VIT UNIVERSITY, ANDHRA PRADESH
School of CSE
CSE3008 - Introduction to Machine Learning
Lab Experiment-5
(**Random Forest** - **Classification Algorithms**)

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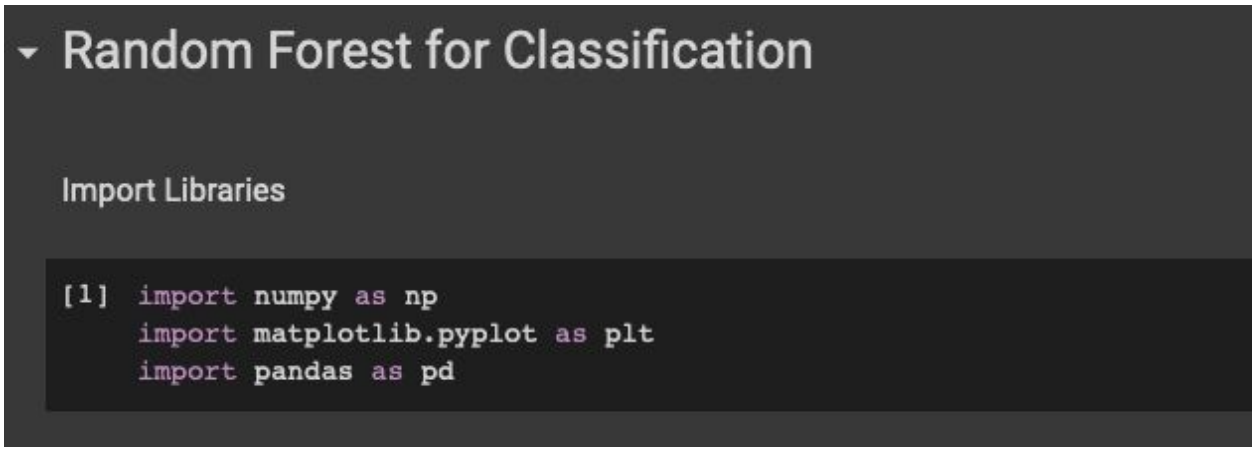

Importing Dataset

```
[2] dataset = pd.read_csv("bill_authentication.csv")
```

```
[3] dataset.head()
```

	Variance	Skewness	Curtosis	Entropy	Class
0	3.62160	8.6661	-2.8073	-0.44699	0
1	4.54590	8.1674	-2.4586	-1.46210	0
2	3.86600	-2.6383	1.9242	0.10645	0
3	3.45660	9.5228	-4.0112	-3.59440	0
4	0.32924	-4.4552	4.5718	-0.98880	0

Preparing Data For Training

```
[4] X = dataset.iloc[:, 0:4].values
    y = dataset.iloc[:, 4].values
```

```
[5] from sklearn.model_selection import train_test_split

    X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)
```

Feature Scaling

```
[6] # Feature Scaling
    from sklearn.preprocessing import StandardScaler

    sc = StandardScaler()
    X_train = sc.fit_transform(X_train)
    X_test = sc.transform(X_test)
```

Training the Algorithm

```
[7] from sklearn.ensemble import RandomForestClassifier
    classifier = RandomForestClassifier(n_estimators = 50)
    classifier.fit(X_train, y_train)
    y_pred = classifier.predict(X_test)
```

Evaluating the Algorithm

```
[8] from sklearn.metrics import classification_report, confusion_matrix, accuracy_score
    result = confusion_matrix(y_test, y_pred)
    print("Confusion Matrix:")
    print(result)
```

```
Confusion Matrix:
[[155   2]
 [  2 116]]
```

```
[9] result1 = classification_report(y_test, y_pred)
    print("Classification Report:",)
    print (result1)
```

```
Classification Report:
              precision    recall  f1-score   support

           0       0.99      0.99      0.99       157
           1       0.98      0.98      0.98       118

    accuracy                           0.99       275
   macro avg       0.99      0.99      0.99       275
weighted avg       0.99      0.99      0.99       275
```

```
[10] result2 = accuracy_score(y_test,y_pred)
     print("Accuracy:",result2)
```

```
Accuracy: 0.9854545454545455
```

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