Experiment-1

Objective: Implement and demonstrate the FIND-Salgorithm for finding the most specifichypothesis based on a given set of training data samples. Read the trainingdata from a .CSV file or excel file.

In [1]:

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

In [2]:

```
# Read the data from the CSV file into a Pandas DataFrame
df = pd.read_excel('finds_algo.xlsx')
```

In [3]:

```
df.head(5)
```

Out[3]:

	Time	Weather	Temperature	Company	Humidity	Wind	Goes
0	Morning	Sunny	Warm	Yes	Mild	Strong	Yes
1	Evening	Rainy	Cold	No	Mild	Normal	No
2	Morning	Sunny	Moderate	Yes	Normal	Normal	Yes
3	Evening	Sunny	Cold	Yes	High	Strong	Yes

In [4]:

```
# Convert the Pandas DataFrame into a 2D array
a = df.values

# Calculate the number of attributes in each training example
num_attributes = len(a[0])-1
print(num_attributes)
```

```
6
```

In [5]:

```
# Initialize the hypothesis with '0' values equal to the number of attributes
hypothesis = ['0']*num_attributes   #['0','0','0','0','0','0']
```

In [6]:

```
# Print the initial hypothesis
print(hypothesis)
```

```
['0', '0', '0', '0', '0', '0']
```

In [7]:

```
# Set the initial value of the hypothesis to be equal to the first training example
for j in range(0,num_attributes):
    hypothesis[j] = a[0][j];

# Print the initial value of the hypothesis
print("The initial value of hypothesis:",hypothesis)
```

```
The initial value of hypothesis: ['Morning', 'Sunny', 'Warm', 'Yes', 'Mild', 'Strong']
```

In [10]:

```
# Iterate over all the training examples
for i in range(0,len(a)):
    # If the target attribute of the training example is 'Yes'
    if a[i][num_attributes] == 'Yes':
        # Update the hypothesis by checking each attribute value
        for j in range(0,num_attributes):
            # If the attribute value is not equal to the hypothesis value, set the hypothesis value to '?'
            if a[i][j]!= hypothesis[j]:
                hypothesis[j] = '?'
            # If the attribute value is equal to the hypothesis value, set the hypothesis value to the attribute value
            else:
                hypothesis[j] = a[i][j]
    # Print the hypothesis for each training example
    print("For training example no: {0} the hypothesis is".format(i),hypothesis)
```

```
For training example no: 0 the hypothesis is ['?', 'Sunny', '?', 'Yes', '?', '?']
For training example no: 1 the hypothesis is ['?', 'Sunny', '?', 'Yes', '?', '?']
For training example no: 2 the hypothesis is ['?', 'Sunny', '?', 'Yes', '?', '?']
For training example no: 3 the hypothesis is ['?', 'Sunny', '?', 'Yes', '?', '?']
```

In [11]:

```
# Print the final maximally specific hypothesis
print("The maximally specific hypothesis for a given training example:",hypothesis)
```

```
The maximally specific hypothesis for a given training example: ['?', 'Sunny', '?', 'Yes', '?', '?']
```

In [ ]: