ITA0612 – MACHINE LEARNING FOR DECISION MAKING

LAB EXPERIMENT 1 – FIND-S ALGORITHM

AIM:

To implement and demonstrate the FIND-S algorithm to find the most specific hypothesis consistent with the training data samples

ALGORITHM:

1. Initialize the most specific hypothesis with null values.

2. Read the training examples along with their target labels.

3. Consider only positive training examples.

4. For each attribute:

   - If the hypothesis attribute is null, replace it with the example's attribute value.

   - If it differs from the example's value, replace it with ?.

5. Repeat until all positive examples are processed.

6. Display the final hypothesis.

PYTHON CODE:

```
def find_s(training_data):

  hypothesis = ['0'] * (len(training_data[0]) - 1)

  for instance in training_data:

    if instance[-1] == 'Yes':

      for i in range(len(hypothesis)):

        if hypothesis[i] == '0':

          hypothesis[i] = instance[i]

        elif hypothesis[i] != instance[i]:

          hypothesis[i] = '?'

  return hypothesis
```

```
data = [

    ['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']

]

print("Final Hypothesis:", find_s(data))
```

SAMPLE OUTPUT:

```
Final Hypothesis: ['Sunny', 'Warm', '?', 'Strong', '?', '?']
```

RESULT:

Thus, the FIND-S algorithm was successfully implemented and the most specific hypothesis was obtained from the given training data.