4. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Find-S algorithm to output a description of the set of all hypotheses consistent with the training examples.

```
import random
import csv
num_attributes = 4
a = []
print("\n The Given Training Data Set \n")
with open('D:/ML-LAB/emp.csv', 'r') as csvFile:
    reader = csv.reader(csvFile)
    for row in reader:
        a.append (row)
        print(row)
print("\n The initial value of hypothesis: ")

hypothesis = ['0'] * num_attributes
print(hypothesis)

# Comparing with First Training Example
for j in range(0,num_attributes):
        hypothesis[j] = a[0][j];
        print ("Hypothesis:",hypothesis[j])

# Comparing with Remaining Training Examples of Given Data Set

print("\n Find S: Finding a Maximally Specific Hypothesis\n")

for i in range(0,len(a)):
    if a[i][num_attributes]=='Yes':
            for j in range(0,num_attributes):
                if a[i][j]!=hypothesis[j]:
                    hypothesis[j]='?'
                else :
                    hypothesis[j]= a[i][j]
    print(" For Training Example No :{0} the hypothesis is
".format(i),hypothesis)

print("\n The Maximally Specific Hypothesis for a given Training
Examples :\n")
print(hypothesis)
```

NOTE:

Create a CSV file with following employee data values and save it in any folder

Experience	Qualification	Skill	Age	Hired (Target)
Yes	Masters	Python	30	Yes
Yes	Bachelors	Python	25	Yes
No	Bachelors	Java	28	No
Yes	Masters	Java	40	Yes
No	Masters	Python	35	No

OUTPUT

The Given Training Data Set

['yes', 'Masters', 'Python', '30', 'Yes']
['yes', 'Bachelors', 'Python', '25', 'Yes']
['No', 'Bachelors', 'Java', '28', 'No']
['yes', 'Masters', 'Java', '40', 'Yes']
['No', 'Masters', 'Python', '35', 'No']

The initial value of hypothesis:
['0', '0', '0', '0']
Hypothesis: yes
Hypothesis: Masters
Hypothesis: Python
Hypothesis: 30

Find S: Finding a Maximally Specific Hypothesis

For Training Example No :0 the hypothesis is ['yes', 'Masters', 'Python', '30']
For Training Example No :1 the hypothesis is ['yes', '?', 'Python', '?']
For Training Example No :2 the hypothesis is ['yes', '?', 'Python', '?']
For Training Example No :3 the hypothesis is ['yes', '?', '?', '?']
For Training Example No :4 the hypothesis is ['yes', '?', '?', '?']

The Maximally Specific Hypothesis for a given Training Examples :

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

[ ]: