In [1]:
```
import pandas as pd
from sklearn.datasets import load_digits
digits=load_digits()
```

In [2]:
```
dir(digits)
```

Out[2]:
```
['DESCR', 'data', 'feature_names', 'frame', 'images', 'target', 'target_name
s']
```

In [4]:
```
digits.target_names
```

Out[4]:
```
array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

In [5]:
```
df=pd.DataFrame(digits.data)
df.head()
```

Out[5]:

	0	1	2	3	4	5	6	7	8	9	...	54	55	56	57	58	59	60	61
0	0.0	0.0	5.0	13.0	9.0	1.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	6.0	13.0	10.0	0.0
1	0.0	0.0	0.0	12.0	13.0	5.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	0.0	11.0	16.0	10.0
2	0.0	0.0	0.0	4.0	15.0	12.0	0.0	0.0	0.0	0.0	...	5.0	0.0	0.0	0.0	0.0	3.0	11.0	16.0
3	0.0	0.0	7.0	15.0	13.0	1.0	0.0	0.0	0.0	8.0	...	9.0	0.0	0.0	0.0	7.0	13.0	13.0	9.0
4	0.0	0.0	0.0	1.0	11.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	0.0	2.0	16.0	4.0

5 rows × 64 columns

In [6]:
```
df["target"]=digits.target
df
```

Out[6]:

	0	1	2	3	4	5	6	7	8	9	...	55	56	57	58	59	60	61
0	0.0	0.0	5.0	13.0	9.0	1.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	6.0	13.0	10.0	0.0
1	0.0	0.0	0.0	12.0	13.0	5.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	11.0	16.0	10.0
2	0.0	0.0	0.0	4.0	15.0	12.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	3.0	11.0	16.0
3	0.0	0.0	7.0	15.0	13.0	1.0	0.0	0.0	0.0	8.0	...	0.0	0.0	0.0	7.0	13.0	13.0	9.0
4	0.0	0.0	0.0	1.0	11.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	2.0	16.0	4.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1792	0.0	0.0	4.0	10.0	13.0	6.0	0.0	0.0	0.0	1.0	...	0.0	0.0	0.0	2.0	14.0	15.0	9.0
1793	0.0	0.0	6.0	16.0	13.0	11.0	1.0	0.0	0.0	0.0	...	0.0	0.0	0.0	6.0	16.0	14.0	6.0
1794	0.0	0.0	1.0	11.0	15.0	1.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	2.0	9.0	13.0	6.0
1795	0.0	0.0	2.0	10.0	7.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	5.0	12.0	16.0	12.0
1796	0.0	0.0	10.0	14.0	8.0	1.0	0.0	0.0	0.0	2.0	...	0.0	0.0	1.0	8.0	12.0	14.0	12.0

1797 rows × 65 columns

In [10]:
```
x=df.drop(['target'],axis='columns')
y=df.target
x
```

Out[10]:

	0	1	2	3	4	5	6	7	8	9	...	54	55	56	57	58	59	60
0	0.0	0.0	5.0	13.0	9.0	1.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	6.0	13.0	10.0
1	0.0	0.0	0.0	12.0	13.0	5.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	0.0	11.0	16.0
2	0.0	0.0	0.0	4.0	15.0	12.0	0.0	0.0	0.0	0.0	...	5.0	0.0	0.0	0.0	0.0	3.0	11.0
3	0.0	0.0	7.0	15.0	13.0	1.0	0.0	0.0	0.0	8.0	...	9.0	0.0	0.0	0.0	7.0	13.0	13.0
4	0.0	0.0	0.0	1.0	11.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	0.0	2.0	16.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1792	0.0	0.0	4.0	10.0	13.0	6.0	0.0	0.0	0.0	1.0	...	4.0	0.0	0.0	0.0	2.0	14.0	15.0
1793	0.0	0.0	6.0	16.0	13.0	11.0	1.0	0.0	0.0	0.0	...	1.0	0.0	0.0	0.0	6.0	16.0	14.0
1794	0.0	0.0	1.0	11.0	15.0	1.0	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	2.0	9.0	13.0
1795	0.0	0.0	2.0	10.0	7.0	0.0	0.0	0.0	0.0	0.0	...	2.0	0.0	0.0	0.0	5.0	12.0	16.0
1796	0.0	0.0	10.0	14.0	8.0	1.0	0.0	0.0	0.0	2.0	...	8.0	0.0	0.0	1.0	8.0	12.0	14.0

1797 rows × 64 columns

In [11]:
```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

