Jaringan Syaraf Tiruan
Identifikasi tentang Kemampuan Hewan Berpindah Tempat Berdasarkan Ciri pada Hewan Menggunakan Metode (Learning Vector Quantization)

DISUSUN OLEH :

Singgih Nugroho Putro (A11.2016.09507)

Program Studi Ilmu Komputer

Departemen Ilmu Komputer dan Elektronika

Fakultas Matematika dan Ilmu Pengetahuan Alam

Universitas Gadjah Mada

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Sinopsis:

Pada tugas kali ini saya membuat identifikasasi tentang kemampuan tersebut berpindah tempat atau bergerak. Untuk ketentuannya ada yang berjalan berati hidup di darat, kemudian ada yang berenang berati hidup di air, ada yang terbang berati hidup di udara. Untuk jenis hewannya sendiri terdiri dari hewan beruang, angsa, gajah, ikan piranha, gurita, tawon, burung pelikan, pinguin, rayap, dan lumba-lumba. Sedangkan untuk kategorinya terdiri dari berambut, berbulu, bertelur, menyusui, pemangsa/predator, bergigi, bertulang, bernafas dengan insang atau paru-paru. Untuk Bahasa pemrogrammannya saya menggunakan Python dengan learning ratenya sendiri saya menggunakan 0.5 kemudian jumlah epoch ada 10.

Code:

```
import math

learning_rate = 0.5
#dataset
dataset= [
            [1, 0, 0, 1, 1, 1, 1, 1],
            [0, 1, 1, 0, 0, 0, 1, 1],
            [1, 0, 0, 1, 0, 1, 1, 1],
            [0, 0, 1, 0, 1, 1, 1, 0],
            [0, 0, 1, 0, 1, 0, 0, 0],
            [1, 0, 1, 0, 0, 0, 0, 1],
            [0, 1, 1, 0, 1, 0, 1, 1],
            [0, 1, 1, 0, 1, 0, 1, 1]
          ]

target = [1, 3, 1, 2, 2, 3, 3, 2]

#training_1 dengan 2 data
traning = [
              [0, 0, 1, 0, 0, 0, 0, 1],
              [0, 0, 0, 1, 1, 1, 1, 1]
           ]
target_traning = [2, 2]
#training_2 dengan 10 data
data = [
        [1, 0, 0, 1, 1, 1, 1, 1],
        [0, 1, 1, 0, 0, 0, 1, 1],
        [1, 0, 0, 1, 0, 1, 1, 1],
        [0, 0, 1, 0, 1, 1, 1, 0],
        [0, 0, 1, 0, 1, 0, 0, 0],
        [1, 0, 1, 0, 0, 0, 0, 1],
        [0, 1, 1, 0, 1, 0, 1, 1],
        [0, 1, 1, 0, 1, 0, 1, 1],
        [0, 0, 1, 0, 0, 0, 0, 1],
        [0, 0, 0, 1, 1, 1, 1, 1]
       ]
target_data = [1, 3, 1, 2, 2, 3, 3, 2, 1, 2]

wight = [dataset[0], dataset[1], dataset[2]]
temp = [[1, 0, 0, 1, 0, 0, 1, 1, 1, 1],
        [0, 1, 1, 0, 1, 1, 0, 0, 1, 1],
        [1, 0, 0, 1, 0, 0, 0, 1, 1, 1]]
d=[0, 0, 0]

#training
print("Trainning Data: ")
for x in range(0, 10):
    print("\nEpoch ke:", x)
    for i in range(0, len(dataset)):
        d[0] = 0
        d[1] = 0
        d[2] = 0
        J = 0
        for j in range(0, len(dataset[0])):
            d[0] += (dataset[i][j] - wight[0][j])**2
            d[1] += (dataset[i][j] - wight[1][j])**2
            d[2] += (dataset[i][j] - wight[2][j])**2
```

```
58.
59.         d[0] = math.sqrt(d[0])
60.         d[1] = math.sqrt(d[1])
61.         d[2] = math.sqrt(d[2])
62.         print("Cetak Distance: ", d)
63.         if (d[0] < d[1] and d[0] < d[2]):
64.             print("J: ", d[0], "-> 1")
65.             J = 1
