EXPERIMENT – 2

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

CODE :

```python
import pandas as pd

data = {
    'Outlook': ['Sunny', 'Sunny', 'Rainy', 'Sunny'],
    'Temperature': ['Warm', 'Warm', 'Cold', 'Warm'],
    'Humidity': ['Normal', 'High', 'High', 'High'],
    'Wind': ['Strong', 'Strong', 'Strong', 'Strong'],
    'Water': ['Warm', 'Warm', 'Warm', 'Cool'],
    'Forecast': ['Same', 'Same', 'Change', 'Change'],
    'PlayTennis': ['Yes', 'Yes', 'No', 'Yes']
}

df = pd.DataFrame(data)

# Initialize S and G
n = len(df.columns) - 1
S = ['Ø'] * n
G = [['?'] * n
]

# Candidate Elimination Algorithm
for _, row in df.iterrows():
    x = row[:-1].tolist()
    y = row[-1].lower()
    if y == 'yes':      # Positive example
        for i in range(n):
            if S[i] == 'Ø':
                S[i] = x[i]
            elif S[i] != x[i]:
```

```python
            S[i] = '?'
        G = [g for g in G if all(g[i] == '?' or g[i] == S[i] for i in range(n))]


    else:
        newG = []
        for g in G:
            for i in range(n):
                if g[i] == '?' and S[i] != '?' and S[i] != x[i]:
                    h = g.copy()
                    h[i] = S[i]
                    newG.append(h)
        G = newG
print("Final S:", S)
print("Final G:")
for g in G:
    print(g)
```

OUTPUT

```
Final S: ['Sunny', 'Warm', '?', 'Strong', '?', '?']
Final G:
['Sunny', '?', '?', '?', '?', '?']
['?', 'Warm', '?', '?', '?', '?']
>>>
```