

# INTRODUCTION TO MACHINE LEARNING

## LAB ASSIGNMENT – 2

**NAME : PRATHAPANI SATWIK**

**REG.NO. : 20BCD7160**

### 1) FIND -S ALGORITHM

#### CODE :

```
import pandas as pd
import numpy as np

data = pd.read_csv("IRIS.csv")
print(data,"n")

d = np.array(data)[:,-1]
print("n The attributes are: ",d)

target = np.array(data)[:,-1]
print("n The target is: ",target)

def train(c,t):
    for i, val in enumerate(t):
        if val == "Yes":
            specific_hypothesis = c[i].copy()
            break

    for i, val in enumerate(c):
        if t[i] == "Yes":
            for x in range(len(specific_hypothesis)):
                if val[x] != specific_hypothesis[x]:
                    specific_hypothesis[x] = '?'
            else:
                pass

    return specific_hypothesis

print("n The final hypothesis is:",train(d,target))
```

#### OUTPUT :

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
..	...	...	...	...	...

145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

[150 rows x 5 columns] n

n The attributes are: [[5.1 3.5 1.4 0.2]

[4.9 3.0 1.4 0.2]

[4.7 3.2 1.3 0.2]

[4.6 3.1 1.5 0.2]

[5.0 3.6 1.4 0.2]

[5.4 3.9 1.7 0.4]

[4.6 3.4 1.4 0.3]

[5.0 3.4 1.5 0.2]

[4.4 2.9 1.4 0.2]

[4.9 3.1 1.5 0.1]

[5.4 3.7 1.5 0.2]

[4.8 3.4 1.6 0.2]

[4.8 3.0 1.4 0.1]

[4.3 3.0 1.1 0.1]

[5.8 4.0 1.2 0.2]

[5.7 4.4 1.5 0.4]

[5.4 3.9 1.3 0.4]

[5.1 3.5 1.4 0.3]

[5.7 3.8 1.7 0.3]

[5.1 3.8 1.5 0.3]

[5.4 3.4 1.7 0.2]

[5.1 3.7 1.5 0.4]

[4.6 3.6 1.0 0.2]

[5.1 3.3 1.7 0.5]

[4.8 3.4 1.9 0.2]

[5.0 3.0 1.6 0.2]

[5.0 3.4 1.6 0.4]

[5.2 3.5 1.5 0.2]

[5.2 3.4 1.4 0.2]

[4.7 3.2 1.6 0.2]

[4.8 3.1 1.6 0.2]

[5.4 3.4 1.5 0.4]

[5.2 4.1 1.5 0.1]

[5.5 4.2 1.4 0.2]

[4.9 3.1 1.5 0.1]

[5.0 3.2 1.2 0.2]

[5.5 3.5 1.3 0.2]

[4.9 3.1 1.5 0.1]

[4.4 3.0 1.3 0.2]

[5.1 3.4 1.5 0.2]

[5.0 3.5 1.3 0.3]

[4.5 2.3 1.3 0.3]

[4.4 3.2 1.3 0.2]

[5.0 3.5 1.6 0.6]

