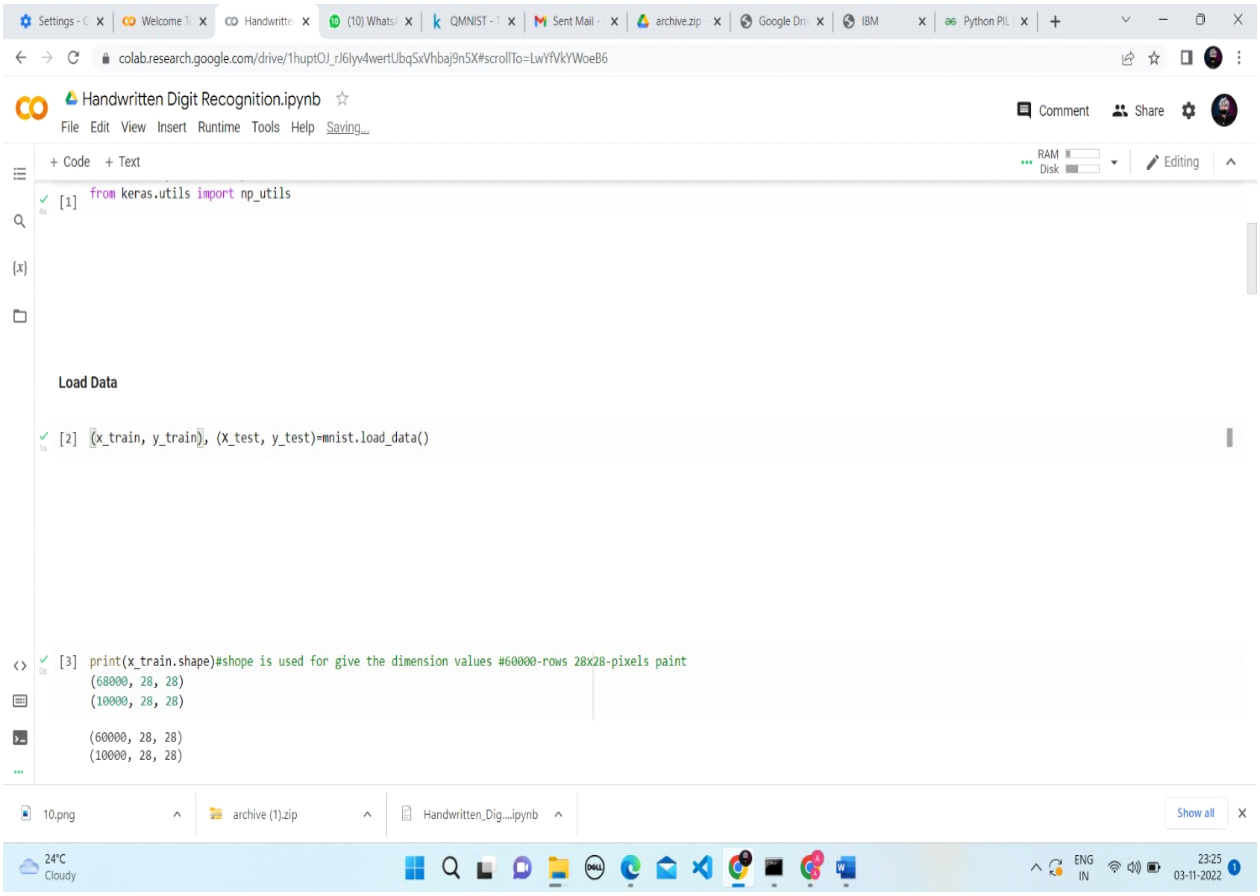
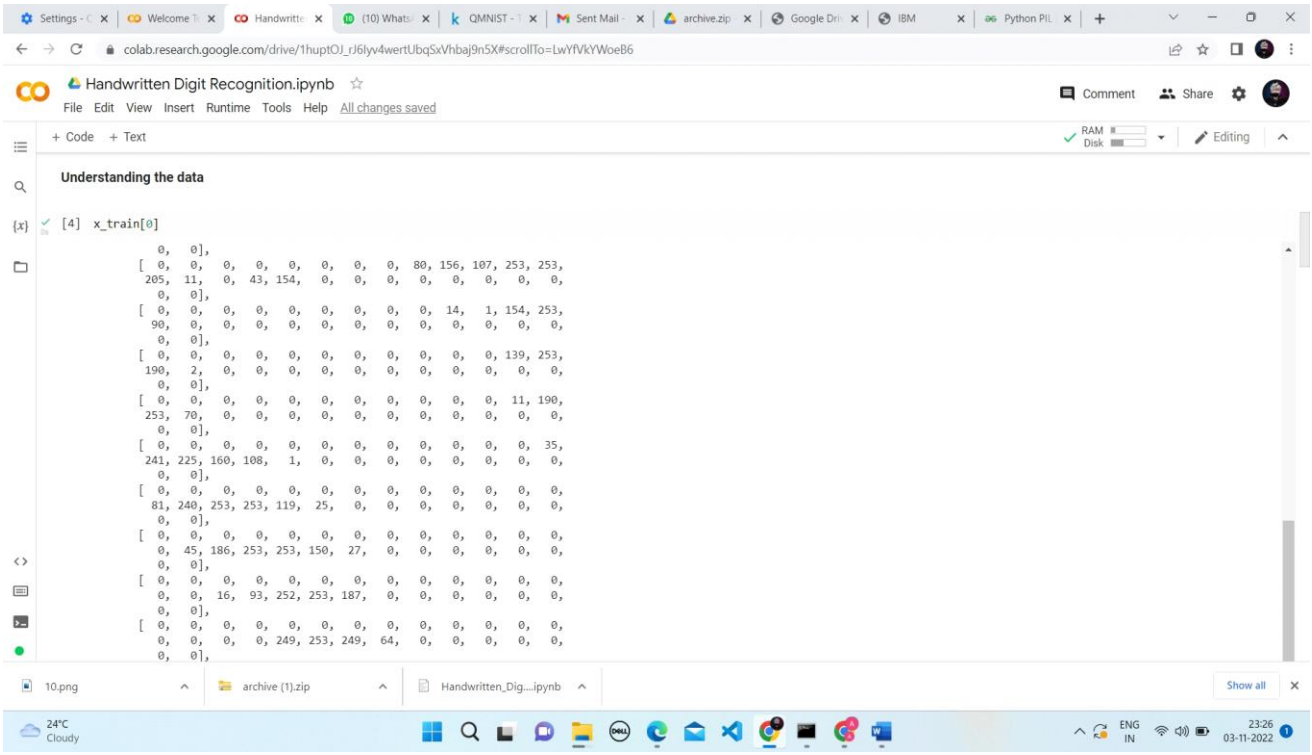
Project
Development
PhaseSprint-1

Date	3 November 2022
Team ID	PNT2022TMID39478
Project Name	A Novel Method for Handwritten Digit Recognition System



Dataset Link:
https://drive.google.com/file/d/1rH45JOMn2Gqme4ymXGQD8qtpFEgT2LL2/view?usp=share_link




Handwritten Digit Recognition.ipynb
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Understanding the data
[4] x_train[0]
0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 80, 156, 107, 253, 253,
205, 11, 0, 43, 154, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 14, 1, 154, 253,
90, 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, 139, 253,
190, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 11, 190,
253, 70, 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, 35,
241, 225, 160, 108, 1, 0, 0, 0, 0, 0, 0, 0,
0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
81, 240, 253, 253, 119, 25, 0, 0, 0, 0, 0, 0,
0, 0],
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0, 45, 186, 253, 253, 150, 27, 0, 0, 0, 0, 0,
0, 0],
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0, 0, 16, 93, 252, 253, 187, 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, 249, 253, 249, 64, 0, 0, 0, 0, 0,
0, 0],
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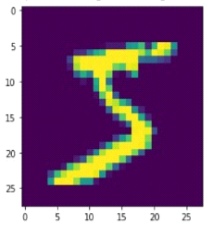
```
[4]          0,   0,   0,   0,   0,   0,   0,   0,   0,   0,   0,   0,
             0,   0],
           [ 0,   0,   0,   0,   0,   0,   0,   0,   0,   0,   0,   0,
             0,   0,   0,   0,   0,   0,   0,   0,   0,   0,   0,   0,
             0,   0]], dtype=uint8)
```

```
[5] y_train[0]
```

```
5
```

```
[6] import matplotlib.pyplot as plt #used for data visualization
    plt.imshow(x_train[0])  #ploting the index=0 image
```

```
<matplotlib.image.AxesImage at 0x7fc68af2c950>
```



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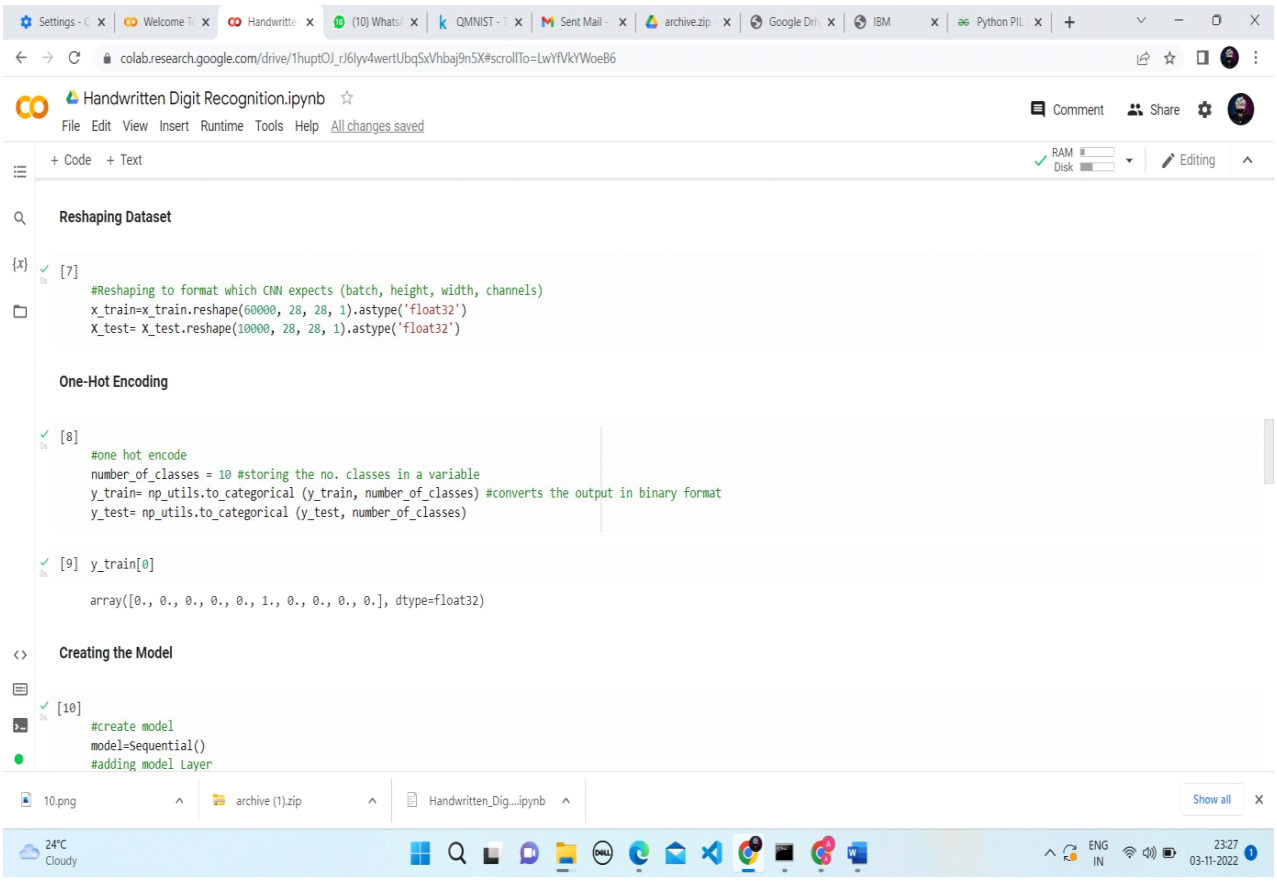
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Editing
Reshaping Dataset
[7]
#Reshaping to format which CNN expects (batch, height, width, channels)
x_train=x_train.reshape(60000, 28, 28, 1).astype('float32')
X_test= X_test.reshape(10000, 28, 28, 1).astype('float32')
One-Hot Encoding
[8]
#one hot encode
number_of_classes = 10 #storing the no. classes in a variable
y_train= np_utils.to_categorical (y_train, number_of_classes) #converts the output in binary format
y_test= np_utils.to_categorical (y_test, number_of_classes)
[9] y_train[0]
array([0., 0., 0., 0., 0., 1., 0., 0., 0., 0.], dtype=float32)
Creating the Model
[10]
#create model
model=Sequential()
#adding model Layer
10.png
archive (1).zip
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