

- 2 For a given set of training data examples stored in a .csv file, implement and demonstrate candidate-elimination algorithm to output a description of the set of all hypotheses consistent with training examples.

```

import csv
with open('C:\\user\\P R Bhoj\\Desktop\\csv\\file\\sampledata2.csv') as f:
    csv_file = csv.reader(f)
    data = list(csv_file)
    print(data)
    s = data[1][:-1]
    g = [['?' for i in range(len(s))] for i in range(len(s))]
    for i in data:
        if i[-1] == "yes":
            for j in range(len(s)):
                if i[j] != s[j]:
                    s[j] = '?'
                    g[j][j] = '?'
        elif i[-1] == "no":
            for j in range(len(s)):
                if i[j] != s[j]:
                    g[j][j] = s[j]
            else:
                g[j][j] = '?'
    print("In steps in candidate elimination algorithm",
          data.index(i)+1)

```

```
print(s)
print(g)
gh = []
for i in g:
    for j in i:
        if j != '?':
            gh.append(i)
            break
print("In Final specific hypothesis:\n", s)
print("In Final general hypothesis:\n", gh)
```

Dataset:

Sunny	warm	Normal	strong	warm	same	Yes
Sunny	warm	High	strong	warm	same	Yes
Rainy	cold	High	strong	warm	change	No
Sunny	warm	High	strong	cool	change	Yes

Output:

[['Sunny', 'warm', 'Normal', 'strong', 'warm',
'same', 'yes'], ['Sunny', 'warm', 'High', 'strong',
'warm', 'same', 'yes'], ['Rainy', 'cold', 'High',
'strong', 'warm', 'change', 'no'], ['Sunny',
'warm', 'High', 'strong', 'cool', 'change', 'yes']]

Steps in candidate elimination Algorithm 1

['Sunny', 'warm', '?', 'strong', 'warm', 'same']
[['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?']]

Steps in candidate elimination Algorithm 2

['Sunny', 'warm', '?', 'strong', 'warm', 'same']
[['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'],
['?', '?', '?', '?', '?', '?']]

'?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?']]

steps in candidate elimination algorithm 3

['sunny' , 'warm' , '?' , 'strong' , 'warm' , 'same']
[['sunny' , '?' , '?' , '?' , '?' , '?'] , ['?' , 'warm' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?']]
['?' , '?' , '?' , '?' , '?' , 'same']]

steps in candidate elimination algorithm 4

['sunny' , 'warm' , '?' , 'strong' , '?' , '?']
[['sunny' , '?' , '?' , '?' , '?' , '?'] , ['?' , 'warm' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?'] , ['?' , '?' , '?' , '?' , '?' , '?']]
['?' , '?' , '?' , '?' , '?' , '?']]

Final specific hypothesis :

['sunny' , 'warm' , '?' , 'strong' , '?' , '?']

Final general hypothesis :

[['sunny' , '?' , '?' , '?' , '?' , '?'] , ['?' , 'warm' , '?' , '?' , '?' , '?']]