[5.1 3.8 1.9 0.4]  
[4.8 3.0 1.4 0.3]  
[5.1 3.8 1.6 0.2]  
[4.6 3.2 1.4 0.2]  
[5.3 3.7 1.5 0.2]  
[5.0 3.3 1.4 0.2]  
[7.0 3.2 4.7 1.4]  
[6.4 3.2 4.5 1.5]  
[6.9 3.1 4.9 1.5]  
[5.5 2.3 4.0 1.3]  
[6.5 2.8 4.6 1.5]  
[5.7 2.8 4.5 1.3]  
[6.3 3.3 4.7 1.6]  
[4.9 2.4 3.3 1.0]  
[6.6 2.9 4.6 1.3]  
[5.2 2.7 3.9 1.4]  
[5.0 2.0 3.5 1.0]  
[5.9 3.0 4.2 1.5]  
[6.0 2.2 4.0 1.0]  
[6.1 2.9 4.7 1.4]  
[5.6 2.9 3.6 1.3]  
[6.7 3.1 4.4 1.4]  
[5.6 3.0 4.5 1.5]  
[5.8 2.7 4.1 1.0]  
[6.2 2.2 4.5 1.5]  
[5.6 2.5 3.9 1.1]  
[5.9 3.2 4.8 1.8]  
[6.1 2.8 4.0 1.3]  
[6.3 2.5 4.9 1.5]  
[6.1 2.8 4.7 1.2]  
[6.4 2.9 4.3 1.3]  
[6.6 3.0 4.4 1.4]  
[6.8 2.8 4.8 1.4]  
[6.7 3.0 5.0 1.7]  
[6.0 2.9 4.5 1.5]  
[5.7 2.6 3.5 1.0]  
[5.5 2.4 3.8 1.1]  
[5.5 2.4 3.7 1.0]  
[5.8 2.7 3.9 1.2]  
[6.0 2.7 5.1 1.6]  
[5.4 3.0 4.5 1.5]  
[6.0 3.4 4.5 1.6]  
[6.7 3.1 4.7 1.5]  
[6.3 2.3 4.4 1.3]  
[5.6 3.0 4.1 1.3]  
[5.5 2.5 4.0 1.3]  
[5.5 2.6 4.4 1.2]  
[6.1 3.0 4.6 1.4]  
[5.8 2.6 4.0 1.2]  
[5.0 2.3 3.3 1.0]  
[5.6 2.7 4.2 1.3]

[5.7 3.0 4.2 1.2]  
[5.7 2.9 4.2 1.3]  
[6.2 2.9 4.3 1.3]  
[5.1 2.5 3.0 1.1]  
[5.7 2.8 4.1 1.3]  
[6.3 3.3 6.0 2.5]  
[5.8 2.7 5.1 1.9]  
[7.1 3.0 5.9 2.1]  
[6.3 2.9 5.6 1.8]  
[6.5 3.0 5.8 2.2]  
[7.6 3.0 6.6 2.1]  
[4.9 2.5 4.5 1.7]  
[7.3 2.9 6.3 1.8]  
[6.7 2.5 5.8 1.8]  
[7.2 3.6 6.1 2.5]  
[6.5 3.2 5.1 2.0]  
[6.4 2.7 5.3 1.9]  
[6.8 3.0 5.5 2.1]  
[5.7 2.5 5.0 2.0]  
[5.8 2.8 5.1 2.4]  
[6.4 3.2 5.3 2.3]  
[6.5 3.0 5.5 1.8]  
[7.7 3.8 6.7 2.2]  
[7.7 2.6 6.9 2.3]  
[6.0 2.2 5.0 1.5]  
[6.9 3.2 5.7 2.3]  
[5.6 2.8 4.9 2.0]  
[7.7 2.8 6.7 2.0]  
[6.3 2.7 4.9 1.8]  
[6.7 3.3 5.7 2.1]  
[7.2 3.2 6.0 1.8]  
[6.2 2.8 4.8 1.8]  
[6.1 3.0 4.9 1.8]  
[6.4 2.8 5.6 2.1]  
[7.2 3.0 5.8 1.6]  
[7.4 2.8 6.1 1.9]  
[7.9 3.8 6.4 2.0]  
[6.4 2.8 5.6 2.2]  
[6.3 2.8 5.1 1.5]  
[6.1 2.6 5.6 1.4]  
[7.7 3.0 6.1 2.3]  
[6.3 3.4 5.6 2.4]  
[6.4 3.1 5.5 1.8]  
[6.0 3.0 4.8 1.8]  
[6.9 3.1 5.4 2.1]  
[6.7 3.1 5.6 2.4]  
[6.9 3.1 5.1 2.3]  
[5.8 2.7 5.1 1.9]  
[6.8 3.2 5.9 2.3]  
[6.7 3.3 5.7 2.5]  
[6.7 3.0 5.2 2.3]

