5.Program to implement text classification using Support vector machine.

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
data=pd.read_csv("apples_and_oranges.csv")
print(data.head(15))
plt.show()
```

```
   Weight  Size   Class
0      69  4.39  orange
1      69  4.21  orange
2      65  4.09  orange
3      72  5.85   apple
4      67  4.70  orange
5      73  5.68   apple
6      70  5.56   apple
7      75  5.11   apple
8      74  5.36   apple
9      65  4.27  orange
10     73  5.79   apple
11     70  5.47   apple
12     74  5.53   apple
13     68  4.47  orange
14     74  5.22   apple
```

```
#Splitting the dataset into training and test samples
from sklearn.model_selection import train_test_splittraining_set,
test_set = train_test_split(data, test_size = 0.2, random_state = 1)

#Classifying the predictors and target
```

```
X_train = training_set.iloc[:,0:2].valuesY_train =
training_set.iloc[:,2].valuesX_test = test_set.iloc[:,0:2].valuesY_test =
test_set.iloc[:,2].values
```

```
#Initializing Support Vector Machine and fitting the training data
from sklearn.svm import SVCclassifier = SVC(kernel='rbf', random_state
= 1)classifier.fit(X_train,Y_train)
```

```
SVC(random_state=1)
```

```
#Predicting the classes for test set
Y_pred = classifier.predict(X_test)
```

```
#Attaching the predictions to test set for comparing
test_set["Predictions"] = Y_predplt.show()
```

In [14]:

```
#Calculating the accuracy of the predictions
from sklearn.metrics import confusion_matrixcm =
confusion_matrix(Y_test,Y_pred)accuracy =
float(cm.diagonal().sum())/len(Y_test)print("\nAccuracy Of SVM For The
Given Dataset : ", accuracy)
```

```
Accuracy Of SVM For The Given Dataset :  0.375
```

In [15]:

```
#Visualizing the classifier
from sklearn.preprocessing
 import LabelEncoderle = LabelEncoder()Y_train =
le.fit_transform(Y_train)
```

In [16]:

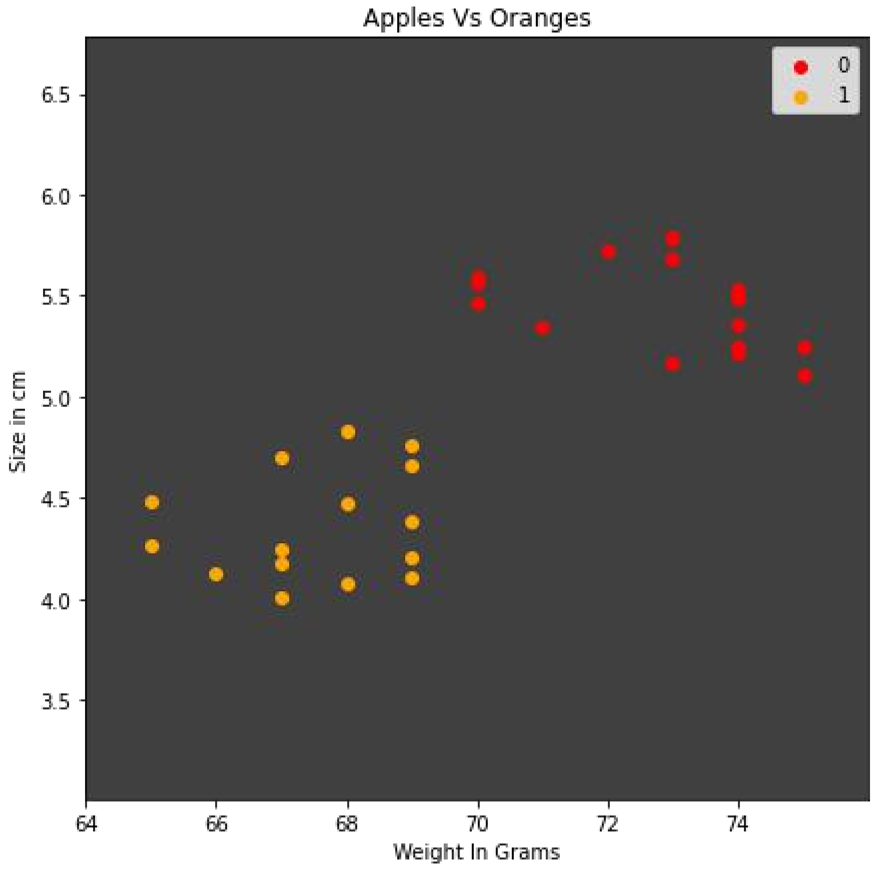
```
from sklearn.svm import SVCclassifier = SVC(kernel='rbf', random_state
= 1)classifier.fit(X_train,Y_train)
```

Out[16]:

