6/29/23, 10:27 AM candidate ellimination

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In [ ]:
          #Implement the Candidate-Elimination Inductive Learning algorithm.
          # Class : MCA II
                                                                     #CA LAB-VII(A): LAB on Mac
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
In [34]:
          import numpy as np
          import pandas as pd
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']
In [40]:
          def learn(concepts, target):
              specific_h = concepts[0].copy()
              print("\nInitialization of specific_h and genearal_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 Bundary after ", i+1, "Instance is ", specific_h)
                  print("Generic Boundary after ", i+1, "Instance is ", general h)
                  print("\n")
              for i in indices:
                  general h.remove(['?', '?', '?', '?', '?'])
              return specific_h, general_h
          s_final, g_final = learn(concepts, target)
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print("Final Specific_h: ", s_final, sep="\n")
 print("Final General h: ", g final, sep="\n")
Initialization of specific h and genearal h
Specific Boundary: [1 'Sunny' 'Warm ' 'Normal' 'Strong' 'Warm' 'Same']
Instance 1 is [1 'Sunny' 'Warm ' 'Normal' 'Strong' 'Warm' 'Same']
Instance is Positive
Specific Bundary after 1 Instance is [1 'Sunny' 'Warm ' 'Normal' 'Strong' 'Warm'
'Same']
Generic Boundary after 1 Instance is [['?', '?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?'], ['?', '?', '?'], ['?', '?', '?'], ['?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]
Instance 2 is [2 'Sunny' 'Warm ' 'High' 'Strong' 'Warm' 'Same']
Instance is Positive
Specific Bundary after 2 Instance is ['?' 'Sunny' 'Warm ' '?' 'Strong' 'Warm' 'Sam
Generic Boundary after 2 Instance is [['?', '?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?', '?'], ['?'], ['?', '?'], ['?'], ['?', '?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?'], ['?']]
Instance 3 is [3 'Rainy' 'Cold' 'High' 'Strong' 'Warm' 'Change']
Instance is Negative
Specific Bundary after 3 Instance is ['?' 'Sunny' 'Warm ' '?' 'Strong' 'Warm' 'Sam
Generic Boundary after 3 Instance is [['?', '?', '?', '?', '?', '?', '?'], ['?', 'Sunny', '?', '?', '?', '?'], ['?', '?', 'Warm ', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?']
Instance 4 is [4 'Sunny' 'Warm ' 'High' 'Strong' 'Cool' 'Change']
Instance is Positive
Specific Bundary after 4 Instance is ['?' 'Sunny' 'Warm ' '?' 'Strong' '?' '?']

Generic Boundary after 4 Instance is [['?', '?', '?', '?', '?', '?', '?'], ['?', 'Sunny', '?', '?', '?', '?'], ['?', '?', 'Warm ', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?'], ['?', '?', '?'], ['?', '?', '?'], ['?', '?', '?'], ['?', '?'], ['?', '?'], ['?', '?', '?']]
Final Specific h:
['?' 'Sunny' 'Warm ' '?' 'Strong' '?' '?']
Final General h:
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In []: