**Experiment 4**

**Student Name: jitesh Kumar UID: 20BCS2334**

**Branch: CSE Section/Group: 903- A**

**Semester: 5th Date of Performance: 21/09/2022**

**Subject Name: Machine Learning Lab Subject Code: 20CSP-317**

1. **Aim/Overview of the practical:**

Implement Support Vector Machine on any data set and analyse the accuracy with Logistic regression

1. **Code and Output:**

**#SVM Implementation**

**#Harsh Pratap Singh**

**#20BCS5370**

**import pandas as pd**

**df = pd.read\_csv("E:\\Sem 5\\Machine Learning Lab\\Exp 4\\appleorange.csv")**

**x = df.iloc[:,:2]**

**y = df.iloc[:,2]**

**from sklearn.model\_selection import train\_test\_split**

**x\_train, x\_test, y\_train, y\_test = train\_test\_split(x,y, test\_size=0.3, random\_state=42)**

**from sklearn import svm**

**clf = svm.SVC(kernel = 'linear')**

**clf.fit(x\_train, y\_train)**

**y\_pred = clf.predict(x\_test)**

**y\_pred**

**y\_test**

**clf.score(x\_test,y\_test)**

**#Analysis using Logistic Regression**

**import pandas as pd**

**from matplotlib import pyplot as plt**

**df = pd.read\_csv("E:\\Sem 5\\Machine Learning Lab\\Exp 4\\appleorange.csv")**

**df.head()**

**x = df[['size']]**

**y = df['class']**

**plt.scatter(x,y,marker='+',color='red')**

**from sklearn.model\_selection import train\_test\_split**

**x\_train, x\_test, y\_train, y\_test = train\_test\_split(x,y,test\_size=0.4)**

**x\_test**

**from sklearn.linear\_model import LogisticRegression**

**model = LogisticRegression()**

**model.fit(x\_train, y\_train)**

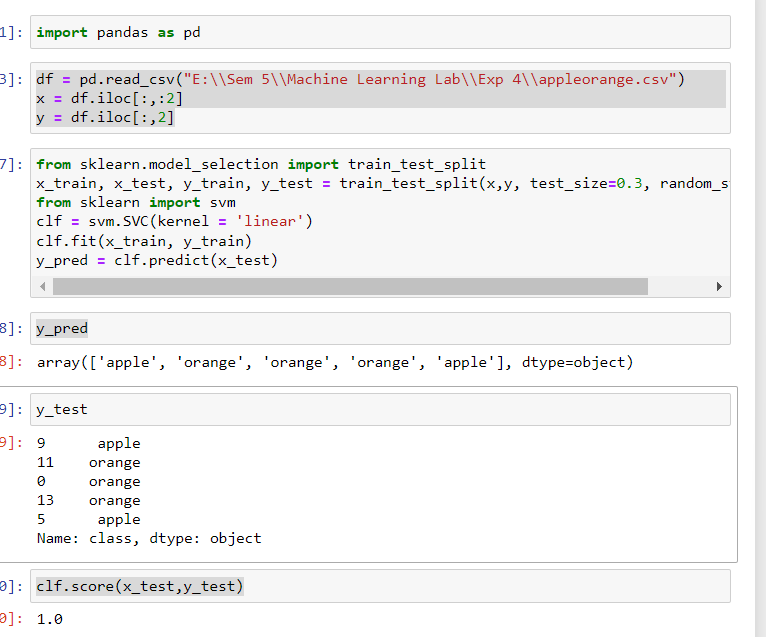
**y\_predicted = model.predict(x\_test)**

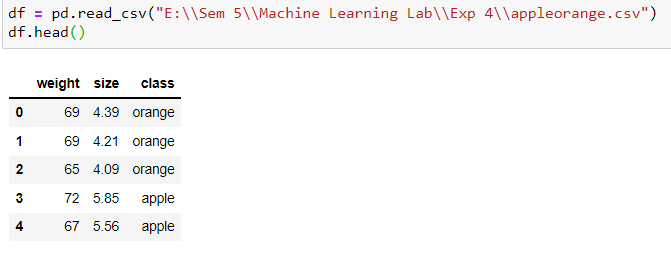
**y\_predicted**

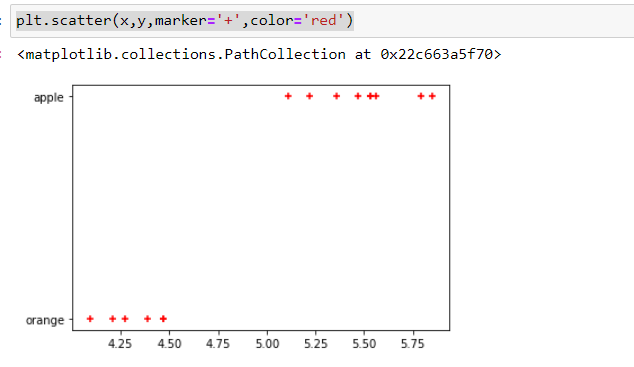
**model.predict\_proba(x\_test)**

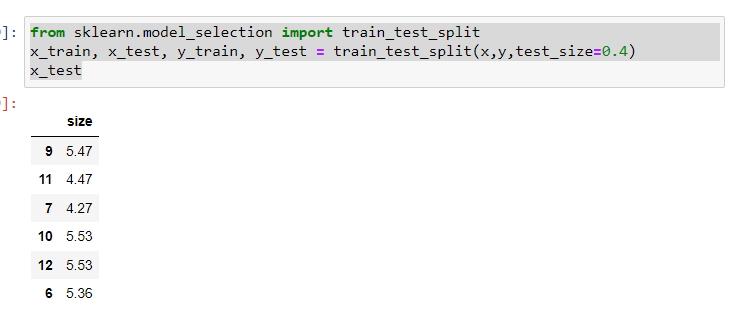
**model.score(x\_test,y\_test)**

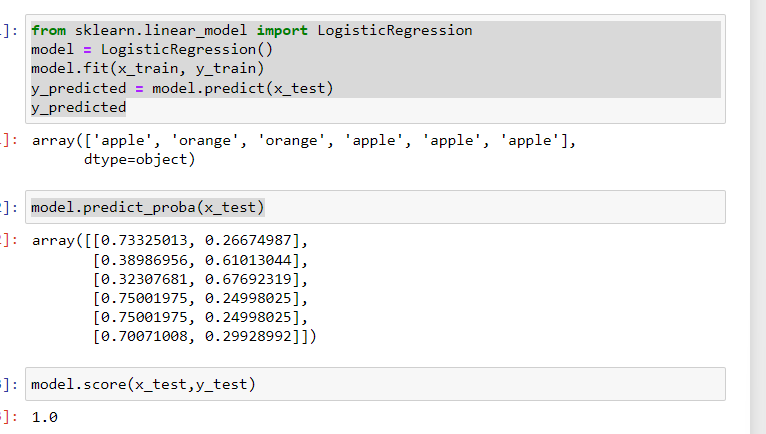
1. **Result/Output:**

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**Learning outcomes:**

1. Understood implementation of SVM (Support vector machine).
2. Learn about analysis using Logistic Regression.

**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** |