[6.3 2.5 5.0 1.9]

[6.5 3.0 5.2 2.0]

[6.2 3.4 5.4 2.3]

[5.9 3.0 5.1 1.8]]

n The target is: ['Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor' 'Iris-versicolor'

'Iris-versicolor' 'Iris-versicolor' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica'

'Iris-virginica' 'Iris-virginica' 'Iris-virginica' 'Iris-virginica']

## 2)CANDIDATE ELIMINATION :

### CODE :

```
import numpy as np
import pandas as pd
# Reading the data from CSV file
data = pd.read_csv('IRIS.csv')
concepts = np.array(data.iloc[:, :-1])
print("\nInstances are:\n", concepts)
```

```

target = np.array(data.iloc[:,-1])
print("\nTarget Values are: ",target)

def train(concepts, target):

    # Initializing general and specific hypothesis
    specific_h = concepts[0].copy()
    print("\nInitialization of specific hypothesis and general hypothesis")
    print("\nSpecific Boundary: ", specific_h)
    general_h = [['?' for i in range(len(specific_h))] for i in range(len(specific_h))]
    print("\nGeneric Boundary: ",general_h)

    for i, val in enumerate(concepts):
        print("\nInstance", i+1 , "is ", val)
        #positive example
        if target[i] == "yes":
            print("Instance is Positive ")
            for x in range(len(specific_h)):
                if val[x] != specific_h[x]:
                    specific_h[x] = '?'
                    general_h[x][x] = '?'
        #negative example
        if target[i] == "no":
            print("Instance is Negative ")
            for x in range(len(specific_h)):
                if val[x] != specific_h[x]:
                    general_h[x][x] = specific_h[x]
            else:
                general_h[x][x] = '?'

        print("Specific Boundary after ", i+1, "Instance is ", specific_h)
        print("Generic Boundary after ", i+1, "Instance is ", general_h)
        print("\n")

    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 = train(concepts, target)
# displaying Specific_hypothesis
print("Final Specific_h: ", s_final, sep="\n")
# displaying Generalized_Hypothesis
print("Final General_h: ", g_final, sep="\n")

```

**OUTPUT :**

Instances are:

[[5.1 3.5 1.4 0.2]  
[4.9 3. 1.4 0.2]  
[4.7 3.2 1.3 0.2]  
[4.6 3.1 1.5 0.2]  
[5. 3.6 1.4 0.2]  
[5.4 3.9 1.7 0.4]  
[4.6 3.4 1.4 0.3]  
[5. 3.4 1.5 0.2]  
[4.4 2.9 1.4 0.2]  
[4.9 3.1 1.5 0.1]  
[5.4 3.7 1.5 0.2]  
[4.8 3.4 1.6 0.2]  
[4.8 3. 1.4 0.1]  
[4.3 3. 1.1 0.1]  
[5.8 4. 1.2 0.2]  
[5.7 4.4 1.5 0.4]  
[5.4 3.9 1.3 0.4]  
[5.1 3.5 1.4 0.3]  
[5.7 3.8 1.7 0.3]  
[5.1 3.8 1.5 0.3]  
[5.4 3.4 1.7 0.2]  
[5.1 3.7 1.5 0.4]  
[4.6 3.6 1. 0.2]  
[5.1 3.3 1.7 0.5]  
[4.8 3.4 1.9 0.2]  
[5. 3. 1.6 0.2]  
[5. 3.4 1.6 0.4]  
[5.2 3.5 1.5 0.2]  
[5.2 3.4 1.4 0.2]  
[4.7 3.2 1.6 0.2]  
[4.8 3.1 1.6 0.2]  
[5.4 3.4 1.5 0.4]  
[5.2 4.1 1.5 0.1]  
[5.5 4.2 1.4 0.2]  
[4.9 3.1 1.5 0.1]  
[5. 3.2 1.2 0.2]  
[5.5 3.5 1.3 0.2]  
[4.9 3.1 1.5 0.1]  
[4.4 3. 1.3 0.2]  
[5.1 3.4 1.5 0.2]  
[5. 3.5 1.3 0.3]  
[4.5 2.3 1.3 0.3]  
[4.4 3.2 1.3 0.2]  
[5. 3.5 1.6 0.6]  
[5.1 3.8 1.9 0.4]  
[4.8 3. 1.4 0.3]  
[5.1 3.8 1.6 0.2]  
[4.6 3.2 1.4 0.2]  
[5.3 3.7 1.5 0.2]  
[5. 3.3 1.4 0.2]

[7. 3.2 4.7 1.4]  
[6.4 3.2 4.5 1.5]  
[6.9 3.1 4.9 1.5]  
[5.5 2.3 4. 1.3]  
[6.5 2.8 4.6 1.5]  
[5.7 2.8 4.5 1.3]  
[6.3 3.3 4.7 1.6]  
[4.9 2.4 3.3 1. ]  
[6.6 2.9 4.6 1.3]  
[5.2 2.7 3.9 1.4]  
[5. 2. 3.5 1. ]  
[5.9 3. 4.2 1.5]  
[6. 2.2 4. 1. ]  
[6.1 2.9 4.7 1.4]  
[5.6 2.9 3.6 1.3]  
[6.7 3.1 4.4 1.4]  
[5.6 3. 4.5 1.5]  
[5.8 2.7 4.1 1. ]  
[6.2 2.2 4.5 1.5]  
[5.6 2.5 3.9 1.1]  
[5.9 3.2 4.8 1.8]  
[6.1 2.8 4. 1.3]  
[6.3 2.5 4.9 1.5]  
[6.1 2.8 4.7 1.2]  
[6.4 2.9 4.3 1.3]  
[6.6 3. 4.4 1.4]  
[6.8 2.8 4.8 1.4]  
[6.7 3. 5. 1.7]  
[6. 2.9 4.5 1.5]  
[5.7 2.6 3.5 1. ]  
[5.5 2.4 3.8 1.1]  
[5.5 2.4 3.7 1. ]  
[5.8 2.7 3.9 1.2]  
[6. 2.7 5.1 1.6]  
[5.4 3. 4.5 1.5]  
[6. 3.4 4.5 1.6]  
[6.7 3.1 4.7 1.5]  
[6.3 2.3 4.4 1.3]  
[5.6 3. 4.1 1.3]  
[5.5 2.5 4. 1.3]  
[5.5 2.6 4.4 1.2]  
[6.1 3. 4.6 1.4]  
[5.8 2.6 4. 1.2]  
[5. 2.3 3.3 1. ]  
[5.6 2.7 4.2 1.3]  
[5.7 3. 4.2 1.2]  
[5.7 2.9 4.2 1.3]  
[6.2 2.9 4.3 1.3]  
[5.1 2.5 3. 1.1]  
[5.7 2.8 4.1 1.3]  
[6.3 3.3 6. 2.5]



