```
from google.colab import files
uploaded = files.upload()
```

```
Choose Files weather.csv
• weather.csv(text/csv) - 142 bytes, last modified: 1/26/2025 - 100% done
Saving weather.csv to weather.csv
```

```
import pandas as pd
import numpy as np
```

```
data =pd.read_csv('weather.csv')
```

```
data
```

	sky	temp	humidity	wind	isPlay
0	sunny	warm	normal	strong	yes
1	sunny	warm	high	strong	yes
2	rainy	cold	high	strong	no
3	sunny	warm	high	weak	yes

Next steps: Generate code with data | View recommended plots | New interactive sheet

```
data.describe()
```

	sky	temp	humidity	wind	isPlay
count	4	4	4	4	4
unique	2	2	2	2	2
top	sunny	warm	high	strong	yes
freq	3	3	3	3	3

```
X = np.array(data.iloc[:,0:-1])
y = np.array(data.iloc[:,-1])
```

```
X
```

```
array([['sunny', 'warm', 'normal', 'strong'],
       ['sunny', 'warm', 'high', 'strong'],
       ['rainy', 'cold', 'high', 'strong'],
       ['sunny', 'warm', 'high', 'weak']], dtype=object)
```

```
y
```

```
array(['yes', 'yes', 'no', 'yes'], dtype=object)
```

```
def learn(X,y):
    specific_h = X[0].copy()
    print("initialization of specific_h \n",specific_h)
    general_h = [["?" for i in range(len(specific_h))] for i in range(len(specific_h))]
    print("initialization of general_h \n", general_h)

    for i, h in enumerate(X):
        if y[i] == "yes":
            print("If instance is Positive ")
            for x in range(len(specific_h)):
                if h[x]!= specific_h[x]:
                    specific_h[x] ='?'
                    general_h[x][x] ='?'

        if y[i] == "no":
            print("If 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(" step {}".format(i+1))
        print(specific_h)
        print(general_h)
        print("\n")
        print("\n")
```

weather.csv

1 to 4 of 4 entries Filter

sky	temp	humidity	wind	isPlay
sunny	warm	normal	strong	yes
sunny	warm	high	strong	yes
rainy	cold	high	strong	no
sunny	warm	high	weak	yes

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```
    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(X, y)

print("Final Specific_h:", s_final, sep="\n")
print("Final General_h:", g_final, sep="\n")
```

```
initialization of specific_h
 ['sunny' 'warm' 'normal' 'strong']
initialization of general_h
 [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]
If instance is Positive
 step 1
['sunny' 'warm' 'normal' 'strong']
[['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]



If instance is Positive
 step 2
['sunny' 'warm' '?' 'strong']
[['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]



If instance is Negative
 step 3
['sunny' 'warm' '?' 'strong']
[['sunny', '?', '?', '?'], ['?', 'warm', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]



If instance is Positive
 step 4
['sunny' 'warm' '?' '?']
[['sunny', '?', '?', '?'], ['?', 'warm', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]



Final Specific_h:
['sunny' 'warm' '?' '?']
Final General_h:
[['sunny', '?', '?', '?'], ['?', 'warm', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]
```