# ML Theory Assignent 2

Naive Bayes for Weather Forecasting

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Roll no-137

Github link for program file - https://github.com/iamitbhardwaj7/ML_Theory_Assignments_sem6

```
import pandas as pd


#importing different sklearn libraries
from sklearn import preprocessing
from sklearn.naive_bayes import GaussianNB
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score


df = pd.read_csv("_weather.csv")
df.head()
```

| | outlook | temperature | play |
|---|---|---|---|
| 0 | overcast | hot | yes |
| 1 | overcast | cool | yes |
| 2 | overcast | mild | yes |
| 3 | overcast | hot | yes |
| 4 | rainy | mild | yes |

```
m = preprocessing.LabelEncoder()
df['outlook']=m.fit_transform(df['outlook'])
df['temperature']=m.fit_transform(df['temperature'])
df['play']=m.fit_transform(df['play'])



df
```

| | outlook | temperature | play |
|---|---|---|---|
| **0** | 0 | 1 | 1 |
| **1** | 0 | 0 | 1 |
| **2** | 0 | 2 | 1 |
| **3** | 0 | 1 | 1 |
| **4** | 1 | 2 | 1 |
| **5** | 1 | 0 | 1 |
| **6** | 1 | 0 | 0 |
| **7** | 1 | 2 | 1 |
| **8** | 1 | 2 | 0 |

```
X = df.drop(columns=['play'],axis=1)
y = df['play']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2)
```

```
model = GaussianNB()
model.fit(X_train,y_train)
```

```
GaussianNB(priors=None, var_smoothing=1e-09)
```

```
predict_train = model.predict(X_train)
print('Target on train data',predict_train)
```

```
Target on train data [1 0 1 1 0 0 0 0 0 1 0]
```

```
accuracy_train = accuracy_score(y_train,predict_train)
print('Accuracy on train dataset : ', accuracy_train)
```

```
Accuracy on train dataset :  0.6363636363636364
```

```
predict_test = model.predict(X_test)
print('Target on test data',predict_test)
```

```
Target on test data [1 0 1]
```

```
accuracy_test = accuracy_score( y_test,predict_test)
print('Accuracy score on test dataset : ', accuracy_test)
```

```
Accuracy score on test dataset :  0.6666666666666666
```

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