

```
In [120]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
In [121]:
```

```
In [122]: dftrain=pd.read_csv(r"C:\USERS\user\Downloads\C9_Data - C9_Data.csv")
```

```
Out[122]:
```

	row_id	user_id	timestamp	gate_id
0	0	18	2022-07-29 09:08:54	7
1	1	18	2022-07-29 09:09:54	9
2	2	18	2022-07-29 09:09:54	9
3	3	18	2022-07-29 09:10:06	5
4	4	18	2022-07-29 09:10:08	5
...
37513	37513	6	2022-12-31 20:38:56	11
37514	37514	6	2022-12-31 20:39:22	6
37515	37515	6	2022-12-31 20:39:23	6
37516	37516	6	2022-12-31 20:39:31	9
37517	37517	6	2022-12-31 20:39:31	9

37518 rows × 4 columns

```
In [123]:
```

```
Out[123]: Index(['row_id', 'user_id', 'timestamp', 'gate_id'], dtype='object')
```

```
In [124]: a=dftrain[['row_id','user_id','gate_id']]
```

Out[124]:

	row_id	user_id	gate_id
0	0	18	7
1	1	18	9
2	2	18	9
3	3	18	5
4	4	18	5
...
37513	37513	6	11
37514	37514	6	6
37515	37515	6	6
37516	37516	6	9
37517	37517	6	9

37518 rows × 3 columns

```
In [125]: b=dftrain.head(10)
```

Out[125]:

	row_id	user_id	timestamp	gate_id
0	0	18	2022-07-29 09:08:54	7
1	1	18	2022-07-29 09:09:54	9
2	2	18	2022-07-29 09:09:54	9
3	3	18	2022-07-29 09:10:06	5
4	4	18	2022-07-29 09:10:08	5
5	5	18	2022-07-29 09:10:34	10
6	6	18	2022-07-29 09:32:47	11
7	7	18	2022-07-29 09:33:12	4
8	8	18	2022-07-29 09:33:13	4
9	9	1	2022-07-29 09:33:16	7

```
In [126]: a=b[['row_id','user_id','gate_id']]
```

```
Out[126]:
```

	row_id	user_id	gate_id
0	0	18	7
1	1	18	9
2	2	18	9
3	3	18	5
4	4	18	5
5	5	18	10
6	6	18	11
7	7	18	4
8	8	18	4
9	9	1	7

```
In [127]: c=a.iloc[:,0:3]
```

```
In [128]:
```

```
Out[128]: (10, 3)
```

```
In [129]:
```

```
Out[129]: (10,)
```

```
In [130]:
```

```
In [131]:
```

```
In [132]: logr=LogisticRegression()
```

```
Out[132]: LogisticRegression()
```

```
In [133]:
```

```
In [134]: prediction=logr.predict(observation)
```

```
Out[134]: array([4], dtype=int64)
```

```
In [135]:
```

```
Out[135]: array([ 4,  5,  7,  9, 10, 11], dtype=int64)
```

```
In [136]:
```

