[5]:

```
import numpy as np
import pandas as pd
from sklearn.neighbors import KNeighborsClassifier

data = {
    "Study": [2,3,4,5,6,7,8,9,10,11],
    "Sleep": [8,7,6,7,8,6,5,7,8,6],
    "Result": ["Fail","Fail","Fail","Pass","Pass","Pass","Fail","Pass","Pass","Pass"]
}

df = pd.DataFrame(data)

X = df[["Study", "Sleep"]]
y = df["Result"]

model = KNeighborsClassifier(n_neighbors=3)
model.fit(X, y)

new_student = np.array([[6, 7]])
prediction = model.predict(new_student)

print("KNN Prediction:", prediction[0])
```

```
KNN Prediction: Pass
```

```python
import numpy as np
import pandas as pd
from sklearn.naive_bayes import CategoricalNB

Data = pd.DataFrame([
    ["Sunny", "Hot", "High" ,Fals e,"No"],
    ["Sunn y","H ot","H igh" ,True,"No"],
    ["Ove rcast ","Hot ","Hi gh",False,"Yes"] ,
    ["Ra iny"," Mild" ,"High",False,"Y es"],
    ["Rainy", "Cool ","Normal",False ,"Yes" ],
    ["Rai ny", "Cool","Normal",Tr ue,"No "],
    ["Ov erca st","Cool","Norm al",Tr ue,"Ye s"],
    ["Sunny","Mild", "High" ,False," No"],
    ["Sunny","Cool","Normal",False,"Yes"],
    ["Rainy", "Mild","Normal",False,"Yes"],
    ["Sunny","Mild","Normal",True,"Yes"],
    ["Overcast","Mild","High",True,"Yes"],
    ["Overcast","Hot","Normal",False,"Yes"],
    ["Rainy","Mild","High",True,"No"]
], columns=["Outlook","Temp","Humidity","Windy","Play"])

df = data.copy()

for col in df.columns:
    df[col] = df[col].astype("category").cat.codes

X = df[["Outlook","Temp","Humidity","Windy"]]
y = df["Play"]

model = CategoricalNB()
model.fit(X, y)

new = pd.DataFrame([["Sunny","Mild","High",False]], columns=["Outlook","Temp","Humidity","Windy"])
```

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Code JupyterLab Python 3 (ipykernel)

```
    ["Sunny","Cool","Normal",False,"Yes"],
    ["Rainy", "Mild","Normal",False,"Yes"],
    ["Sunny","Mild","Normal",True,"Yes"],
    ["Overcast","Mild","High",True,"Yes"],
    ["Overcast","Hot","Normal",False,"Yes"],
    ["Rainy","Mild","High",True,"No"]
], columns=["Outlook","Temp","Humidity","Windy","Play"])

df = data.copy()

for col in df.columns:
    df[col] = df[col].astype("category").cat.codes

X = df[["Outlook","Temp","Humidity","Windy"]]
y = df["Play"]

model = CategoricalNB()
model.fit(X, y)

new = pd.DataFrame([["Sunny","Mild","High",False]], columns=["Outlook","Temp","Humidity","Windy"])

for col in new.columns:
    new[col] = new[col].astype("category").cat.set_categories(data[col].unique()).cat.codes

prediction = model.predict(new)

print("Naive Bayes Prediction:", prediction[0])
```

```
Naive Bayes Prediction: 1
```

[ ]: