In [17]:
```
import numpy as np
from sklearn import datasets
iris = datasets.load_iris()
iris_X = iris.data
iris_y = iris.target
```

In [19]:
```
type(iris_X)
```

Out[19]:
```
numpy.ndarray
```

In [7]:
```
np.unique(iris_y)
np.random.seed(0)
indices = np.random.permutation(len(iris_X))
```

In [33]:
```
##Random Order - First ten
indices[:10]
```

Out[33]:
```
array([114,  62,  33, 107,   7, 100,  40,  86,  76,  71])
```

In [31]:
```
indices[-10:]  ## Last Ten
```

Out[31]:
```
array([ 88,  70,  87,  36,  21,   9, 103,  67, 117,  47])
```

In [22]:
```
iris_X_train = iris_X[indices[:-10]]
iris_y_train = iris_y[indices[:-10]]
```

In [30]:
```
iris_X_train[:5,:]
```

Out[30]:
```
array([[ 5.8,  2.8,  5.1,  2.4],
       [ 6. ,  2.2,  4. ,  1. ],
       [ 5.5,  4.2,  1.4,  0.2],
       [ 7.3,  2.9,  6.3,  1.8],
       [ 5. ,  3.4,  1.5,  0.2]])
```

In [23]:
```
iris_X_test  = iris_X[indices[-10:]]
iris_y_test  = iris_y[indices[-10:]]
```

In [24]:
```
# Create and fit a nearest-neighbor classifier
from sklearn.neighbors import KNeighborsClassifier
```

In [25]:
```
knn = KNeighborsClassifier()
knn.fit(iris_X_train, iris_y_train)
```

Out[25]:
```
KNeighborsClassifier(algorithm='auto', leaf_size=30, metric='minkowski',
           metric_params=None, n_neighbors=5, p=2, weights='uniform')
```

In [26]:
```
knn.predict(iris_X_test)
```

Out[26]:
```
array([1, 2, 1, 0, 0, 0, 2, 1, 2, 0])
```

In [28]:
```
# Note the second outcome above and below
iris_y_test
```

Out[28]:
```
array([1, 1, 1, 0, 0, 0, 2, 1, 2, 0])
```

In []: