

In [4]:

```

import numpy as np
import pandas as pd

data = pd.DataFrame(pd.read_csv('pgm2.csv'))
concepts = np.array(data.iloc[:, :-1])
target = np.array(data.iloc[:, -1])

def learn(concepts, target):
    specific_h = concepts[0].copy()
    general_h = [["?" for i in range(len(specific_h))] for i in range(len(specific_h))]

    for i, h in enumerate(concepts):
        if target[i] == "Yes":
            for x in range(len(specific_h)):
                if h[x] != specific_h[x]:
                    specific_h[x] = '?'
                    general_h[x][x] = '?'

            print("\n\nFor Training instance No:{0} the hypothesis is\n".format(i))
            print("Specific hypothesis: ", specific_h)
            print("General Hypothesis: ", general_h)

        if target[i] == "No":
            for x in range(len(specific_h)):
                if h[x] != specific_h[x]:
                    general_h[x][x] = specific_h[x]
                else:
                    general_h[x][x] = '?'
            print("\n\nFor Training instance No:{0} the hypothesis is\n".format(i))
            print("Specific hypothesis: ", specific_h)
            print("General Hypothesis: ", general_h)

    indices = [i for i, val in enumerate(general_h) if val == ['?', '?', '?', '?', '?', '?']]

    for i in indices:
        general_h.remove(['?', '?', '?', '?', '?', '?'])

    return specific_h, general_h

```

In [5]:

```
print("***20,Candidate Elimination Algorithm","***20)
s_final,g_final=learn(concepts,target)
print("Final Specific hypothesis:",s_final)
print("General Specific hypothesis:",g_final)
```

***** Candidate Elimination Algorithm *****

For Training instance No:0 the hypothesis is

```
Specific hypothesis: ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
General Hypothesis: [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?']]
```

For Training instance No:1 the hypothesis is

```
Specific hypothesis: ['Sunny' 'Warm' '?' 'Strong' 'Warm' 'Same']
General Hypothesis: [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?']]
```

For Training instance No:2 the hypothesis is

```
Specific hypothesis: ['Sunny' 'Warm' '?' 'Strong' 'Warm' 'Same']
General Hypothesis: [['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?'],
['?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', 'Same']]
```

For Training instance No:3 the hypothesis is

```
Specific hypothesis: ['Sunny' 'Warm' '?' 'Strong' '?' '?']
General Hypothesis: [['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?'],
['?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?']]
Final Specific hypothesis: ['Sunny' 'Warm' '?' 'Strong' '?' '?']
General Specific hypothesis: [['Sunny', '?', '?', '?', '?', '?'], ['?', 'War
m', '?', '?', '?', '?']]
```

In []: