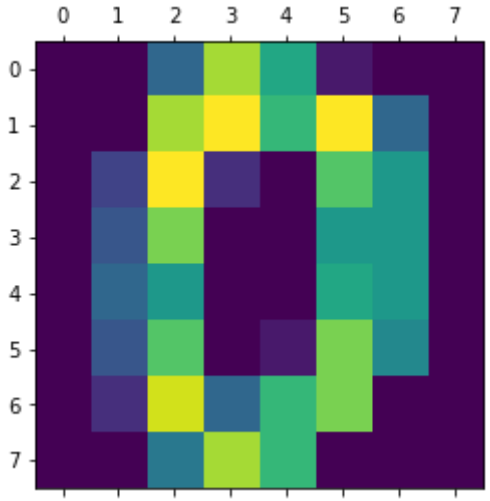
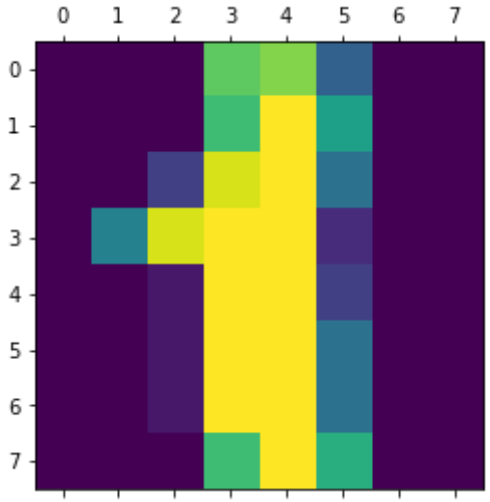
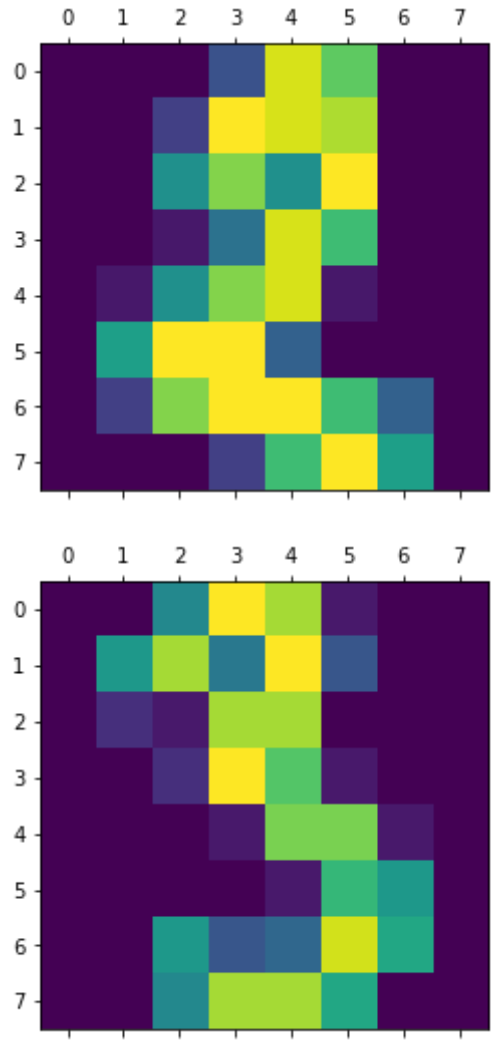
In [2]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
from sklearn.datasets import load_digits
```

In [3]:
```
digits=load_digits()
```

In [6]:
```
plt.gray
for i in range(4):
    plt.matshow(digits.images[i])
```




0 1 2 3 4 5 6 7
0
1
2
3
4
5
6
7


0 1 2 3 4 5 6 7
0
1
2
3
4
5
6
7

In [7]:
```
df=pd.DataFrame(digits.data)
df.head()
```

Out[7]:

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | ... | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.0 | 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 | 0.0 | 0.0 |
| 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 | 9.0 | 0.0 |
| 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 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 |

5 rows × 64 columns

In [8]:
```
df['target']=digits.target
df.head()
```

Out[8]:

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | ... | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.0 | 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 | 0.0 | 0.0 | 1 |
| 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 | 9.0 | 0.0 | 2 |
| 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 | 0.0 | 0.0 | 3 |
| 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 | 0.0 | 0.0 | 4 |

5 rows × 65 columns

In [12]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test=train_test_split(df.drop(['target'],axis=1),digits.target,test_size=0.2)
```

In [13]:
```
1 len(X_train)
```

Out[13]:
```
1437
```

In [15]:
```
len(y_train)
```

Out[15]:
```
1437
```

In [16]:
```
len(X_test)
```

Out[16]:
```
360
```

In [25]:
```
from sklearn.ensemble import RandomForestClassifier
model=RandomForestClassifier(n_estimators=40)
```

In [26]:
```
model.fit(X_train,y_train)
```

Out[26]:
```
RandomForestClassifier(bootstrap=True, class_weight=None, criterion='gini',
                       max_depth=None, max_features='auto', max_leaf_nodes=None,
                       min_impurity_decrease=0.0, min_impurity_split=None,
                       min_samples_leaf=1, min_samples_split=2,
                       min_weight_fraction_leaf=0.0, n_estimators=40,
                       n_jobs=None, oob_score=False, random_state=None,
                       verbose=0, warm_start=False)
```

In [27]:
```
model.score(X_test,y_test)
```

Out[27]:
```
0.9527777777777777
```

In [ ]:

In [ ]: