| Team ID | PNT2022TMID26315 |
|---------|------------------|
| Project Name | A Novel Method for Handwritten Digit Recognition System |

## Test with Saved model:

```python
from tensorflow.keras.models import load_model
model=load_model("model.h5")
```

```python
model.summary()
```

Model: "sequential"

| Layer (type) | Output Shape | Param # |
|--------------|--------------|---------|
| conv2d (Conv2D) | (None, 26, 26, 64) | 640 |
| conv2d_1 (Conv2D) | (None, 24, 24, 32) | 18464 |
| flatten (Flatten) | (None, 18432) | 0 |
| dense (Dense) | (None, 10) | 184330 |

Total params: 203,434
Trainable params: 203,434
Non-trainable params: 0

```python
example = X_train[1]
prediction = model.predict(example.reshape(1, 28, 28, 1))
## First output
print ("Prediction (Softmax) from the neural network:\n\n {}".format(prediction))
## Second output
hard_maxed_prediction = np.zeros(prediction.shape)
hard_maxed_prediction[0][np.argmax(prediction)] = 1
print ("\n\nHard-maxed form of the prediction: \n\n {}".format(hard_maxed_prediction))
## Third output
print ("\n\n---------- Prediction ---------- \n\n")
plt.imshow(example.reshape(28, 28), cmap="gray")
plt.show()
print("\n\nFinal Output: {}".format(np.argmax(prediction)))
```
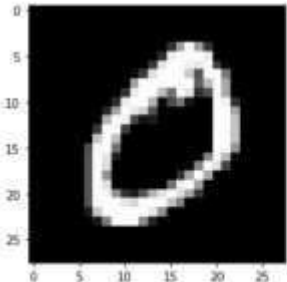
Prediction (Softmax) from the neural network:

```
[[1.0000000e+00 3.5041303e-34 3.1392596e-20 1.9669141e-34 0.0000000e+00
  1.2160965e-34 2.6726674e-17 7.1123406e-35 3.0426787e-25 8.0960580e-30]]
```

Hard-maxed form of the prediction:

```
[[1. 0. 0. 0. 0. 0. 0. 0. 0. 0.]]
```

---------- Prediction ----------



Final Output: 0