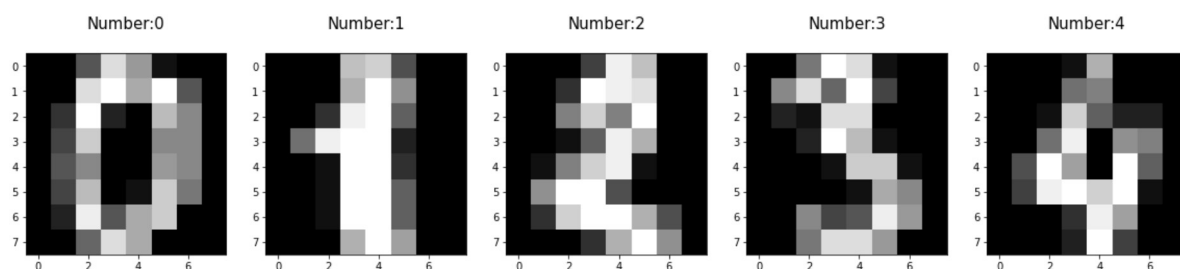
```
Out[136]: 0.8683472229938579
```

```
In [137]: import re
from sklearn.datasets import load_digits
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LogisticRegression
```

```
In [138]: digits=load_digits()
```

```
Out[138]: {'data': array([[ 0.,  0.,  5., ...,  0.,  0.,  0.],
        [ 0.,  0.,  0., ..., 10.,  0.,  0.],
        [ 0.,  0.,  0., ..., 16.,  9.,  0.],
        ...,
        [ 0.,  0.,  1., ...,  6.,  0.,  0.],
        [ 0.,  0.,  2., ..., 12.,  0.,  0.],
        [ 0.,  0., 10., ..., 12.,  1.,  0.])),
  'target': array([0, 1, 2, ..., 8, 9, 8]),
  'frame': None,
  'feature_names': ['pixel_0_0',
    'pixel_0_1',
    'pixel_0_2',
    'pixel_0_3',
    'pixel_0_4',
    'pixel_0_5',
    'pixel_0_6',
    'pixel_0_7',
    'pixel_1_0',
    'pixel_1_1',
    'pixel_1_2',
    'pixel_1_3',
    'pixel_1_4',
    'pixel_1_5',
    'pixel_1_6',
    'pixel_1_7',
    'pixel_2_0',
    'pixel_2_1',
    'pixel_2_2',
    'pixel_2_3',
    'pixel_2_4',
    'pixel_2_5',
    'pixel_2_6',
    'pixel_2_7',
    'pixel_3_0',
    'pixel_3_1',
    'pixel_3_2',
    'pixel_3_3',
    'pixel_3_4',
    'pixel_3_5',
    'pixel_3_6',
    'pixel_3_7',
    'pixel_4_0',
    'pixel_4_1',
    'pixel_4_2',
    'pixel_4_3',
    'pixel_4_4',
    'pixel_4_5',
    'pixel_4_6',
    'pixel_4_7',
    'pixel_5_0',
    'pixel_5_1',
    'pixel_5_2',
    'pixel_5_3',
    'pixel_5_4',
    'pixel_5_5',
    'pixel_5_6',
    'pixel_5_7',
    'pixel_6_0',
    'pixel_6_1',
    'pixel_6_2',
    'pixel_6_3',
    'pixel_6_4',
    'pixel_6_5',
    'pixel_6_6',
    'pixel_6_7',
    'pixel_7_0',
    'pixel_7_1',
    'pixel_7_2',
    'pixel_7_3',
    'pixel_7_4',
    'pixel_7_5',
    'pixel_7_6',
    'pixel_7_7']
}
```

```
In [139]: plt.figure(figsize=(20,4))
for index,(image,label) in enumerate(zip(digits.data[0:5],digits.target[0:5])):
    plt.subplot(1,5,index+1)
    plt.imshow(np.reshape(image,(8,8)),cmap=plt.cm.gray)
```



```
In [140]:
```

```
In [141]: print(x_train.shape)
print(x_test.shape)
print(y_train.shape)
```

```
(1257, 64)
(540, 64)
(1257,)
(540,)
```

```
In [142]: logre=LogisticRegression(max_iter=10000)
```

```
Out[142]: LogisticRegression(max_iter=10000)
```

```
In [143]:
```

```
[2 4 2 6 2 1 9 3 0 5 2 8 6 5 1 1 1 7 4 3 7 1 5 2 9 3 5 7 7 1 5 5 4 8 4 1 7
 9 5 0 5 4 1 8 1 5 4 4 8 7 2 8 4 2 6 4 4 6 3 3 1 7 9 9 1 2 3 5 7 0 9 4 0 4
 3 2 2 8 2 2 9 8 1 9 9 5 9 2 9 1 5 9 3 4 9 2 4 3 8 3 2 4 5 7 3 2 1 9 8 8 1
 1 4 2 0 9 8 1 9 9 4 9 6 6 8 2 4 3 3 3 5 4 2 0 6 5 8 5 3 8 8 1 5 8 4 5 3 4
 6 6 5 7 1 1 0 7 3 2 6 8 4 2 9 2 4 3 0 7 0 8 4 1 4 4 3 6 7 6 2 3 4 1 5 4 8
 1 4 7 8 5 5 2 8 4 4 3 2 7 6 9 1 6 1 7 4 5 3 9 1 7 3 9 7 2 2 2 3 5 0 4 1 3
 4 7 6 5 1 7 2 1 6 4 2 6 9 1 7 6 1 0 3 4 1 3 3 2 2 9 7 9 3 8 9 3 9 0 0 4 6
 0 8 5 8 7 9 9 5 2 8 3 7 2 4 1 5 0 9 8 8 9 2 4 1 8 0 0 0 0 9 8 7 2 0 0 7 4
 6 7 3 7 3 4 0 0 0 2 6 8 4 2 4 9 5 1 3 8 4 8 2 3 0 5 4 9 5 0 4 3 4 1 9 6 7
 5 9 1 5 0 0 4 3 7 8 8 7 5 2 4 8 0 0 7 4 6 7 5 8 0 5 3 5 0 9 8 7 6 9 6 6 8
 9 0 7 0 9 6 8 8 4 6 9 8 9 8 4 6 5 5 5 5 6 6 0 9 5 2 8 7 1 9 0 0 1 8 9 7 0
 7 9 8 5 7 1 5 0 3 1 7 1 9 9 9 5 3 2 5 8 0 8 0 7 6 6 5 7 3 4 9 5 6 6 0 7 7
 6 6 1 6 3 7 9 8 4 0 5 0 6 4 7 7 8 9 9 1 7 7 0 6 2 8 3 7 4 4 6 0 0 1 8 0 2
 3 9 7 0 4 0 7 4 2 7 7 2 1 7 7 5 0 2 2 1 1 3 7 8 8 0 3 8 7 8 8 3 1 1 5 3 0
 9 5 2 2 0 2 0 8 3 0 4 5 1 2 8 7 2 5 3 1 1 6]
```

```
In [144]:
```

```
0.9537037037037037
```

```
In [ ]:
```

```
In [ ]:
```