[5.8 2.7 5.1 1.9]  
[7.1 3. 5.9 2.1]  
[6.3 2.9 5.6 1.8]  
[6.5 3. 5.8 2.2]  
[7.6 3. 6.6 2.1]  
[4.9 2.5 4.5 1.7]  
[7.3 2.9 6.3 1.8]  
[6.7 2.5 5.8 1.8]  
[7.2 3.6 6.1 2.5]  
[6.5 3.2 5.1 2. ]  
[6.4 2.7 5.3 1.9]  
[6.8 3. 5.5 2.1]  
[5.7 2.5 5. 2. ]  
[5.8 2.8 5.1 2.4]  
[6.4 3.2 5.3 2.3]  
[6.5 3. 5.5 1.8]  
[7.7 3.8 6.7 2.2]  
[7.7 2.6 6.9 2.3]  
[6. 2.2 5. 1.5]  
[6.9 3.2 5.7 2.3]  
[5.6 2.8 4.9 2. ]  
[7.7 2.8 6.7 2. ]  
[6.3 2.7 4.9 1.8]  
[6.7 3.3 5.7 2.1]  
[7.2 3.2 6. 1.8]  
[6.2 2.8 4.8 1.8]  
[6.1 3. 4.9 1.8]  
[6.4 2.8 5.6 2.1]  
[7.2 3. 5.8 1.6]  
[7.4 2.8 6.1 1.9]  
[7.9 3.8 6.4 2. ]  
[6.4 2.8 5.6 2.2]  
[6.3 2.8 5.1 1.5]  
[6.1 2.6 5.6 1.4]  
[7.7 3. 6.1 2.3]  
[6.3 3.4 5.6 2.4]  
[6.4 3.1 5.5 1.8]  
[6. 3. 4.8 1.8]  
[6.9 3.1 5.4 2.1]  
[6.7 3.1 5.6 2.4]  
[6.9 3.1 5.1 2.3]  
[5.8 2.7 5.1 1.9]  
[6.8 3.2 5.9 2.3]  
[6.7 3.3 5.7 2.5]  
[6.7 3. 5.2 2.3]  
[6.3 2.5 5. 1.9]  
[6.5 3. 5.2 2. ]  
[6.2 3.4 5.4 2.3]  
[5.9 3. 5.1 1.8]]

Target Values are: ['Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa' 'Iris-setosa']



Instance 3 is [4.7 3.2 1.3 0.2]

Specific Boundary after 3 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 3 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 4 is [4.6 3.1 1.5 0.2]

Specific Boundary after 4 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 4 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 5 is [5. 3.6 1.4 0.2]

Specific Boundary after 5 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 5 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 6 is [5.4 3.9 1.7 0.4]

Specific Boundary after 6 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 6 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 7 is [4.6 3.4 1.4 0.3]

Specific Boundary after 7 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 7 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 8 is [5. 3.4 1.5 0.2]

Specific Boundary after 8 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 8 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 9 is [4.4 2.9 1.4 0.2]

Specific Boundary after 9 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 9 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 10 is [4.9 3.1 1.5 0.1]

Specific Boundary after 10 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 10 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 11 is [5.4 3.7 1.5 0.2]

Specific Boundary after 11 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 11 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 12 is [4.8 3.4 1.6 0.2]

Specific Boundary after 12 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 12 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 13 is [4.8 3. 1.4 0.1]

Specific Boundary after 13 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 13 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 14 is [4.3 3. 1.1 0.1]

Specific Boundary after 14 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 14 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 15 is [5.8 4. 1.2 0.2]

Specific Boundary after 15 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 15 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 16 is [5.7 4.4 1.5 0.4]

Specific Boundary after 16 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 16 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 17 is [5.4 3.9 1.3 0.4]

Specific Boundary after 17 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 17 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 18 is [5.1 3.5 1.4 0.3]

Specific Boundary after 18 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 18 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 19 is [5.7 3.8 1.7 0.3]

Specific Boundary after 19 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 19 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 20 is [5.1 3.8 1.5 0.3]

Specific Boundary after 20 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 20 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 21 is [5.4 3.4 1.7 0.2]

Specific Boundary after 21 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 21 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 22 is [5.1 3.7 1.5 0.4]

Specific Boundary after 22 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 22 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 23 is [4.6 3.6 1. 0.2]

Specific Boundary after 23 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 23 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 24 is [5.1 3.3 1.7 0.5]

Specific Boundary after 24 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 24 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 25 is [4.8 3.4 1.9 0.2]

Specific Boundary after 25 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 25 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 26 is [5. 3. 1.6 0.2]

Specific Boundary after 26 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 26 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 27 is [5. 3.4 1.6 0.4]

Specific Boundary after 27 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 27 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 28 is [5.2 3.5 1.5 0.2]

Specific Boundary after 28 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 28 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 29 is [5.2 3.4 1.4 0.2]

Specific Boundary after 29 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 29 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 30 is [4.7 3.2 1.6 0.2]

Specific Boundary after 30 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 30 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 31 is [4.8 3.1 1.6 0.2]

Specific Boundary after 31 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 31 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 32 is [5.4 3.4 1.5 0.4]

Specific Boundary after 32 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 32 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 33 is [5.2 4.1 1.5 0.1]

Specific Boundary after 33 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 33 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 34 is [5.5 4.2 1.4 0.2]

Specific Boundary after 34 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 34 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 35 is [4.9 3.1 1.5 0.1]

Specific Boundary after 35 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 35 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 36 is [5. 3.2 1.2 0.2]

Specific Boundary after 36 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 36 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 37 is [5.5 3.5 1.3 0.2]

Specific Boundary after 37 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 37 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 38 is [4.9 3.1 1.5 0.1]

Specific Boundary after 38 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 38 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 39 is [4.4 3. 1.3 0.2]

Specific Boundary after 39 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 39 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 40 is [5.1 3.4 1.5 0.2]

Specific Boundary after 40 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 40 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 41 is [5. 3.5 1.3 0.3]

Specific Boundary after 41 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 41 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 42 is [4.5 2.3 1.3 0.3]

Specific Boundary after 42 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 42 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 43 is [4.4 3.2 1.3 0.2]

Specific Boundary after 43 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 43 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 44 is [5. 3.5 1.6 0.6]

Specific Boundary after 44 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 44 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 45 is [5.1 3.8 1.9 0.4]

Specific Boundary after 45 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 45 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 46 is [4.8 3. 1.4 0.3]

Specific Boundary after 46 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 46 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 47 is [5.1 3.8 1.6 0.2]

Specific Boundary after 47 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 47 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 48 is [4.6 3.2 1.4 0.2]

Specific Boundary after 48 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 48 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 49 is [5.3 3.7 1.5 0.2]

Specific Boundary after 49 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 49 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 50 is [5. 3.3 1.4 0.2]

Specific Boundary after 50 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 50 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 51 is [7. 3.2 4.7 1.4]

Specific Boundary after 51 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 51 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 52 is [6.4 3.2 4.5 1.5]

Specific Boundary after 52 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 52 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 53 is [6.9 3.1 4.9 1.5]

Specific Boundary after 53 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 53 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]



Instance 54 is [5.5 2.3 4. 1.3]

Specific Boundary after 54 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 54 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 55 is [6.5 2.8 4.6 1.5]

Specific Boundary after 55 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 55 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 56 is [5.7 2.8 4.5 1.3]

Specific Boundary after 56 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 56 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 57 is [6.3 3.3 4.7 1.6]

Specific Boundary after 57 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 57 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 58 is [4.9 2.4 3.3 1. ]

Specific Boundary after 58 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 58 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 59 is [6.6 2.9 4.6 1.3]

Specific Boundary after 59 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 59 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 60 is [5.2 2.7 3.9 1.4]

Specific Boundary after 60 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 60 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 61 is [5. 2. 3.5 1. ]

Specific Boundary after 61 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 61 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 62 is [5.9 3. 4.2 1.5]

Specific Boundary after 62 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 62 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 63 is [6. 2.2 4. 1. ]

Specific Boundary after 63 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 63 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 64 is [6.1 2.9 4.7 1.4]

Specific Boundary after 64 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 64 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 65 is [5.6 2.9 3.6 1.3]

Specific Boundary after 65 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 65 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 66 is [6.7 3.1 4.4 1.4]

Specific Boundary after 66 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 66 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 67 is [5.6 3. 4.5 1.5]

Specific Boundary after 67 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 67 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 68 is [5.8 2.7 4.1 1. ]

Specific Boundary after 68 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 68 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 69 is [6.2 2.2 4.5 1.5]

Specific Boundary after 69 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 69 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 70 is [5.6 2.5 3.9 1.1]

Specific Boundary after 70 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 70 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 71 is [5.9 3.2 4.8 1.8]

Specific Boundary after 71 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 71 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 72 is [6.1 2.8 4. 1.3]

Specific Boundary after 72 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 72 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 73 is [6.3 2.5 4.9 1.5]

Specific Boundary after 73 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 73 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 74 is [6.1 2.8 4.7 1.2]

Specific Boundary after 74 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 74 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 75 is [6.4 2.9 4.3 1.3]

Specific Boundary after 75 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 75 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 76 is [6.6 3. 4.4 1.4]

Specific Boundary after 76 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 76 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 77 is [6.8 2.8 4.8 1.4]

Specific Boundary after 77 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 77 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 78 is [6.7 3. 5. 1.7]

Specific Boundary after 78 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 78 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 79 is [6. 2.9 4.5 1.5]

Specific Boundary after 79 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 79 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 80 is [5.7 2.6 3.5 1. ]

Specific Boundary after 80 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 80 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 81 is [5.5 2.4 3.8 1.1]

Specific Boundary after 81 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 81 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 82 is [5.5 2.4 3.7 1. ]

Specific Boundary after 82 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 82 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 83 is [5.8 2.7 3.9 1.2]

Specific Boundary after 83 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 83 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 84 is [6. 2.7 5.1 1.6]

Specific Boundary after 84 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 84 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 85 is [5.4 3. 4.5 1.5]

Specific Boundary after 85 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 85 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 86 is [6. 3.4 4.5 1.6]

Specific Boundary after 86 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 86 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 87 is [6.7 3.1 4.7 1.5]

Specific Boundary after 87 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 87 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 88 is [6.3 2.3 4.4 1.3]

Specific Boundary after 88 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 88 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 89 is [5.6 3. 4.1 1.3]

Specific Boundary after 89 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 89 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 90 is [5.5 2.5 4. 1.3]

Specific Boundary after 90 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 90 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 91 is [5.5 2.6 4.4 1.2]

Specific Boundary after 91 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 91 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 92 is [6.1 3. 4.6 1.4]

Specific Boundary after 92 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 92 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 93 is [5.8 2.6 4. 1.2]

Specific Boundary after 93 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 93 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 94 is [5. 2.3 3.3 1. ]

Specific Boundary after 94 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 94 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 95 is [5.6 2.7 4.2 1.3]

Specific Boundary after 95 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 95 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 96 is [5.7 3. 4.2 1.2]

Specific Boundary after 96 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 96 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 97 is [5.7 2.9 4.2 1.3]

Specific Boundary after 97 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 97 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 98 is [6.2 2.9 4.3 1.3]

Specific Boundary after 98 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 98 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 99 is [5.1 2.5 3. 1.1]

Specific Boundary after 99 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 99 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 100 is [5.7 2.8 4.1 1.3]

Specific Boundary after 100 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 100 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 101 is [6.3 3.3 6. 2.5]

Specific Boundary after 101 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 101 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 102 is [5.8 2.7 5.1 1.9]

Specific Boundary after 102 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 102 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 103 is [7.1 3. 5.9 2.1]

Specific Boundary after 103 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 103 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 104 is [6.3 2.9 5.6 1.8]

Specific Boundary after 104 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 104 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 105 is [6.5 3. 5.8 2.2]

Specific Boundary after 105 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 105 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 106 is [7.6 3. 6.6 2.1]

Specific Boundary after 106 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 106 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 107 is [4.9 2.5 4.5 1.7]

Specific Boundary after 107 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 107 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 108 is [7.3 2.9 6.3 1.8]

Specific Boundary after 108 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 108 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 109 is [6.7 2.5 5.8 1.8]

Specific Boundary after 109 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 109 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 110 is [7.2 3.6 6.1 2.5]

Specific Boundary after 110 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 110 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 111 is [6.5 3.2 5.1 2. ]

