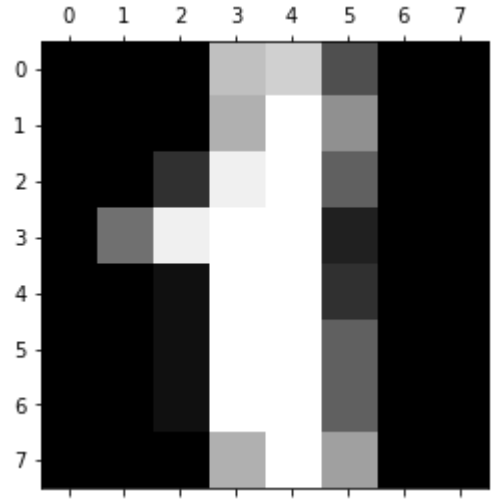
In [1]:
```
#import dataset
from sklearn.datasets import load_digits
digits = load_digits()
```

In [2]:
```
#display image
import matplotlib.pyplot as plt
plt.gray()
plt.matshow(digits.images[1])
plt.show()
```

```
<Figure size 432x288 with 0 Axes>
```



In [3]:
```
print(digits.data.shape)
print(digits.target.shape)
```

```
(1797, 64)
(1797,)
```

In [4]:
```
#split data in train and test
from sklearn.model_selection import train_test_split
x_train ,x_test ,y_train ,y_test = train_test_split(digits.data ,digits.target, t
```

In [5]:
```
#import library and fit model find accuracy
from sklearn.naive_bayes import GaussianNB
from sklearn import metrics
model = GaussianNB()
model.fit(x_train,y_train)
y_pred = model.predict(x_test)
print("Accuracy : ",metrics.accuracy_score(y_test,y_pred))
```

```
Accuracy :  0.8505564387917329
```

In [6]:
```
#create confusion matrix
from sklearn.metrics import confusion_matrix
confusion_matrix(y_test, y_pred)
```

Out[6]:
```
array([[60,  0,  0,  0,  0,  1,  0,  1,  0,  0],
       [ 0, 73,  0,  0,  0,  0,  0,  1,  3,  1],
       [ 0, 14, 27,  0,  0,  0,  0,  0, 14,  0],
       [ 0,  0,  0, 57,  0,  1,  0,  3,  2,  0],
       [ 0,  2,  0,  0, 52,  0,  0,  6,  1,  0],
       [ 0,  0,  0,  0,  0, 55,  0,  3,  1,  0],
       [ 0,  0,  1,  0,  1,  1, 57,  0,  0,  0],
       [ 0,  0,  1,  0,  1,  1,  0, 64,  0,  0],
       [ 0, 15,  0,  0,  0,  1,  0,  3, 43,  0],
       [ 1,  4,  0,  1,  0,  0,  1,  6,  2, 47]])
```

In [7]:
```
#checked on random data
y_pred_sample = model.predict([digits.data[100]])
print("predicted : " , y_pred_sample)
print("Actual : ",digits.target[100])
```

```
predicted :  [4]
Actual :  4
```

In [8]:
```
from sklearn.metrics import precision_score
from sklearn.metrics import recall_score
precision = precision_score(y_test,y_pred,average='micro')
recall = recall_score(y_test,y_pred,average='micro')
print('precision: {}'.format(precision))
print('recall: {}'.format(recall))
```

```
precision: 0.8505564387917329
recall: 0.8505564387917329
```