$$61.2\% > 38.7\%$$

$$\therefore x_b = Play$$

2.2 Consider the following example and calculate the accuracy of the classifier with precision, recall, F1-score, sensitivity, specificity and ROC curve using Python.

```
In [164]:  import os
           import pandas as pd
           import numpy as np
           import matplotlib.pyplot as plt

           from sklearn.naive_bayes import GaussianNB, BernoulliNB
           from sklearn.linear_model import LogisticRegression
           from sklearn.model_selection import train_test_split, GridSearchCV
           from sklearn.metrics import confusion_matrix, auc, roc_curve, roc_auc_score, c
           lassification_report
           from sklearn.metrics import recall_score, precision_score, accuracy_score, f1_
           score

           %matplotlib inline


           df_A = pd.DataFrame(pd.read_csv('data/Table1/table1.csv'))
           df_A.keys()
```

```
Out[164]:  Index(['Day', 'Outlook', 'Temperature', 'Humidity', 'Wind', 'Play'], dtype='o
           bject')
```

```
In [165]:  def make_label(p):
               if p == 'Yes':
                   return 1
               else:
                   return 0
```

Naive Bayes Vector A

```
In [166]:  df_A['Play_Label'] = df_A['Play'].apply(make_label)
           df_A.head()
```

Out[166]:

	Day	Outlook	Temperature	Humidity	Wind	Play	Play_Label
0	D1	Sunny	Hot	Normal	Weak	No	0
1	D2	Sunny	Hot	High	Strong	No	0
2	D3	Overcast	Hot	High	Weak	Yes	1
3	D4	Rain	Mild	Normal	Strong	Yes	1
4	D5	Rain	Cool	Normal	Weak	Yes	1