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1BM19CS097

ML-Lab 1

In [14]:

```
import pandas as pd #supports for multi dimensional array # built on top of Numpy
import numpy as np

# to read the data in the csv file
data = pd.read_csv("/content/data.csv")
print(data)

# making an array of all the attributes
d = np.array(data)[:, :-1]
print("\n The attributes are: ", d)

# segragating the target that has positive and negative examples
target = np.array(data)[:, -1]
print("\n The target is: ", target)


# training function to implement find-s algorithm
def train(c, t):
    for i, val in enumerate(t):
        if val == "YES":
            specific_hypothesis = c[i].copy()
            print("sh is ", specific_hypothesis)
            break
    for i, val in enumerate(c):
        if t[i] == "YES":
            for x in range(len(specific_hypothesis)):
                if val[x] != specific_hypothesis[x]:
                    specific_hypothesis[x] = '?'
                else:
                    pass
    return specific_hypothesis
```

	Color	Toughness	Fungus	Appearance	Poisonous
0	GREEN	HARD	NO	WRINKLED	YES
1	GREEN	HARD	YES	SMOOTH	NO
2	BROWN	SOFT	NO	WRINKLED	NO
3	ORANGE	HARD	NO	WRINKLED	YES
4	GREEN	SOFT	YES	SMOOTH	YES
5	GREEN	HARD	YES	WRINKLED	YES
6	ORANGE	HARD	NO	WRINKLED	YES

```
The attributes are:  [['GREEN' 'HARD' 'NO' 'WRINKLED']
['GREEN' 'HARD' 'YES' 'SMOOTH']
['BROWN' 'SOFT' 'NO' 'WRINKLED']
['ORANGE' 'HARD' 'NO' 'WRINKLED']
['GREEN' 'SOFT' 'YES' 'SMOOTH']
['GREEN' 'HARD' 'YES' 'WRINKLED']
['ORANGE' 'HARD' 'NO' 'WRINKLED']]

The target is:  ['YES' 'NO' 'NO' 'YES' 'YES' 'YES' 'YES']
```

In [15]:
```
#print("Specific hypothesis is: ",train(d,target))
train(d,target)
```

```
sh is  ['GREEN' 'HARD' 'NO' 'WRINKLED']
```

Out[15]:
```
array(['?', '?', '?', '?'], dtype=object)
```

MANUAL INPUT

In [18]:
```
import pandas as pd #supports for multi dimensional array # built on top of Numpy
import numpy as np


Row=int(input("Enter the number of rows:"))
C = int(input("Enter the number of columns:"))

# Initialize matrix
data = []
print("Enter the entries rowwise:")

# For user input
for i in range(Row):          # A for loop for row entries
    a =[]
    for j in range(C):      # A for loop for column entries
         a.append(input())
    data.append(a)

print(data)


d = np.array(data)[:, :-1]
print("\n The attributes are: ", d)
```

```
target = np.array(data)[:, -1]
print("\n The target is: ", target)

def FindS(c, t):
    for i, val in enumerate(t):
        if val == "YES":
            specific_hypothesis = c[i].copy()
            print("sh is ", specific_hypothesis)
            break

    for i, val in enumerate(c):
        if t[i] == "YES":
            for x in range(len(specific_hypothesis)):
                if val[x] != specific_hypothesis[x]:
                    specific_hypothesis[x] = '?'
                else:
                    pass

    return specific_hypothesis
```

```
Enter the number of rows:7
Enter the number of columns:5
Enter the entries rowwise:
GREEN
HARD
NO
WRINKLED
YES
GREEN
HARD
YES
SMOOTH
NO
BROWN
SOFT
NO
WRINKLED
NO
ORANGE
```

```
ORANGE
HARD
NO
WRINKLED
YES
GREEN
SOFT
YES
SMOOTH
YES
GREEN
HARD
YES
WRINKLED
YES
ORANGE
HARD
NO
WRINKLED
YES
[['GREEN', 'HARD', 'NO', 'WRINKLED', 'YES'], ['GREEN', 'HARD', 'YES', 'SMOOTH', 'NO'], ['BROWN', 'SOFT', 'NO', 'WRINKLED', 'NO'], ['ORANGE', 'HARD', 'N
O', 'WRINKLED', 'YES'], ['GREEN', 'SOFT', 'YES', 'SMOOTH', 'YES'], ['GREEN', 'HARD', 'YES', 'WRINKLED', 'YES'], ['ORANGE', 'HARD', 'NO', 'WRINKLED', 'Y
ES']]

 The attributes are:  [['GREEN' 'HARD' 'NO' 'WRINKLED']
 ['GREEN' 'HARD' 'YES' 'SMOOTH']
 ['BROWN' 'SOFT' 'NO' 'WRINKLED']
 ['ORANGE' 'HARD' 'NO' 'WRINKLED']
 ['GREEN' 'SOFT' 'YES' 'SMOOTH']
 ['GREEN' 'HARD' 'YES' 'WRINKLED']
 ['ORANGE' 'HARD' 'NO' 'WRINKLED']]

 The target is:  ['YES' 'NO' 'NO' 'YES' 'YES' 'YES' 'YES']
```

In [19]:
```
FindS(d,target)
```

```
sh is  ['GREEN' 'HARD' 'NO' 'WRINKLED']
```

Out[19]:
```
array(['?', '?', '?', '?'], dtype='<U8')
```