```
import tensorflow as tf
from tensorflow import keras
from matplotlib import pyplot as plt
%matplotlib inline
import numpy as np
import pandas as pd
```

```
(X_train, y_train), (X_test, y_test) = keras.datasets.mnist.load_data()
```

```
len(X_train)
```

```
60000
```

```
len(X_test)
```

```
10000
```

```
X_train[0].shape
```

```
(28, 28)
```

each element in the array is an 28x28 pixel image

```
X_train[0]
```

```
array([[  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],
       [
```