```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from google.colab import drive
from PIL import Image
```

creating a pandas dataframe

```
df=pd.read_csv('mnist_train.csv')
```

Extracting 2nd row from mnist.csv and convert to image

```
arr=df.iloc[2,1:]
np_arr=np.array(arr.values)
arr2d=np_arr.reshape((28,28)).astype(np.uint8)
img2d=Image.fromarray(arr2d)
print('Shape =>',arr2d.shape)
```

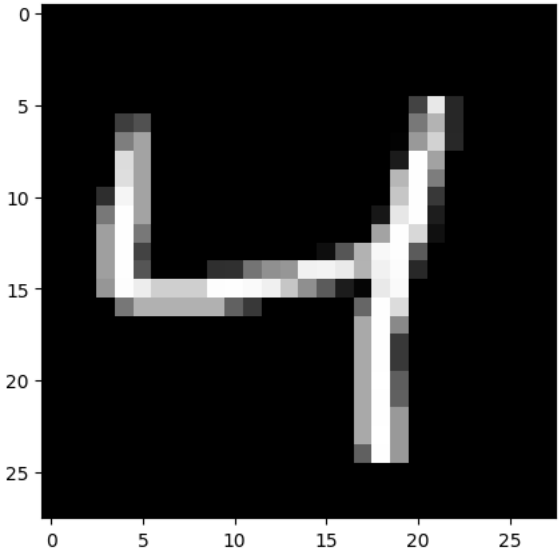
```
Shape => (28, 28)
```

```
img2d.show()
```

Plotting image in matplot

```
fig, ax = plt.subplots(figsize=(5,5))
ax.imshow(img2d, cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x7ff6888fe710>
```



Flipping image horizontally and vertically using numpy flip ndarray function

```
arr_flip_h=np.flip(img2d,axis=1)
arr_flip_v=np.flip(img2d,axis=0)
img_h=Image.fromarray(arr_flip_h)
img_v=Image.fromarray(arr_flip_v)
fig,ax=plt.subplots(2,1,figsize=(10,10))

ax[0].imshow(img_h, cmap='gray')
ax[1].imshow(img_v, cmap='gray')
# plt.imshow(img_h, cmap='gray')
# plt.imshow(img_v, cmap='gray')
```

Alt+A

```
<matplotlib.image.AxesImage at 0x7ff68952f430>
```