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In [ ]: #Implement the Candidate-Elimination Inductive Learning algorithm.
        # Class : MCA II                                     #CA LAB-VII(A): LAB on Mac
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In [42]: # Create the dataset and save it using .csv
        # Dataset
        #Example,Sky,AirTemp,Humidity,Wind,Water,Forecast,EnjoySport
        #1,Sunny,Warm ,Normal,Strong,Warm,Same,Yes
        #2,Sunny,Warm ,High,Strong,Warm,Same,Yes
        #3,Rainy,Cold,High,Strong,Warm,Change,No
        #4,Sunny,Warm ,High,Strong,Cool,Change,Yes
```

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In [34]: import numpy as np
        import pandas as pd
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In [35]: data = pd.read_csv('enjoysport.csv')
        concepts = np.array(data.iloc[:, :-1])
        print("\nInstances are:\n", concepts)
        target = np.array(data.iloc[:, -1])
        print("\nTarget Values are: ", target)
```

Instances are:

```
[[1 'Sunny' 'Warm' 'Normal' 'Strong' 'Warm' 'Same']
 [2 'Sunny' 'Warm' 'High' 'Strong' 'Warm' 'Same']
 [3 'Rainy' 'Cold' 'High' 'Strong' 'Warm' 'Change']
 [4 'Sunny' 'Warm' 'High' 'Strong' 'Cool' 'Change']]
```

Target Values are: ['Yes' 'Yes' 'No' 'Yes']

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In [40]: def learn(concepts, target):
        specific_h = concepts[0].copy()
        print("\nInitialization of specific_h and general_h")
        print("\nSpecific Boundary: ", specific_h)
        general_h = [["?" for i in range(len(specific_h))] for i in range(len(specific_h))]
        print("\nGeneric Boundary: ", general_h)
        for i, h in enumerate(concepts):
            print("\nInstance", i+1, "is ", h)
            if target[i] == "Yes":
                print("Instance is Positive ")
                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("Specific Boundary after ", i+1, "Instance is ", specific_h)
            print("Generic 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)
```

