Experiment-3

Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets. Data Set You can use Java/Python ML library classes/API.

In [1]:

```
import pandas as pd
import numpy as np
```

In [2]:

```
df_play=pd.read_csv('PlayTennis.csv')
```

In [3]:

```
df_play.head(15)
```

Out[3]:

	Outlook	Temperature	Humidity	Wind	Play Tennis
0	Sunny	Hot	High	Weak	No
1	Sunny	Hot	High	Strong	No
2	Overcast	Hot	High	Weak	Yes
3	Rain	Mild	High	Weak	Yes
4	Rain	Cool	Normal	Weak	Yes
5	Rain	Cool	Normal	Strong	No
6	Overcast	Cool	Normal	Strong	Yes
7	Sunny	Mild	High	Weak	No
8	Sunny	Cool	Normal	Weak	Yes
9	Rain	Mild	Normal	Weak	Yes
10	Sunny	Mild	Normal	Strong	Yes
11	Overcast	Mild	High	Strong	Yes
12	Overcast	Hot	Normal	Weak	Yes
13	Rain	Mild	High	Strong	No

In [4]:

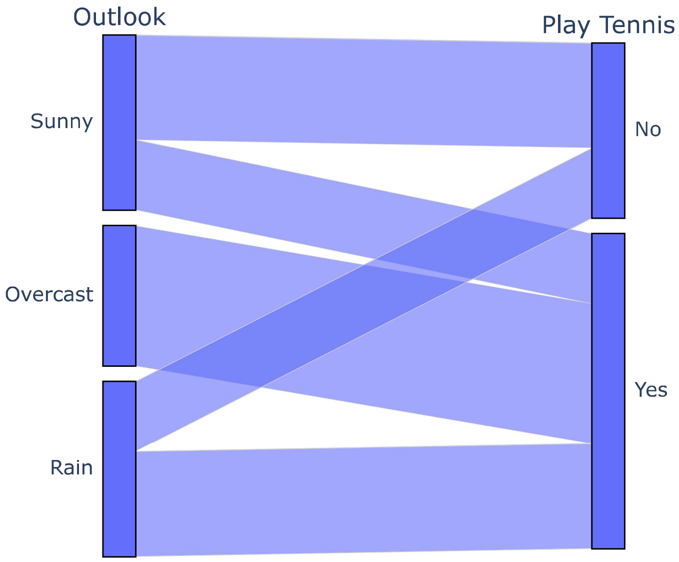
```
import plotly.express as plt
```

In [6]:

```
figure=plt.parallel_categories(df_play[['Outlook','Play Tennis']],
                               height=400,width=500)
figure.show()
```

```
C:\Users\khana\miniconda3\envs\ML_Experiments\lib\site-packages\plotly\expres
s\_core.py:279: FutureWarning:

iteritems is deprecated and will be removed in a future version. Use .items i
nstead.
```



In [7]:

```
from sklearn.preprocessing import LabelEncoder
```

In [8]:

```
LE=LabelEncoder()
```

In [10]:

```
df_play['Outlook']=LE.fit_transform(df_play['Outlook'])
df_play['Temperature']=LE.fit_transform(df_play['Temperature'])
df_play['Humidity']=LE.fit_transform(df_play['Humidity'])
df_play['Wind']=LE.fit_transform(df_play['Wind'])
```

In [11]:
```
df_play.head(15)
```

Out[11]:

	Outlook	Temperature	Humidity	Wind	Play Tennis
0	2	1	0	1	No
1	2	1	0	0	No
2	0	1	0	1	Yes
3	1	2	0	1	Yes
4	1	0	1	1	Yes
5	1	0	1	0	No
6	0	0	1	0	Yes
7	2	2	0	1	No
8	2	0	1	1	Yes
9	1	2	1	1	Yes
10	2	2	1	0	Yes
11	0	2	0	0	Yes
12	0	1	1	1	Yes
13	1	2	0	0	No

In [12]:
```
X=df_play.drop('Play Tennis',axis=1)
```

In [23]:
```
y=df_play['Play Tennis']
```

In [24]:
```
from sklearn.model_selection import train_test_split
```

In [25]:
```
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=
```

In [26]:
```
from sklearn.naive_bayes import GaussianNB
```

In [27]:
```
model=GaussianNB()
```

In [28]:
```
model.fit(X_train,y_train)
```

Out[28]:
```
▾ GaussianNB
GaussianNB()
```

In [29]:

```
y_pred=model.predict([[2,0,0,0]])
```

```
C:\Users\khana\miniconda3\envs\ML_Experiments\lib\site-packages\sklearn\base.
py:450: UserWarning:

X does not have valid feature names, but GaussianNB was fitted with feature n
ames
```

In [30]:

```
y_pred
```

Out[30]:

```
array(['No'], dtype='<U3')
```

In [32]:

```
predictions=model.predict(X_test)
```

In [31]:

```
from sklearn.metrics import accuracy_score
```

In [33]:

```
accuracy_score(y_test,predictions)
```

Out[33]:

```
0.6666666666666666
```

In [ ]:

```

```