

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

```

import csv
with open("lab2.csv") as f:
    csv_file = csv.reader(f)
    data = list(csv_file)
print(data)
s = data[1][:-1]
print(s)
g = [['?' for i in range(len(s)) for j 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("Steps of 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("InFinal specific hypothesis: In", s)
```

```
print("InFinal general hypothesis: In", gh)
```


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']]

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

Steps of candidate elimination algorithm 1

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

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

Steps of candidate elimination algorithm 2

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

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

Steps of candidate elimination algorithm 3

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

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

Steps of candidate elimination algorithm 4

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

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

Final specific hypothesis:

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

Final general hypothesis:

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

Dataset used:

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