In [101]:
```
from sklearn import datasets
```

In [102]:
```
cancer = datasets.load_breast_cancer()
```

In [103]:
```
print("Features: ",cancer.feature_names)
```

```
Features:  ['mean radius' 'mean texture' 'mean perimeter' 'mean area'
 'mean smoothness' 'mean compactness' 'mean concavity'
 'mean concave points' 'mean symmetry' 'mean fractal dimension'
 'radius error' 'texture error' 'perimeter error' 'area error'
 'smoothness error' 'compactness error' 'concavity error'
 'concave points error' 'symmetry error' 'fractal dimension error'
 'worst radius' 'worst texture' 'worst perimeter' 'worst area'
 'worst smoothness' 'worst compactness' 'worst concavity'
 'worst concave points' 'worst symmetry' 'worst fractal dimension']
```

In [104]:
```
print("labels: ",cancer.target_names)
```

```
labels:  ['malignant' 'benign']
```

In [105]:
```
cancer.data.shape
```

Out[105]:
```
(569, 30)
```

In [106]:
```
print(cancer.target)
```

```
[0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 1 0 0 0 0 0 0 0 0 1 0 1 1 1 1 1 0 0 1 0 0 1 1 1 1 0 1 0 0 1 1 1 1 0 1 0 0
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 1 1 1 1 1 1 0 1 0 1 1 0 1 1 1 1 1 0 0 1 0 1 0 1 1 1 1 1 0 1 1 0 1 0 1 0 0
 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 0 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 1 1 1 1 1 1 1 0 0 0 0 0 0 1]
```

In [107]:
```
from sklearn.model_selection import train_test_split
```

In [108]:
```
x_train,x_test,y_train,y_test=train_test_split(cancer.data,cancer.target,test_size=0.3,random_state=100)
```

In [109]:
```
from sklearn import svm
```

In [110]:
```
clf=svm.SVC(kernel='linear')
```

In [111]:
```
clf.fit(x_train,y_train)
```

Out[111]:
```
SVC(kernel='linear')
```

In [112]:
```
y_pred = clf.predict(x_test)
```

In [113]:
```
from sklearn import metrics
```

In [114]:
```
print("Accuracy:",metrics.accuracy_score(y_test,y_pred))
```

```
Accuracy: 0.9532163742690059
```

In [115]:
```
from sklearn.metrics import classification_report, confusion_matrix
print(confusion_matrix(y_test, y_pred))
print(classification_report(y_test, y_pred))
```

```
[[64  5]
 [ 3 99]]
              precision    recall  f1-score   support

           0       0.96      0.93      0.94        69
           1       0.95      0.97      0.96       102

    accuracy                           0.95       171
   macro avg       0.95      0.95      0.95       171
weighted avg       0.95      0.95      0.95       171
```

In [116]:
```
clf=svm.SVC(kernel='poly')
```

In [117]:
```
clf.fit(x_train,y_train)
```

Out[117]:
```
SVC(kernel='poly')
```

In [118]:
```
y_pred = clf.predict(x_test)
```

In [119]:
```
from sklearn import metrics
```

In [120]:
```
print("Accuracy:",metrics.accuracy_score(y_test,y_pred))
```

```
Accuracy: 0.9064327485380117
```

In [121]:
```
from sklearn.metrics import classification_report, confusion_matrix
print(confusion_matrix(y_test, y_pred))
print(classification_report(y_test, y_pred))
```

```
[[ 54  15]
 [  1 101]]
              precision    recall  f1-score   support

           0       0.98      0.78      0.87        69
           1       0.87      0.99      0.93       102

    accuracy                           0.91       171
   macro avg       0.93      0.89      0.90       171
weighted avg       0.92      0.91      0.90       171
```

In [122]:
```
clf=svm.SVC(kernel='rbf')
```

In [123]:
```
clf.fit(x_train,y_train)
```

Out[123]:
```
SVC()
```

In [124]:
```
y_pred = clf.predict(x_test)
```

In [125]:
```
from sklearn import metrics
```

In [126]:
```
print("Accuracy:",metrics.accuracy_score(y_test,y_pred))
```

```
Accuracy: 0.9064327485380117
```

In [127]:
```
clf=svm.SVC(kernel='sigmoid')
```

In [128]:
```
clf.fit(x_train,y_train)
```

Out[128]:
```
SVC(kernel='sigmoid')
```

In [129]:
```
y_pred = clf.predict(x_test)
```

In [130]:
```
from sklearn import metrics
```

In [131]:
```
print("Accuracy:",metrics.accuracy_score(y_test,y_pred))
```

```
Accuracy: 0.45614035087719296
```

In [ ]:
```

```