```
SVC(random_state=1)
```

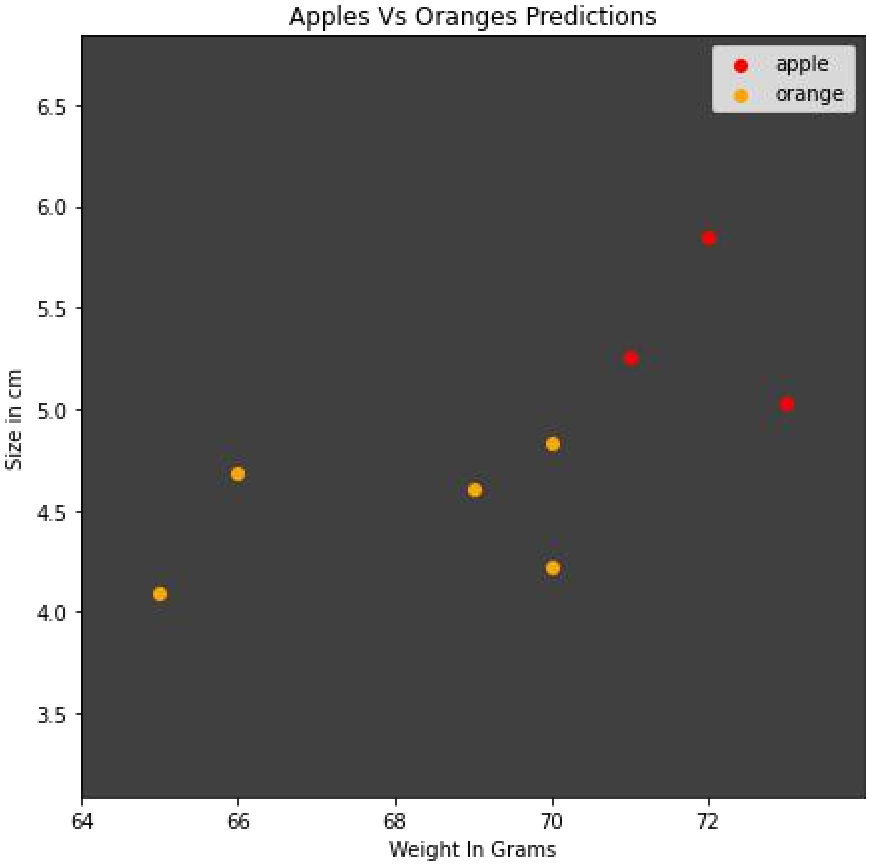
In [21]:

```
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.colors import ListedColormap
plt.figure(figsize = (7,7))
X_set, y_set = X_train, Y_train
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:, 0].max() + 1, step = 0.01), np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:, 1].max() + 1, step = 0.01))
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(), X2.ravel()]).T).reshape(X1.shape), alpha = 0.75, cmap = ListedColormap(('black', 'white')))
plt.xlim(X1.min(), X1.max())
plt.ylim(X2.min(), X2.max())
for i, j in enumerate(np.unique(y_set)):plt.scatter(X_set[y_set == j, 0], X_set[y_set == j, 1],c = ListedColormap(('red', 'orange'))(i), label = j)
plt.title('Apples Vs Oranges')
plt.xlabel('Weight In Grams')
plt.ylabel('Size in cm')
plt.legend()
plt.show()
```



In [20]:

```
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.colors import ListedColormap
plt.figure(figsize = (7,7))
X_set, y_set = X_test, Y_test
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:,
0].max() + 1, step = 0.01),np.arange(start = X_set[:, 1].min() - 1, stop =
X_set[:, 1].max() + 1, step = 0.01))
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(),
X2.ravel()]).T).reshape(X1.shape),alpha = 0.75, cmap =
ListedColormap(('black', 'white')))
plt.xlim(X1.min(), X1.max())
plt.ylim(X2.min(), X2.max())
for i, j in enumerate(np.unique(y_set)):plt.scatter(X_set[y_set == j, 0],
X_set[y_set == j, 1],c = ListedColormap(('red', 'orange'))(i), label = j)
plt.title('Apples Vs Oranges Predictions')
plt.xlabel('Weight In Grams')
plt.ylabel('Size in cm')
plt.legend()
plt.show()
```



)