In [1]:
```
import numpy as np
import pandas as pd
```

In [2]:
```
df = pd.read_csv('golf_df.csv')
df
```

Out[2]:

	Outlook	Temperature	Humidity	Windy	Play
0	sunny	hot	high	False	no
1	sunny	hot	high	True	no
2	overcast	hot	high	False	yes
3	rainy	mild	high	False	yes
4	rainy	cool	normal	False	yes
5	rainy	cool	normal	True	no
6	overcast	cool	normal	True	yes
7	sunny	mild	high	False	no
8	sunny	cool	normal	False	yes
9	rainy	mild	normal	False	yes
10	sunny	mild	normal	True	yes
11	overcast	mild	high	True	yes
12	overcast	hot	normal	False	yes
13	rainy	mild	high	True	no

In [3]:
```
total = len(df)
training = int(input("Enter size of training data set:"))
testing = total - training
```

```
Enter size of training data set:9
```

In [4]:
```
trainset = df[:training]
testset = df[training:]
```

In [5]:
```
testset.reset_index(inplace = True)
```

In [6]:
```
testset = testset.drop("index", axis=1)
```

In [7]:
```
play = trainset[trainset.columns[len(trainset.columns)-1]]
```

In [8]:
```
yescount,nocount = play.value_counts()
```

In [9]:
```
print(yescount,nocount)
```

```
5 4
```

In [10]:
```
yesset = trainset[trainset[trainset.columns[len(trainset.columns)-1]] == 'yes']
col = trainset.columns[:-1]
yes = []
yeslist = []
for i in col:
    yeslist.append(yesset[i].unique())
    yes.append(list(yesset[i].value_counts()/yescount))
yes
```

Out[10]:
```
[[0.4, 0.4, 0.2], [0.6, 0.2, 0.2], [0.6, 0.4], [0.8, 0.2]]
```

In [11]:
```
noset = trainset[trainset[trainset.columns[len(trainset.columns)-1]] == 'no']
col = trainset.columns[:-1]
no = []
nolist = []
for i in col:
    nolist.append(noset[i].unique())
    no.append(list(noset[i].value_counts()/nocount))
no
```

Out[11]:
```
[[0.75, 0.25], [0.5, 0.25, 0.25], [0.75, 0.25], [0.5, 0.5]]
```

In [12]:
```
yesprob = yescount/(yescount+nocount)
noprob = nocount/(yescount+nocount)
print(yesprob,noprob)
```

```
0.5555555555555556 0.4444444444444444
```

In [13]:
```
org_testset = testset
```

In [14]:
```
testset = testset[testset.columns[:-1]]
```

In [15]:
```
org_testset
```

Out[15]:

	Outlook	Temperature	Humidity	Windy	Play
0	rainy	mild	normal	False	yes
1	sunny	mild	normal	True	yes
2	overcast	mild	high	True	yes
3	overcast	hot	normal	False	yes
4	rainy	mild	high	True	no

In [16]:
```
yestest = []
notest = []
for i in range(len(testset)):
    l = list(testset.iloc[i])
    prob = 1
    for j in range(len(l)):
        if l[j] in yeslist[j]:
            prob *= yes[j][list(yeslist[j]).index(l[j])]
        else:
            prob = 0
            break
    yestest.append(prob)
for i in range(len(testset)):
    l = list(testset.iloc[i])
    prob = 1
    for j in range(len(l)):
        if l[j] in nolist[j]:
            prob *= no[j][list(nolist[j]).index(l[j])]
        else:
            prob = 0
            break
    notest.append(prob)
res = []
for i,j in zip(yestest,notest):
    if i >= j:
        res.append('yes')
    else:
        res.append('no')
print(res)
```

```
['yes', 'no', 'yes', 'yes', 'no']
```

In [17]:
```
org = list(org_testset.iloc[:,-1])
count = 0
for i,j in zip(res,org):
    if i == j:
        count += 1
print("Accuracy = ",count/len(org)*100,'%')
```

```
Accuracy =  80.0 %
```

In [18]:
```
!pip install nbconvert
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: nbconvert in c:\programdata\anaconda3\lib\site
-packages (6.5.4)
Requirement already satisfied: lxml in c:\programdata\anaconda3\lib\site-pack
ages (from nbconvert) (4.9.2)
Requirement already satisfied: beautifulsoup4 in c:\programdata\anaconda3\lib
\site-packages (from nbconvert) (4.12.2)
Requirement already satisfied: bleach in c:\programdata\anaconda3\lib\site-pa
ckages (from nbconvert) (4.1.0)
Requirement already satisfied: defusedxml in c:\programdata\anaconda3\lib\sit
e-packages (from nbconvert) (0.7.1)
Requirement already satisfied: entrypoints>=0.2.2 in c:\programdata\anaconda3
\lib\site-packages (from nbconvert) (0.4)
Requirement already satisfied: jinja2>=3.0 in c:\programdata\anaconda3\lib\si
te-packages (from nbconvert) (3.1.2)
Requirement already satisfied: jupyter-core>=4.7 in c:\programdata\anaconda3
\lib\site-packages (from nbconvert) (5.3.0)
Requirement already satisfied: jupyterlab-pygments in c:\programdata\anaconda
3\lib\site-packages (from nbconvert) (0.1.2)
Requirement already satisfied: MarkupSafe>=2.0 in c:\programdata\anaconda3\li
b\site-packages (from nbconvert) (2.1.1)
Requirement already satisfied: mistune<2,>=0.8.1 in c:\programdata\anaconda3
\lib\site-packages (from nbconvert) (0.8.4)
Requirement already satisfied: nbclient>=0.5.0 in c:\programdata\anaconda3\li
b\site-packages (from nbconvert) (0.5.13)
Requirement already satisfied: nbformat>=5.1 in c:\programdata\anaconda3\lib
\site-packages (from nbconvert) (5.7.0)
Requirement already satisfied: packaging in c:\programdata\anaconda3\lib\site
-packages (from nbconvert) (23.0)
Requirement already satisfied: pandocfilters>=1.4.1 in c:\programdata\anacond
a3\lib\site-packages (from nbconvert) (1.5.0)
Requirement already satisfied: pygments>=2.4.1 in c:\programdata\anaconda3\li
b\site-packages (from nbconvert) (2.15.1)
Requirement already satisfied: tinycss2 in c:\programdata\anaconda3\lib\site-
packages (from nbconvert) (1.2.1)
Requirement already satisfied: traitlets>=5.0 in c:\programdata\anaconda3\lib
\site-packages (from nbconvert) (5.7.1)
Requirement already satisfied: platformdirs>=2.5 in c:\programdata\anaconda3
\lib\site-packages (from jupyter-core>=4.7->nbconvert) (2.5.2)
Requirement already satisfied: pywin32>=300 in c:\programdata\anaconda3\lib\s
ite-packages (from jupyter-core>=4.7->nbconvert) (305.1)
Requirement already satisfied: jupyter-client>=6.1.5 in c:\programdata\anacon
da3\lib\site-packages (from nbclient>=0.5.0->nbconvert) (8.1.0)
Requirement already satisfied: nest-asyncio in c:\programdata\anaconda3\lib\s
ite-packages (from nbclient>=0.5.0->nbconvert) (1.5.6)
Requirement already satisfied: fastjsonschema in c:\programdata\anaconda3\lib
\site-packages (from nbformat>=5.1->nbconvert) (2.16.2)
Requirement already satisfied: jsonschema>=2.6 in c:\programdata\anaconda3\li
b\site-packages (from nbformat>=5.1->nbconvert) (4.17.3)
Requirement already satisfied: soupsieve>1.2 in c:\programdata\anaconda3\lib
\site-packages (from beautifulsoup4->nbconvert) (2.4)
Requirement already satisfied: six>=1.9.0 in c:\programdata\anaconda3\lib\sit
e-packages (from bleach->nbconvert) (1.16.0)
Requirement already satisfied: webencodings in c:\programdata\anaconda3\lib\s
ite-packages (from bleach->nbconvert) (0.5.1)
Requirement already satisfied: attrs>=17.4.0 in c:\programdata\anaconda3\lib
\site-packages (from jsonschema>=2.6->nbformat>=5.1->nbconvert) (22.1.0)
```

```
Requirement already satisfied: pyrsistent!=0.17.0,!=0.17.1,!=0.17.2,>=0.14.0
in c:\programdata\anaconda3\lib\site-packages (from jsonschema>=2.6->nbformat
>=5.1->nbconvert) (0.18.0)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\programdata\anaco
nda3\lib\site-packages (from jupyter-client>=6.1.5->nbclient>=0.5.0->nbconver
t) (2.8.2)
Requirement already satisfied: pyzmq>=23.0 in c:\programdata\anaconda3\lib\si
te-packages (from jupyter-client>=6.1.5->nbclient>=0.5.0->nbconvert) (25.1.0)
Requirement already satisfied: tornado>=6.2 in c:\programdata\anaconda3\lib\s
ite-packages (from jupyter-client>=6.1.5->nbclient>=0.5.0->nbconvert) (6.2)
```