In [12]:
```
len(x_train)
```

Out[12]:
```
1437
```

In [24]:
```
from sklearn.svm import SVC
model=SVC(C=100,kernel='linear')
```

In [25]:
```
model.fit(x_train,y_train)
```

Out[25]:
```
SVC(C=100, kernel='linear')
```

In [26]:
```
model.score(x_test,y_test)
```

Out[26]:
```
0.9777777777777777
```

In [27]:
```
model.predict(x_test)
```

Out[27]:
```
array([7, 8, 3, 8, 5, 7, 8, 6, 9, 4, 9, 8, 6, 9, 8, 5, 6, 6, 1, 6, 1, 1,
       9, 4, 0, 5, 3, 3, 2, 8, 4, 0, 7, 0, 4, 6, 6, 8, 9, 6, 1, 6, 4, 2,
       4, 1, 9, 5, 8, 6, 9, 8, 0, 7, 3, 6, 6, 3, 1, 2, 4, 9, 9, 3, 9, 6,
       2, 7, 0, 9, 3, 8, 0, 8, 9, 2, 6, 4, 8, 8, 1, 3, 9, 9, 0, 0, 9, 8,
       7, 0, 9, 4, 6, 0, 9, 1, 3, 9, 3, 0, 2, 0, 3, 8, 6, 9, 1, 4, 1, 2,
       2, 3, 0, 0, 6, 3, 1, 1, 9, 6, 5, 0, 4, 2, 1, 6, 6, 7, 6, 4, 3, 6,
       0, 9, 9, 3, 5, 5, 4, 1, 8, 7, 7, 7, 9, 5, 4, 8, 3, 3, 5, 7, 4, 8,
       2, 8, 1, 4, 7, 7, 5, 4, 0, 3, 2, 9, 8, 8, 9, 9, 8, 3, 7, 9, 6, 7,
       7, 7, 5, 7, 7, 6, 3, 5, 5, 9, 5, 4, 3, 3, 5, 2, 6, 6, 9, 7, 9, 4,
       7, 5, 5, 0, 9, 1, 9, 3, 4, 4, 5, 1, 4, 5, 8, 5, 9, 1, 6, 5, 6, 4,
       1, 6, 2, 1, 2, 4, 9, 3, 1, 7, 8, 2, 4, 1, 9, 4, 8, 7, 3, 1, 5, 4,
       9, 9, 9, 1, 0, 4, 8, 2, 7, 2, 4, 5, 0, 3, 1, 6, 1, 6, 1, 0, 2, 6,
       5, 7, 9, 9, 4, 0, 8, 2, 4, 9, 2, 7, 8, 6, 2, 2, 3, 8, 1, 1, 5, 4,
       3, 2, 5, 9, 6, 3, 3, 4, 6, 2, 1, 7, 0, 0, 1, 7, 5, 8, 0, 2, 6, 2,
       7, 0, 9, 6, 6, 3, 2, 2, 4, 5, 5, 1, 0, 1, 8, 4, 0, 5, 9, 3, 2, 1,
       7, 6, 2, 1, 1, 5, 7, 5, 0, 1, 0, 1, 3, 2, 1, 7, 7, 3, 6, 5, 7, 5,
       8, 4, 1, 6, 6, 6, 0, 7])
```

In [ ]:
```

```