Specific Boundary after 111 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 111 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 112 is [6.4 2.7 5.3 1.9]

Specific Boundary after 112 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 112 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 113 is [6.8 3. 5.5 2.1]

Specific Boundary after 113 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 113 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 114 is [5.7 2.5 5. 2. ]

Specific Boundary after 114 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 114 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 115 is [5.8 2.8 5.1 2.4]

Specific Boundary after 115 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 115 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 116 is [6.4 3.2 5.3 2.3]

Specific Boundary after 116 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 116 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 117 is [6.5 3. 5.5 1.8]

Specific Boundary after 117 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 117 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 118 is [7.7 3.8 6.7 2.2]

Specific Boundary after 118 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 118 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]



Instance 119 is [7.7 2.6 6.9 2.3]

Specific Boundary after 119 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 119 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 120 is [6. 2.2 5. 1.5]

Specific Boundary after 120 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 120 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 121 is [6.9 3.2 5.7 2.3]

Specific Boundary after 121 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 121 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 122 is [5.6 2.8 4.9 2. ]

Specific Boundary after 122 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 122 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 123 is [7.7 2.8 6.7 2. ]

Specific Boundary after 123 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 123 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 124 is [6.3 2.7 4.9 1.8]

Specific Boundary after 124 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 124 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 125 is [6.7 3.3 5.7 2.1]

Specific Boundary after 125 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 125 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 126 is [7.2 3.2 6. 1.8]

Specific Bunday after 126 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 126 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 127 is [6.2 2.8 4.8 1.8]

Specific Bunday after 127 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 127 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 128 is [6.1 3. 4.9 1.8]

Specific Bunday after 128 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 128 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 129 is [6.4 2.8 5.6 2.1]

Specific Bunday after 129 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 129 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 130 is [7.2 3. 5.8 1.6]

Specific Bunday after 130 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 130 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 131 is [7.4 2.8 6.1 1.9]

Specific Bunday after 131 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 131 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 132 is [7.9 3.8 6.4 2. ]

Specific Bunday after 132 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 132 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 133 is [6.4 2.8 5.6 2.2]

Specific Boundary after 133 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 133 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 134 is [6.3 2.8 5.1 1.5]

Specific Boundary after 134 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 134 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 135 is [6.1 2.6 5.6 1.4]

Specific Boundary after 135 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 135 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 136 is [7.7 3. 6.1 2.3]

Specific Boundary after 136 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 136 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 137 is [6.3 3.4 5.6 2.4]

Specific Boundary after 137 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 137 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 138 is [6.4 3.1 5.5 1.8]

Specific Boundary after 138 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 138 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 139 is [6. 3. 4.8 1.8]

Specific Boundary after 139 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 139 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 140 is [6.9 3.1 5.4 2.1]

Specific Boundary after 140 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 140 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 141 is [6.7 3.1 5.6 2.4]

Specific Boundary after 141 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 141 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 142 is [6.9 3.1 5.1 2.3]

Specific Boundary after 142 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 142 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 143 is [5.8 2.7 5.1 1.9]

Specific Boundary after 143 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 143 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 144 is [6.8 3.2 5.9 2.3]

Specific Boundary after 144 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 144 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 145 is [6.7 3.3 5.7 2.5]

Specific Boundary after 145 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 145 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 146 is [6.7 3. 5.2 2.3]

Specific Boundary after 146 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 146 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 147 is [6.3 2.5 5. 1.9]

Specific Boundary after 147 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 147 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 148 is [6.5 3. 5.2 2. ]

Specific Bunday after 148 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 148 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 149 is [6.2 3.4 5.4 2.3]

Specific Bunday after 149 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 149 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Instance 150 is [5.9 3. 5.1 1.8]

Specific Bunday after 150 Instance is [5.1 3.5 1.4 0.2]

Generic Boundary after 150 Instance is [['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?'], ['?', '?', '?', '?']]

Final Specific\_h:

[5.1 3.5 1.4 0.2]

Final General\_h:

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