Experiment 2.2

Naive Bayes

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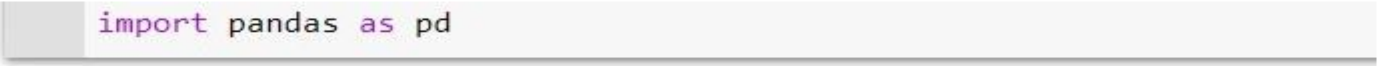
Semester: 5th
Subject Name: Machine Learning Lab **Subject Code: CSP-317**

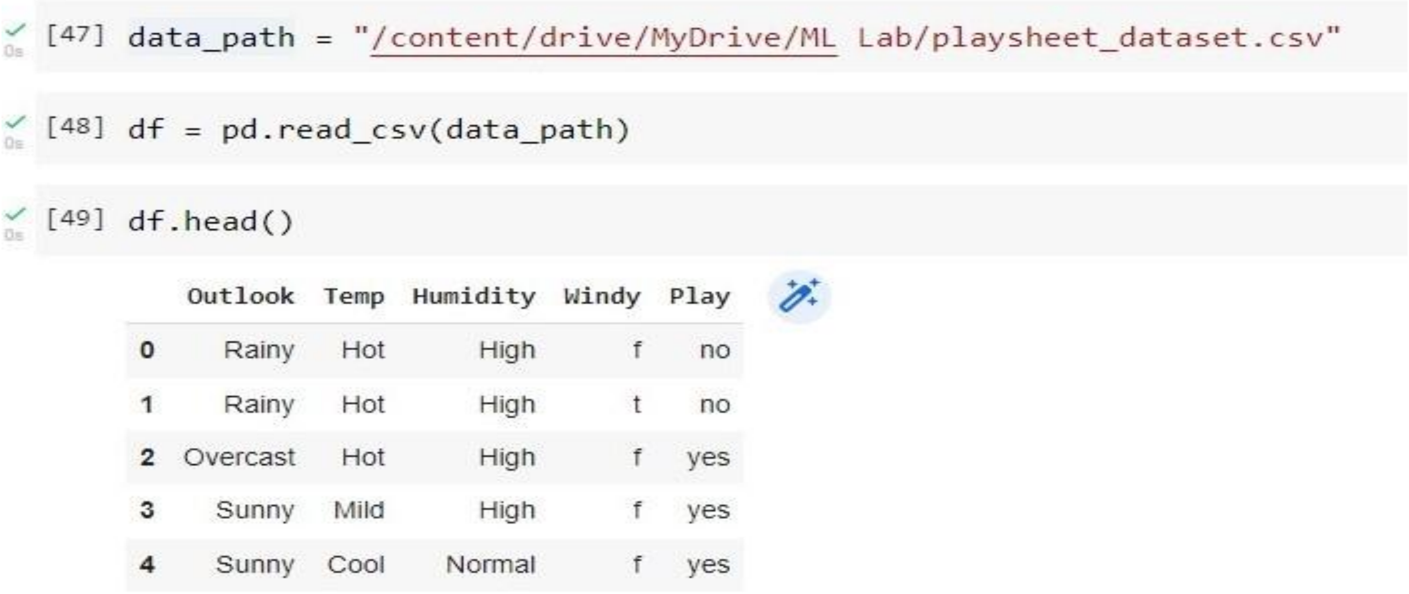
1. Aim/Overview of the practical:

Apply naive bayes on any dataset.

2. Source Code:



```
import pandas as pd
```

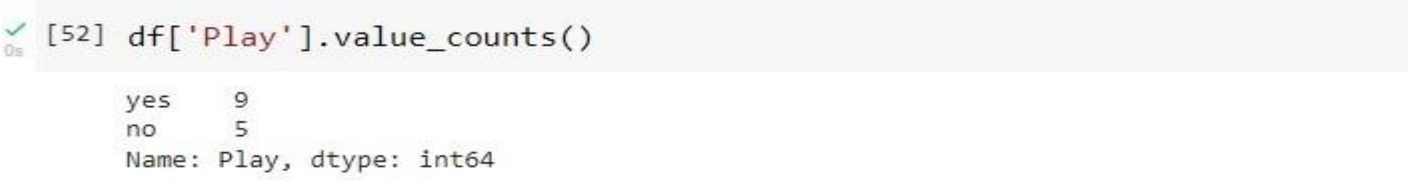


```
[47] data_path = "/content/drive/MyDrive/ML Lab/playsheet_dataset.csv"
```

```
[48] df = pd.read_csv(data_path)
```

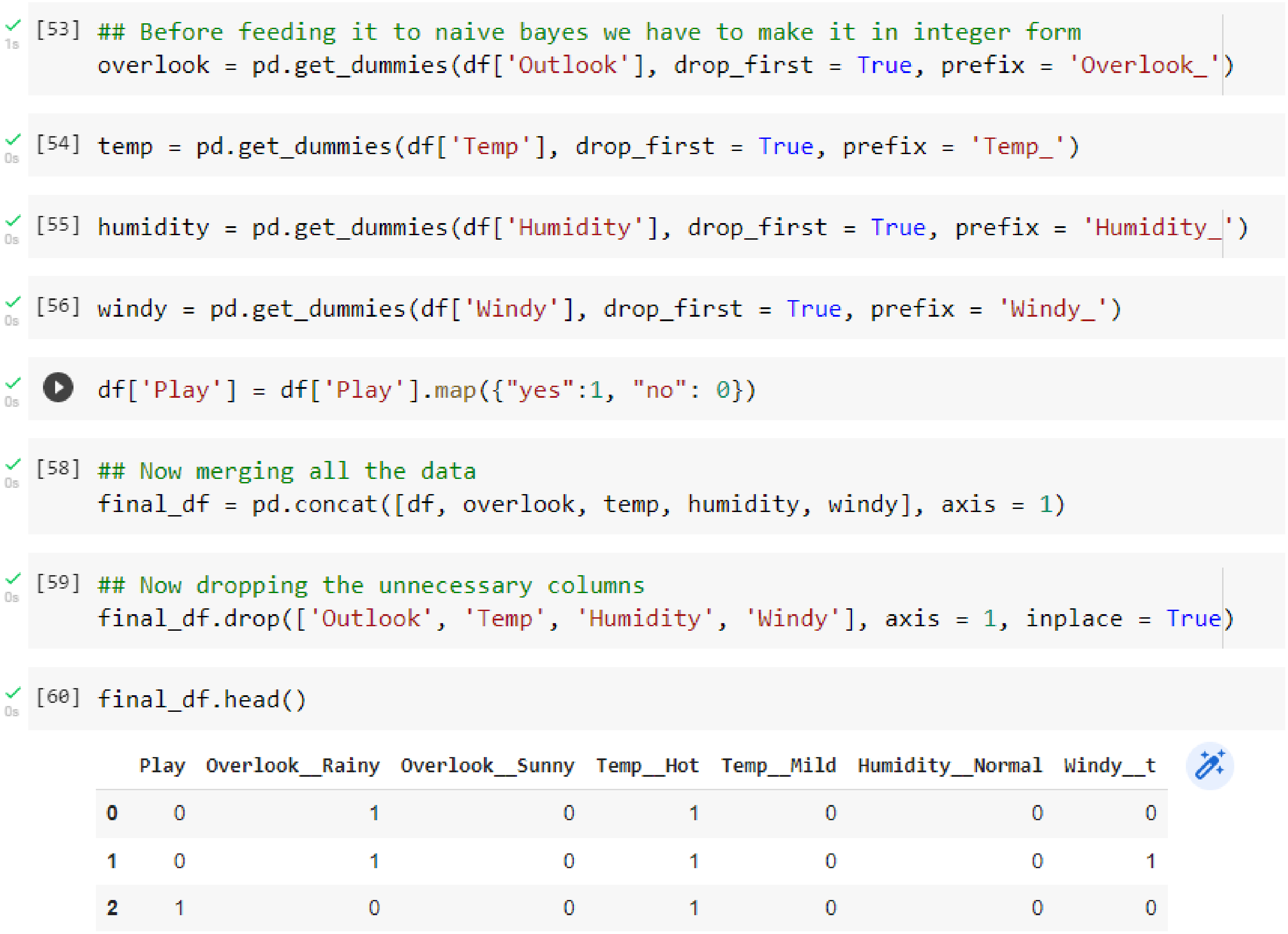
```
[49] df.head()
```

	Outlook	Temp	Humidity	Windy	Play
0	Rainy	Hot	High	f	no
1	Rainy	Hot	High	t	no
2	Overcast	Hot	High	f	yes
3	Sunny	Mild	High	f	yes
4	Sunny	Cool	Normal	f	yes



```
[52] df['Play'].value_counts()
```

```
yes    9
no     5
Name: Play, dtype: int64
```



```
[53] ## Before feeding it to naive bayes we have to make it in integer form
     overlook = pd.get_dummies(df['Outlook'], drop_first = True, prefix = 'Overlook_')
```

```
[54] temp = pd.get_dummies(df['Temp'], drop_first = True, prefix = 'Temp_')
```

