In [1]:
```
#Aim: To implement support vector machine algorithm for Iris dataset
```

In [2]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.colors import ListedColormap
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import confusion_matrix,accuracy_score
from sklearn.svm import SVC
```

In [3]:
```
dataset = pd.read_csv('iris.csv')
```

In [4]:
```
x = dataset.iloc[:, [0,1,2,3]].values
```

In [5]:
```
y = dataset.iloc[:, 4].values
```

In [6]:
```
xtrain,xtest,ytrain,ytest=train_test_split(x,y,test_size=0.25,random_state=0)
```

In [7]:
```
sc = StandardScaler()
xtrain = sc.fit_transform(xtrain)
xtest = sc.transform(xtest)
```

In [8]:
```
classifier = SVC(kernel = "rbf", random_state = 0)
classifier.fit(xtrain, ytrain)
```

Out[8]:
```
▾         SVC

SVC(random_state=0)
```

In [9]:
```
ypred = classifier.predict(xtest)
print(ypred)
```

```
['Virginica' 'Versicolor' 'Setosa' 'Virginica' 'Setosa' 'Virginica'
 'Setosa' 'Versicolor' 'Versicolor' 'Versicolor' 'Virginica' 'Versicolor'
 'Versicolor' 'Versicolor' 'Versicolor' 'Setosa' 'Versicolor' 'Versicolor'
 'Setosa' 'Setosa' 'Virginica' 'Versicolor' 'Setosa' 'Setosa' 'Virginica'
 'Setosa' 'Setosa' 'Versicolor' 'Versicolor' 'Setosa' 'Virginica'
 'Versicolor' 'Setosa' 'Virginica' 'Virginica' 'Versicolor' 'Setosa'
 'Virginica']
```

In [10]:
```
print("Accuracy:",accuracy_score(ytest,ypred))
```

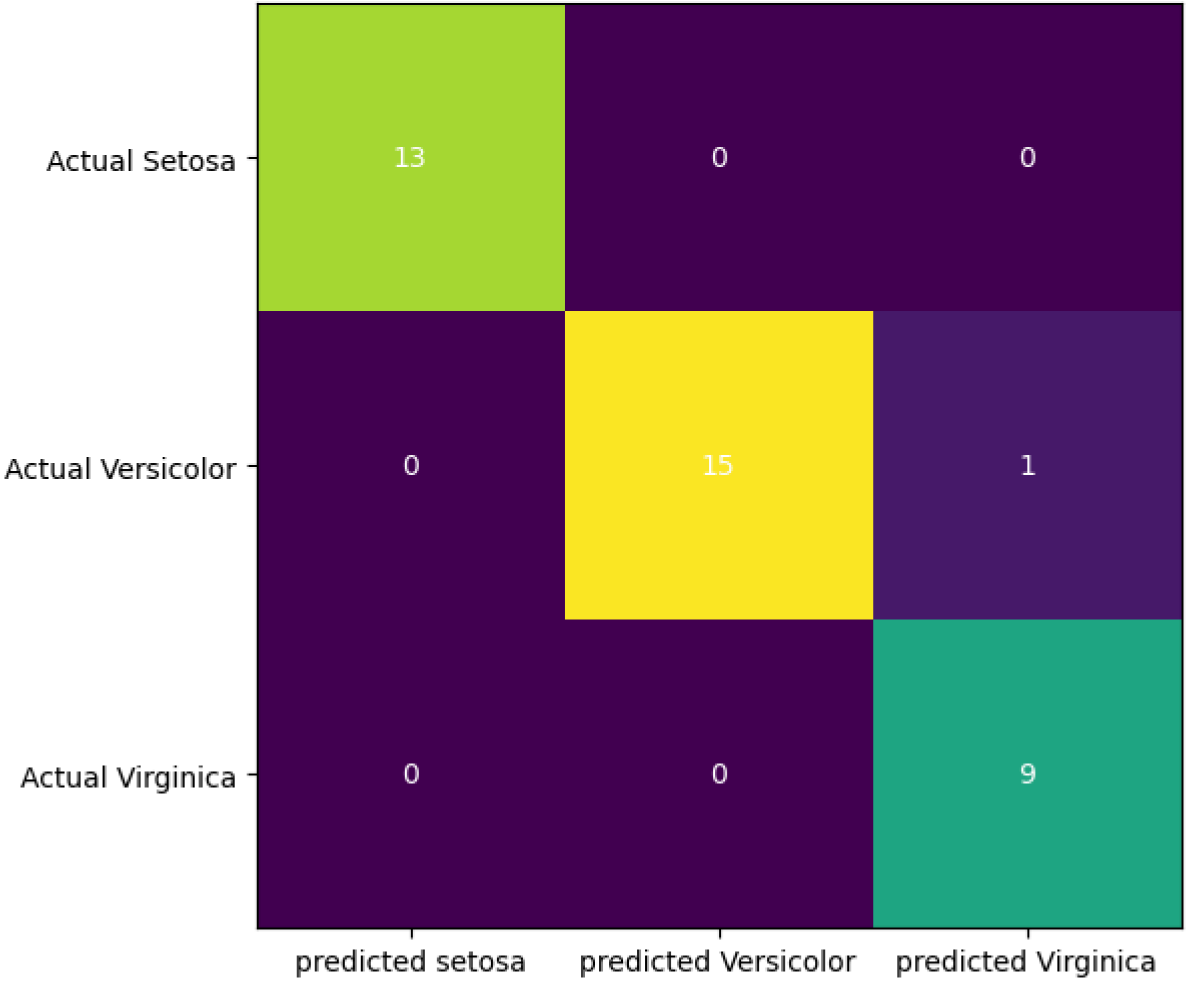
```
Accuracy: 0.9736842105263158
```

In [11]:
```
cm = confusion_matrix(ytest, ypred)
print("confusion matrix: \n", cm)
```

```
confusion matrix:
 [[13  0  0]
 [ 0 15  1]
 [ 0  0  9]]
```

In [12]:

```
fig,ax=plt.subplots(figsize=(6,6))
ax.imshow(cm)
ax.grid(False)
ax.xaxis.set(ticks=(0,1,2),ticklabels=("predicted setosa","predicted Versicolor","predicted Virginica"))
ax.yaxis.set(ticks=(0,1,2),ticklabels=("Actual Setosa","Actual Versicolor","Actual Virginica"))
ax.set_ylim(2.5,-0.5)
for i in range(3):
    for j in range(3):
        ax.text(j,i,cm[i,j],ha="center",va="center",color="white")
plt.show()
```


Actual Setosa
Actual Versicolor
Actual Virginica
predicted setosa
predicted Versicolor
predicted Virginica