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In [ ]: import pandas as pd
import numpy as np
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In [ ]: file="C:\\Users\\asus\\OneDrive\\Desktop\\college_sem\\5th sem\\ml_lab\\ml2\\P2datas
```

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In [ ]: data=pd.read_csv(file)
data
```

```
Out[ ]:
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	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
0	Sunny	Warm	Normal	Strong	Warm	Same	Yes
1	Sunny	Warm	High	Strong	Warm	Same	Yes
2	Rainy	Cold	High	Strong	Warm	Change	No
3	Sunny	Warm	High	Strong	Cool	Change	Yes

```
In [ ]: dataF=np.array(data)[:,:]
# dataF
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In [ ]: concept=np.array(data)[:,-1]
# concept
```

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In [ ]: target=np.array(data)[:,-1]
# target
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```
In [ ]: def train(con,tar):
    specific_h = con[0].copy()
    general_h=[['?' for x in range(len(specific_h))] for x in range(len(specific_h))

    for i,val in enumerate(con):
        if tar[i] == 'yes':
            for x in range(len(specific_h)):
                if(val[x] != specific_h[x]):
                    specific_h[x] = '?'
                    general_h[x][x] = '?'
        else:
            for x in range(len(specific_h)):
                if val[x] != specific_h[x]:
                    general_h[x][x] = specific_h[x]
                else:
                    general_h[x][x]='?'

    print("Iteration["+ str(i+1) + "]")
    print("Specific: "+str(specific_h))
    print("General: "+str(general_h)+"\n\n")

    general_h =[general_h[i] for i, val in enumerate(general_h) if val!= ['?' for x
    return specific_h, general_h
```

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In [ ]: specific , general = train(concept,target)
print("Final hypothesis: ")
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print("Specific hypothesis: " +str(specific))
print("General hypothes: "+ str(general))
```

```
Iteration[1]
Specific: ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
General: [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?',
'?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?']]
```

```
Iteration[2]
Specific: ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
General: [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?',
'Normal', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?',
'?'], ['?', '?', '?', '?', '?', '?']]
```

```
Iteration[3]
Specific: ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
General: [['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?'],
['?', '?', 'Normal', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?',
'?', '?', '?'], ['?', '?', '?', '?', '?', 'Same']]
```

```
Iteration[4]
Specific: ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
General: [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?',
'Normal', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', 'War
m', '?'], ['?', '?', '?', '?', '?', 'Same']]
```

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

In []: