190031920

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DS Practical 9

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

In [2]:
```
weatherdata = pd.read_csv('vijandhydweather.csv')
weatherdata
```

	day	Vijayawada	Hyderabad
0	1	Sunny	Sunny
1	2	Cloudy	Cloudy
2	3	Sunny	Cloudy
3	4	Cloudy	Cloudy
4	5	Sunny	Sunny
5	6	Cloudy	Cloudy
6	7	Rainy	Rainy
7	8	Sunny	Sunny
8	9	Rainy	Rainy
9	10	Sunny	Cloudy
10	11	Cloudy	Cloudy
11	12	Rainy	Rainy
12	13	Sunny	Sunny
13	14	Rainy	Cloudy
14	15	Cloudy	Rainy
15	16	Sunny	Sunny
16	17	Cloudy	Sunny
17	18	Cloudy	Cloudy
18	19	Cloudy	Rainy
19	20	Sunny	Sunny

In [3]:
```
index = ['Vijayawada-Sunny', 'Vijayawada-Cloudy', 'Vijayawada-Rainy', 'Marginal-probability']
columns = ['Hyderabad-Sunny', 'Hyderabad-Cloudy', 'Hyderabad-Rainy', 'Marginal-probability']
probabilityTable = pd.DataFrame(index=index, columns=columns)
probabilityTable
```

	Hyderabad-Sunny	Hyderabad-Cloudy	Hyderabad-Rainy	Marginal-probability
Vijayawada-Sunny	NaN	NaN	NaN	NaN
Vijayawada-Cloudy	NaN	NaN	NaN	NaN
Vijayawada-Rainy	NaN	NaN	NaN	NaN
Marginal-probability	NaN	NaN	NaN	NaN

In [4]:
```
counterss = countersc = countersr = 0
countercs = countercc = countercr = 0
counterrs = counterrc = counterrr = 0
weatherdatalen = len(weatherdata.index)
for i in range(weatherdatalen):
    if weatherdata.iat[i, 1] == "Sunny":
        if weatherdata.iat[i, 2] == "Sunny" :
            counterss+=1
        elif weatherdata.iat[i, 2] == "Cloudy" :
            countersc+=1
        elif weatherdata.iat[i, 2] == "Rainy" :
            countersr+=1
    if weatherdata.iat[i, 1] == "Cloudy":
        if weatherdata.iat[i, 2] == "Sunny" :
            countercs+=1
        elif weatherdata.iat[i, 2] == "Cloudy" :
            countercc+=1
        elif weatherdata.iat[i, 2] == "Rainy" :
            countercr+=1
    if weatherdata.iat[i, 1] == "Rainy":
        if weatherdata.iat[i, 2] == "Sunny" :
            counterrs+=1
        elif weatherdata.iat[i, 2] == "Cloudy" :
            counterrc+=1
        elif weatherdata.iat[i, 2] == "Rainy" :
            counterrr+=1
```

In [5]:
```
probabilityTable.iat[0, 0] = counterss
probabilityTable.iat[0, 1] = countersc
probabilityTable.iat[0, 2] = countersr
probabilityTable.iat[1, 0] = countercs
probabilityTable.iat[1, 1] = countercc
probabilityTable.iat[1, 2] = countercr
probabilityTable.iat[2, 0] = counterrs
probabilityTable.iat[2, 1] = counterrc
probabilityTable.iat[2, 2] = counterrr
probabilityTable
```

	Hyderabad-Sunny	Hyderabad-Cloudy	Hyderabad-Rainy	Marginal-probability
Vijayawada-Sunny	6	2	0	NaN
Vijayawada-Cloudy	1	5	2	NaN
Vijayawada-Rainy	0	1	3	NaN
Marginal-probability	NaN	NaN	NaN	NaN

In [6]:
```
vs = vc = vr = 0
hs = hc = hr = 0
for i in range(3):
    vs += probabilityTable.iat[0,i]
    vc += probabilityTable.iat[1,i]
    vr += probabilityTable.iat[2,i]
    hs += probabilityTable.iat[i,0]
    hc += probabilityTable.iat[i,1]
    hr += probabilityTable.iat[i,2]

probabilityTable.iat[3,0] = hs
probabilityTable.iat[3,1] = hc
probabilityTable.iat[3,2] = hr
probabilityTable.iat[0,3] = vs
probabilityTable.iat[1,3] = vc
probabilityTable.iat[2,3] = vr
probabilityTable.iat[3,3] = 20
probabilityTable
```

	Hyderabad-Sunny	Hyderabad-Cloudy	Hyderabad-Rainy	Marginal-probability
Vijayawada-Sunny	6	2	0	8
Vijayawada-Cloudy	1	5	2	8
Vijayawada-Rainy	0	1	3	4
Marginal-probability	7	8	5	20

In [7]:
```
for i in range(4):
    for j in range(4):
        probabilityTable.iat[i,j]  = probabilityTable.iat[i,j]/20

probabilityTable
```

	Hyderabad-Sunny	Hyderabad-Cloudy	Hyderabad-Rainy	Marginal-probability
Vijayawada-Sunny	0.3	0.1	0	0.4
Vijayawada-Cloudy	0.05	0.25	0.1	0.4
Vijayawada-Rainy	0	0.05	0.15	0.2
Marginal-probability	0.35	0.4	0.25	1

All the required prabability values can be obtained from the above table