```
[55] humidity = pd.get_dummies(df['Humidity'], drop_first = True, prefix = 'Humidity_')
```

```
[56] windy = pd.get_dummies(df['Windy'], drop_first = True, prefix = 'Windy_')
```

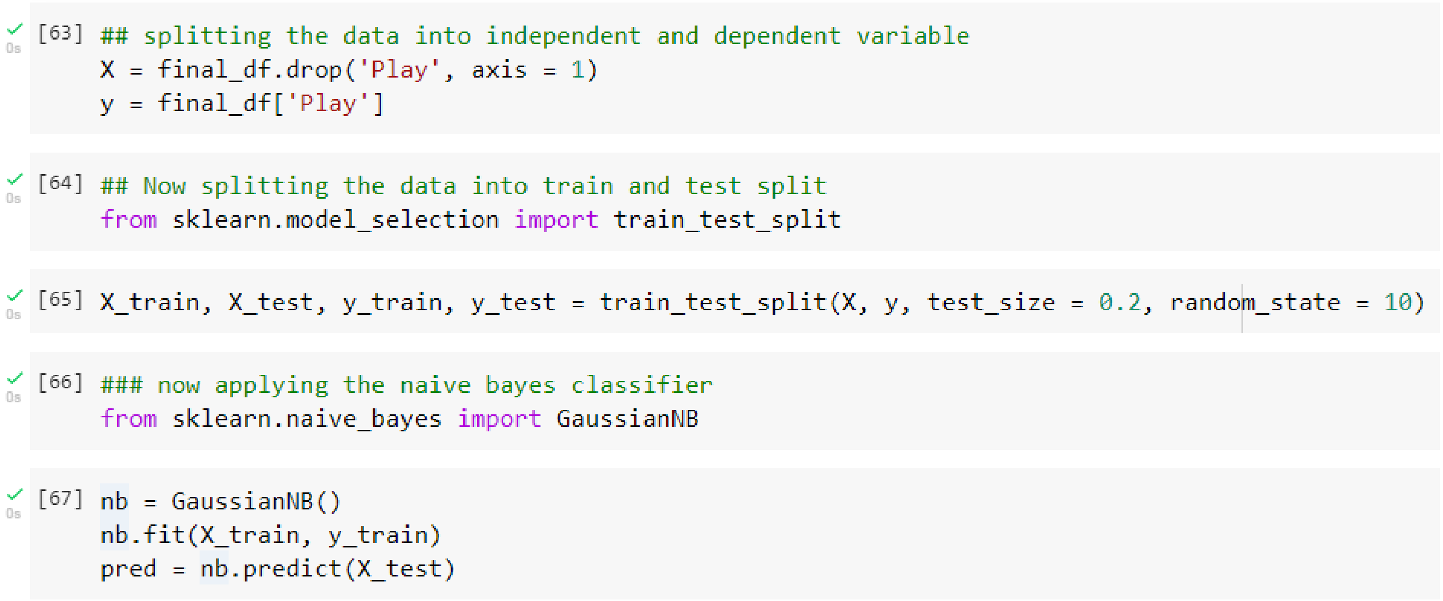
```
df['Play'] = df['Play'].map({"yes":1, "no": 0})
```

```
[58] ## Now merging all the data
     final_df = pd.concat([df, overlook, temp, humidity, windy], axis = 1)
```

```
[59] ## Now dropping the unnecessary columns
     final_df.drop(['Outlook', 'Temp', 'Humidity', 'Windy'], axis = 1, inplace = True)
```

```
[60] final_df.head()
```

	Play	Overlook__Rainy	Overlook__Sunny	Temp__Hot	Temp__Mild	Humidity__Normal	Windy__t
0	0	1	0	1	0	0	0
1	0	1	0	1	0	0	1
2	1	0	0	1	0	0	0



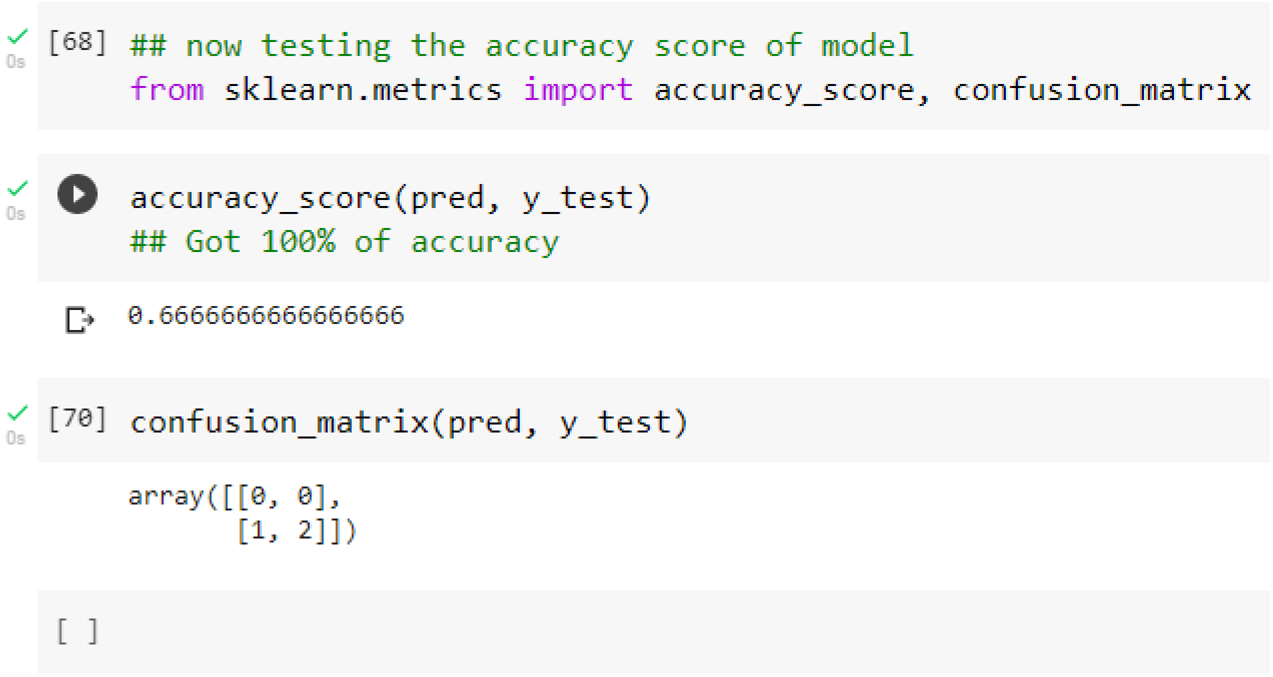
```
[63] ## splitting the data into independent and dependent variable
     X = final_df.drop('Play', axis = 1)
     y = final_df['Play']

[64] ## Now splitting the data into train and test split
     from sklearn.model_selection import train_test_split

[65] X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 10)

[66] ### now applying the naive bayes classifier
     from sklearn.naive_bayes import GaussianNB

[67] nb = GaussianNB()
     nb.fit(X_train, y_train)
     pred = nb.predict(X_test)
```



```
[68] ## now testing the accuracy score of model
     from sklearn.metrics import accuracy_score, confusion_matrix

     accuracy_score(pred, y_test)
     ## Got 100% of accuracy

     0.6666666666666666

[70] confusion_matrix(pred, y_test)

     array([[0, 0],
            [1, 2]])

[ ]
```

Learning outcomes (What I have learnt):

1. Learn about the Naive Bayes algorithm
2. Learn to perform the Naive Bayes algorithm on weather dataset
3. Learnt about the exploratory data analysis
4. Learn to optimize the Model
5. Got the clear concept of Naive Bayes classifier

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**