# Model Performance Test

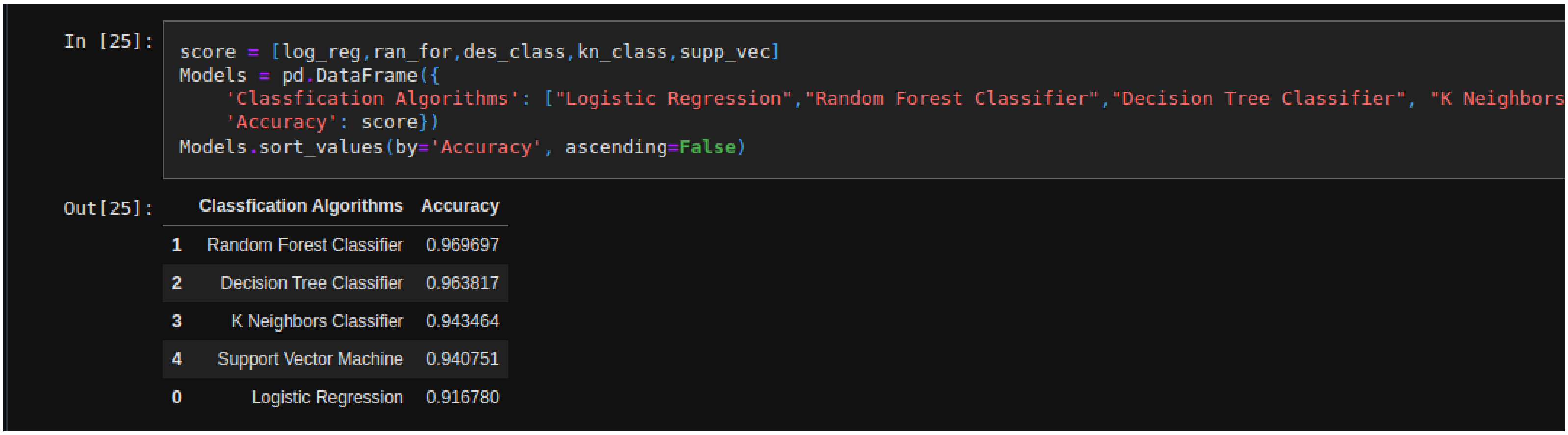
| | |
|---|---|
| Date | 10 November 2022 |
| Team ID | PNT2022TMID00037 |
| Project Name | Project - Web Phishing Detection |
| Maximum Marks | 10 Marks |

**Model Performance Testing:**

| S.No. | Parameter | Values |
|---|---|---|
| 1. | Metrics | **Random Forest Classifier**<br>**Accuracy score-96.96** |
| 2. | Tune the Model | **Hyperparameter Tuning**<br>**- Validation Method -** |

**1. METRICS**

**Classification Report:**



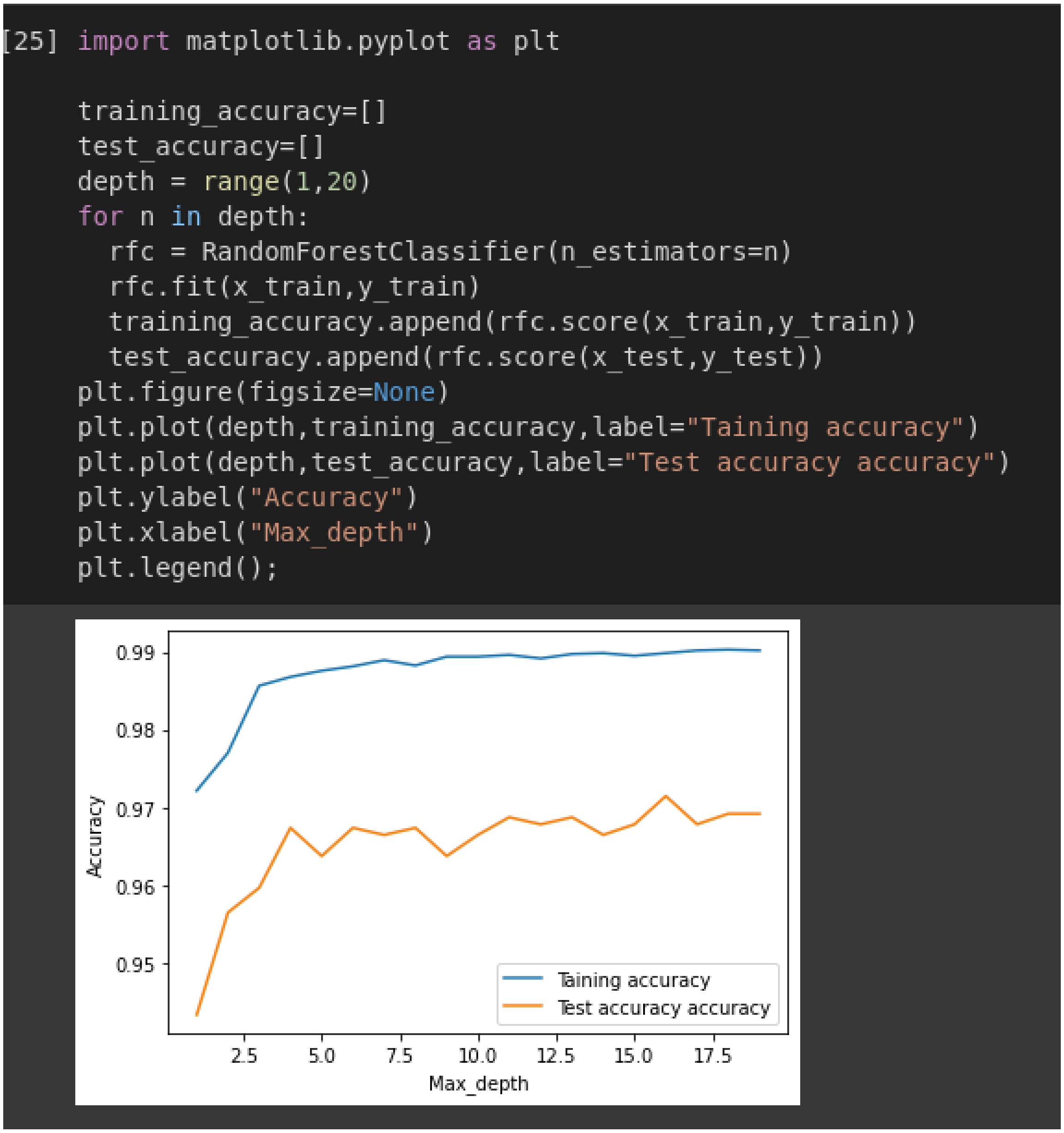
In [25]:

```
score = [log_reg,ran_for,des_class,kn_class,supp_vec]
Models = pd.DataFrame({
    'Classfication Algorithms': ["Logistic Regression","Random Forest Classifier","Decision Tree Classifier", "K Neighbors
    'Accuracy': score})
Models.sort_values(by='Accuracy', ascending=False)
```

Out[25]:

| | Classfication Algorithms | Accuracy |
|---|---|---|
| 1 | Random Forest Classifier | 0.969697 |
| 2 | Decision Tree Classifier | 0.963817 |
| 3 | K Neighbors Classifier | 0.943464 |
| 4 | Support Vector Machine | 0.940751 |
| 0 | Logistic Regression | 0.916780 |

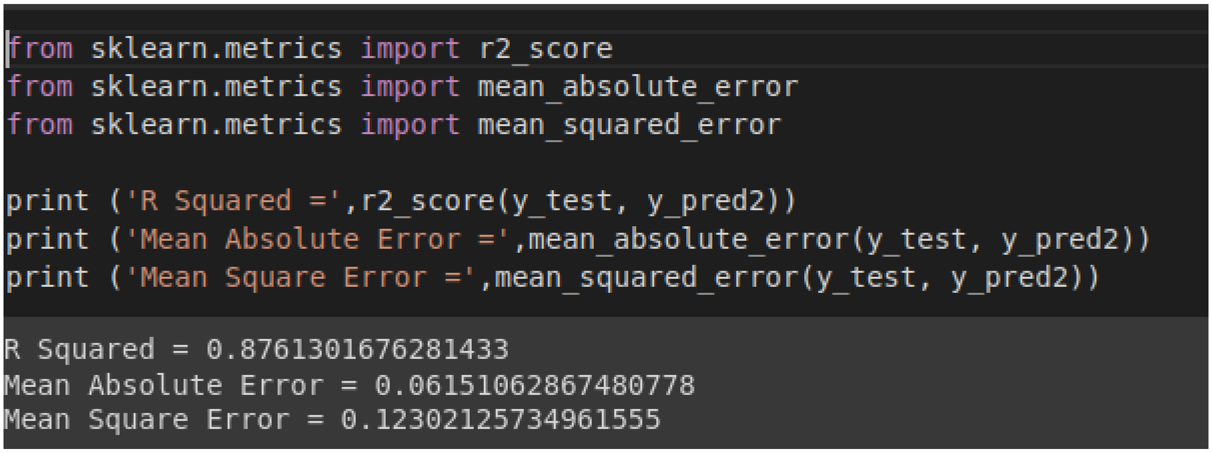
**Performance:**



```
[25] import matplotlib.pyplot as plt

     training_accuracy=[]
     test_accuracy=[]
     depth = range(1,20)
     for n in depth:
       rfc = RandomForestClassifier(n_estimators=n)
       rfc.fit(x_train,y_train)
       training_accuracy.append(rfc.score(x_train,y_train))
       test_accuracy.append(rfc.score(x_test,y_test))
     plt.figure(figsize=None)
     plt.plot(depth,training_accuracy,label="Taining accuracy")
     plt.plot(depth,test_accuracy,label="Test accuracy accuracy")
     plt.ylabel("Accuracy")
     plt.xlabel("Max_depth")
     plt.legend();
```

**2.Tune the model**



```
from sklearn.metrics import r2_score
from sklearn.metrics import mean_absolute_error
from sklearn.metrics import mean_squared_error

print ('R Squared =',r2_score(y_test, y_pred2))
print ('Mean Absolute Error =',mean_absolute_error(y_test, y_pred2))
print ('Mean Square Error =',mean_squared_error(y_test, y_pred2))
```

```
R Squared = 0.8761301676281433
Mean Absolute Error = 0.061510628674807778
Mean Square Error = 0.12302125734961555
```