candidate elemination algorithm

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

In [2]:
```
data = pd.read_csv(r"C:\Users\sempa\Downloads\enjoysport.csv")
```

In [3]:
```
display(data)
```

	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 [ ]:
```

```

In [4]:
```
X = np.array(data.iloc[:,:-1])
```

In [5]:
```
display(X)
```

```
array([['Sunny', 'Warm', 'Normal', 'Strong', 'Warm', 'Same'],
       ['Sunny', 'Warm', 'High', 'Strong', 'Warm', 'Same'],
       ['Rainy', 'Cold', 'High', 'Strong', 'Warm', 'Change'],
       ['Sunny', 'Warm', 'High', 'Strong', 'Cool', 'Change']],
      dtype=object)
```

In [17]:
```
target = np.array(data["EnjoySport"])
```

In [16]:
```
display(target)
```

```
array(['Yes', 'Yes', 'No', 'Yes'], dtype=object)
```

In [8]:
```
def train(X, target):
    specific_h = X[0].copy()
    general_h = [["?" for _ in specific_h] for _ in specific_h]

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

    general_h = [h for h in general_h if h != ['?', '?', '?', '?', '?',

    return specific_h, general_h


```

In [9]:
```
specific_boundry, general_boundry = train(X, target)
```

In [10]:
```
print("Hypothesis in Specific Boundry:", specific_boundry, "\n")
print("Hypotheses in General Boundry:", general_boundry)
```

```
Hypothesis in Specific Boundry: ['Sunny' 'Warm' '?' 'Strong' '?' '?']

Hypotheses in General Boundry: [['Sunny', '?', '?', '?', '?', '?'], ['?',
'Warm', '?', '?', '?', '?']]
```

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```
The general hypothesis in the candidate elimination algorithm
represents a set of possible hypotheses
that are consistent with the observed data, allowing for more
flexibility in the learning process and potential refinement.
```

```
The specific hypothesis in the candidate elimination algorithm
represents a single possible hypothesis
that is consistent with the observed data and can be further refined
or eliminated during the learning process.
```