Experiment Title- 2.1

Student Name: Lipakshi **UID: 20BCS5082**
Branch: BE-CSE **Section/Group-20BCSWM_607-B**
Semester:5 **Date of Performance:27/10/2022**
Subject Name: Machine Learning Lab **Subject Code: 20CSP-317**

1. Aim: Implement Support Vector Machine on any data set and analyze the accuracy with Logistic regression.

2. Source Code and Output:

importnumpyasnp

importpandasaspd

importseabornassns

importmatplotlib.pyplotasplt

fromsklearn.model_selectionimporttrain_test_split

fromsklearn.metricsimportclassification_report,confusion_matrix

fromsklearn.metricsimportroc_curve,auc

fromsklearn.preprocessingimportlabel_binarize

fromsklearn.multiclassimportOneVsRestClassifier

fromsklearn.metricsimportprecision_recall_curve

fromsklearn.metricsimportroc_auc_score

fromsklearn.linear_modelimportLogisticRegression

fromsklearn.svmimportSVC

```
data=pd.read_csv('Downloads/iris  data.csv')

data.head()
```

	sepal.length	sepal.width	petal.length	petal.width	variety	Unnamed: 5
0	5.1	3.5	1.4	0.2	Setosa	NaN
1	4.9	3.0	1.4	0.2	Setosa	NaN
2	4.7	3.2	1.3	0.2	Setosa	NaN
3	4.6	3.1	1.5	0.2	Setosa	NaN
4	5.0	3.6	1.4	0.2	Setosa	NaN

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
sepal.length    150 non-null float64
sepal.width     150 non-null float64
petal.length    150 non-null float64
petal.width     150 non-null float64
variety         150 non-null object
Unnamed: 5      0 non-null float64
dtypes: float64(5), object(1)
memory usage: 6.5+ KB
```

```
tmp=data.drop('Unnamed: 5',axis=1)
tmp.head()
```

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa

```
X=data.drop(['Unnamed: 5','variety'],axis=1)
y=data['variety']
# print(X.head())
print(X.shape)
# print(y.head())
print(y.shape)
```

```
lit(X,y,test_size=0.4,random_state=5)
print(X_train.shape) print(y_train.shape) print(X_test.shape) print(y_test.shape)
```

```
(150, 4)
(150,)
```

```
(90, 4)
(90,)
(60, 4)
(60,)
```

```
logreg.fit(X_train, y_train) y_pred=logreg.predict(X_test) print(metrics.accuracy_score(y_test,
y_pred))
```

```
0.9333333333333333
```

```
logreg.predict([[6, 3, 4, 2]])
```

```
array(['Virginica'], dtype=object)
```

```
logreg.predict([[5, 3, 1, 0]]) sv=SVC()
sv.fit(X_train, y_train)
```

```
array(['Setosa'],
dtype=object)
```

```
SVC(C=1.0, cache_size=200, class_weight=None, coef0=0.0,
decision_function_shape='ovr', degree=3, gamma='auto', kernel='rbf',
```

```
pred=sv.predict(X_test)
print(metrics.accuracy_score(y_test, y_pred))
```

```
0.9333333333333333
```

```
sv.predict([[6, 3, 4, 2]])
```

```
array(['Versicolor'], dtype=object)
```

```
sv.predict([[5, 3, 1, 0]])
```

```
array(['Setosa'], dtype=object)
```

Learning outcomes (What I have learnt):

1. I learnt what is support vector machine.
2. Practical use of SVM.
3. How machine learning helps to analyze datasets.

Evaluation Grid :

Sr. No.	Parameters	Marks Obtained	Maximum Marks

1.	**Student Performance (Conduct of experiment) objectives/Outcomes.**		**12**
2.	**Viva Voce**		**10**
3.	**Submission of Work Sheet (Record)**		**8**
	Total		**30**