```
print("hello")
```

```
hello
```

```
import numpy as np
import pandas as pd
```

```
data = pd.read_csv("/content/dataset.csv")
concepts = np.array(data.iloc[:, 0:-1])
print(f"\nInstances are {concepts}")
target = np.array(data.iloc[:, -1])
print(f"Target values are: {target}")

def learn(concepts, target):
    specific_h = concepts[0].copy()
    print("Initalization of specific h and general h")
    print(f"specific Boundary: {specific_h}")
    general_h = [["?" for i in range(len(specific_h))] for i in range(len(specific_h))]
    print(f"Generic Boundary {general_h}")
    for i, h in enumerate(concepts):
        print(f"Instance {i + 1} is {h}")
        if target[i] == 'Yes':
            print("Instance if postivve")
            for x in range(len(specific_h)):
                if h[x] != specific_h[x]:
                    specific_h[x] = '?'
                    general_h[x][x] = '?'
        if target[i] == 'No':
            print("Instance is negative")
            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(f"Specific Boundary after {i + 1} instance is {specific_h}")
        print(f"General Boundary after {i + 1} instance is {general_h}")
        print("\n")
    indices = [i for i, val in enumerate(general_h) if val ==['?', '?', '?', "?", "?", "?"]]
    for i in indices:
        general_h.remove(['?', '?', '?', '?', '?', '?'])
    return specific_h, general_h

s_final, g_final = learn(concepts, target)
print(f"Final Specific_h {s_final}")
print(f"Final General_h {g_final}")
```

```
Instances are [['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
 ['Sunny' 'Warm' 'High' 'Strong' 'Warm' 'Same']
 ['Rainy' 'Cold' 'High' 'Strong' 'Warm' 'Change']
 ['Sunny' 'Warm' 'High' 'Strong' 'Cool' 'Change']]
Target values are: ['Yes' 'Yes' 'No' 'Yes']
Initalization of specific h and general h
specific Boundary: ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
Generic Boundary [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '
Instance 1 is ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
Instance if postivve
Specific Boundary after 1 instance is ['Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
General Boundary after 1 instance is [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'


Instance 2 is ['Sunny' 'Warm' 'High' 'Strong' 'Warm' 'Same']
Instance if postivve
Specific Boundary after 2 instance is ['Sunny' 'Warm' '?' 'Strong' 'Warm' 'Same']
General Boundary after 2 instance is [['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'


Instance 3 is ['Rainy' 'Cold' 'High' 'Strong' 'Warm' 'Change']
Instance is negative
Specific Boundary after 3 instance is ['Sunny' 'Warm' '?' 'Strong' 'Warm' 'Same']
General Boundary after 3 instance is [['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?'], ['?', '?', '?', '?', '


Instance 4 is ['Sunny' 'Warm' 'High' 'Strong' 'Cool' 'Change']
Instance if postivve
Specific Boundary after 4 instance is ['Sunny' 'Warm' '?' 'Strong' '?' '?']
General Boundary after 4 instance is [['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?'], ['?', '?', '?', '?', '


Final Specific_h ['Sunny' 'Warm' '?' 'Strong' '?' '?']
Final General_h [['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?']]
```