66.             if (target[i] == J):
67.                 print('J1 == Target')
68.                 for k in range(0, len(wight[1])):
69.                     wight[0][k] = wight[0][k]+learning_rate*(dataset[i][k]-wight[0][k])
70.
71.             elif (target[i] != J):
72.                 print('J1 != Target')
73.                 for k in range(0, len(wight[1])):
74.                     wight[0][k] = wight[0][k]-learning_rate*(dataset[i][k]-wight[0][k])
75.         elif (d[1] < d[0] and d[1] < d[2]):
76.             print("J: ", d[1], "-> 2")
77.             J = 2
78.             if (target[i] == J):
79.                 print('J2 == Target')
80.                 for k in range(0, len(wight[0])):
81.                     wight[1][k] = wight[1][k]+learning_rate*(dataset[i][k]-wight[1][k])
82.
83.             elif (target[i] != J):
84.                 print('J2 != Target')
85.                 for k in range(0, len(wight[0])):
86.                     wight[1][k] = wight[1][k]-learning_rate*(dataset[i][k]-wight[1][k])
87.
88.         elif (d[2] < d[1] and d[2] < d[0]):
89.             print("J: ", d[2], "-> 3")
90.             J = 3
91.             if (target[i] == J):
92.                 print('J3 == Target')
93.                 for k in range(0, len(wight[1])):
94.                     wight[2][k] = wight[2][k]+learning_rate*(dataset[i][k]-wight[2][k])
95.
96.             elif (target[i] != J):
97.                 print('J3 != Target')
98.                 for k in range(0, len(wight[1])):
99.                     wight[2][k] = wight[2][k]-learning_rate*(dataset[i][k]-wight[2][k])
100.
101.         print('W1, W2, W3: ', wight)
102.     learning_rate = learning_rate * 0.8
103.
104. #testing 2 data
105. print("\n\n Testing Data 2 Data")
106. for x in range (0, 2):
107.     print(traning[x])
108.     for j in range(0, len(traning[x])):
109.         d[0] += (traning[x][j] - wight[0][j])**2
110.         d[1] += (traning[x][j] - wight[1][j])**2
111.         d[2] += (traning[x][j] - wight[2][j])**2
112.
113.     d[0] = math.sqrt(d[0])
114.     d[1] = math.sqrt(d[1])
115.     d[2] = math.sqrt(d[2])
116.     print("Cetak Distance: ", d)
117.     if (d[0] < d[1] and d[0] < d[2]):
118.         J=1
```

```
    elif (d[1] < d[0] and d[1] < d[2]):
        J=2
    elif (d[2] < d[1] and d[2] < d[0]):
        J=3
    print("->", J)

#testing 10 data
print("\n\n Testing Data 10 Data")
for x in range (0, 10):
    print(data[x])
    for j in range(0, len(data[x])):
        d[0] += (data[x][j] - wight[0][j])**2
        d[1] += (data[x][j] - wight[1][j])**2
        d[2] += (data[x][j] - wight[2][j])**2

    d[0] = math.sqrt(d[0])
    d[1] = math.sqrt(d[1])
    d[2] = math.sqrt(d[2])
    print("Cetak Distance: ", d)
    if (d[0] < d[1] and d[0] < d[2]):
        print("J: ", d[0])
        J=1
    elif (d[1] < d[0] and d[1] < d[2]):
        print("J: ", d[1])
        J=2
    elif (d[2] < d[1] and d[2] < d[0]):
        print("J: ", d[2])
        J=3
    print("->", J)
```

Untuk datasetnya sebagai berikut:

No.	X1	X2	X3	X4	X5	X6	X7	X8	Target
1.	1	0	0	1	1	1	1	1	1
2.	0	1	1	0	0	0	1	1	3
3.	1	0	0	1	0	1	1	1	1
4.	0	0	1	0	1	1	1	0	2
5.	0	0	1	0	1	0	0	0	2
6.	1	0	1	0	0	0	0	1	3
7.	0	1	1	0	1	0	1	1	3
8.	0	1	1	0	1	0	1	1	2
9.	0	0	1	0	1	0	0	0	1
10.	0	0	1	0	1	0	0	0	2

Hasil Outputnya:

```
C:\Users\Singgih\AppData\Local\Programs\Python\Python37-32\python.exe "D:/Exchange UGM/Jaringan Syaraf Tiruan/LVQ"
Trainning Data:

Epoch ke: 0
Cetak Distance:  [0.0, 2.449489742783178, 1.0]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [0, 1, 1, 0, 0, 0, 1, 1], [1, 0, 0, 1, 0, 1, 1, 1]]
Cetak Distance:  [2.449489742783178, 0.0, 2.23606797749979]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [0.0, 1.0, 1.0, 0.0, 0.0, 0.0, 1.0, 1.0], [1, 0, 0, 1, 0, 1, 1, 1]]
Cetak Distance:  [1.0, 2.23606797749979, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [0.0, 1.0, 1.0, 0.0, 0.0, 0.0, 1.0, 1.0], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.0, 2.0, 2.23606797749979]
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [0.0, 1.0, 1.0, 0.0, 0.0, 0.0, 1.0, 1.0], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.449489742783178, 2.0, 2.6457513110645907]
J:  2.0 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [0.0, 0.5, 1.0, 0.0, 0.5, 0.0, 0.5, 0.5], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.23606797749979, 1.4142135623730951, 2.0]
J:  1.4142135623730951 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.5, 0.75, 1.0, 0.0, 0.75, 0.0, 0.75, 0.25], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]

Cetak Distance:  [2.23606797749979, 1.0, 2.449489742783178]
J:  1.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.75, 0.625, 1.0, 0.0, 0.625, 0.0, 0.625, -0.125], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.23606797749979, 1.5, 2.449489742783178]
J:  1.5 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.375, 0.8125, 1.0, 0.0, 0.8125, 0.0, 0.8125, 0.4375], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]

Epoch ke: 1
Cetak Distance:  [0.0, 2.436698586202241, 1.0]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.375, 0.8125, 1.0, 0.0, 0.8125, 0.0, 0.8125, 0.4375], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.436698586202241, 0.0, 2.5617376914898995]
J:  0.0 -> 2
J2 != Target
```

```
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.375, 0.8125, 1.0, 0.0, 0.8125, 0.0, 0.8125, 0.4375], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [1.0, 2.5617376914898995, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.375, 0.8125, 1.0, 0.0, 0.8125, 0.0, 0.8125, 0.4375], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.0, 1.4361406616345072, 2.23606797749979]
J:  1.4361406616345072 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.22499999999999998, 0.4875, 1.0, 0.0, 0.8875, 0.4, 0.8875, 0.26249999999999996], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.449489742783178, 1.1478240283248995, 2.6457513110645907]
J:  1.1478240283248995 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.13499999999999998, 0.2925, 1.0, 0.0, 0.9325, 0.24, 0.5325, 0.15749999999999997], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8150206610394275, 2.0]
J:  1.8150206610394275 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.589, 0.4095, 1.0, 0.0, 1.3054999999999999, 0.33599999999999997, 0.7454999999999999, -0.17950000000000005], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.23606797749979, 1.535522061059365, 2.449489742783178]
J:  1.535522061059365 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.8246, 0.17329999999999995, 1.0, 0.0, 1.4276999999999997, 0.47039999999999993, 0.6436999999999999, -0.6513], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.23606797749979, 2.1497308854831108, 2.449489742783178]
J:  2.1497308854831108 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.49476, 0.50398, 1.0, 0.0, 1.2566199999999998, 0.28223999999999994, 0.7862199999999999, 0.009220000000000006], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]

Epoch ke: 2
Cetak Distance:  [0.0, 2.4691462971642646, 1.0]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.49476, 0.50398, 1.0, 0.0, 1.2566199999999998, 0.28223999999999994, 0.7862199999999999, 0.009220000000000006], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.4691462971642646, 0.0, 2.7586089677226817]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.49476, 0.50398, 1.0, 0.0, 1.2566199999999998, 0.28223999999999994, 0.7862199999999999, 0.009220000000000006], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [1.0, 2.7586089677226817, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.49476, 0.50398, 1.0, 0.0, 1.2566199999999998, 0.28223999999999994, 0.7862199999999999, 0.009220000000000006], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.0, 1.060944596479948, 2.23606797749979]
J:  1.060944596479948 -> 2
```

```
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.3364368, 0.34270639999999997, 1.0, 0.0, 1.1745016, 0.5119232, 0.8546296, 0.006269600000000004], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.449489742783178, 1.1196359359971972, 2.6457513110645907]
J:  1.1196359359971972 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.22877702399999997, 0.23304035199999995, 1.0, 0.0, 1.1186610879999999, 0.348107776, 0.5811481279999999, 0.004263328000000002], [1.0, 0.0, 0.0, 1.0, 0.0, 1.0, 1.0, 1.0]]
Cetak Distance:  [2.23606797749979, 2.0654314562655256, 2.0]
J:  2.0 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.22877702399999997, 0.23304035199999995, 1.0, 0.0, 1.1186610879999999, 0.348107776, 0.5811481279999999, 0.004263328000000002], [1.0, 0.0, 0.32000000000000006, 0.6799999999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.393827075548158, 2.1188676221038443]
J:  1.393827075548158 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.30198567167999996, -0.012386735360000123, 1.0, 0.0, 1.15663263616, 0.45950226431999996, 0.44711552895999984, -0.3143724070400001], [1.0, 0.0, 0.32000000000000006, 0.6799999999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8398517397235685, 2.1188676221038443]
J:  1.8398517397235685 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.20535025674239996, 0.31157701995520004, 1.0, 0.0, 1.1065101925888, 0.31246153973759994, 0.6240385596928, 0.1062267632128], [1.0, 0.0, 0.32000000000000006, 0.6799999999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]

Epoch ke: 3
Cetak Distance:  [0.0, 2.2302871204518397, 1.1872657663724664]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.20535025674239996, 0.31157701995520004, 1.0, 0.0, 1.1065101925888, 0.31246153973759994, 0.6240385596928, 0.1062267632128], [1.0, 0.0, 0.32000000000000006, 0.6799999999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [2.2302871204518397, 0.0, 2.1531746534980427]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.20535025674239996, 0.31157701995520004, 1.0, 0.0, 1.1065101925888, 0.31246153973759994, 0.6240385596928, 0.1062267632128], [1.0, 0.0, 0.32000000000000006, 0.6799999999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [1.1872657663724664, 2.1531746534980427, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.20535025674239996, 0.31157701995520004, 1.0, 0.0, 1.1065101925888, 0.31246153973759994, 0.6240385596928, 0.1062267632128], [1.0, 0.0, 0.32000000000000006, 0.6799999999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [2.0, 0.8808709625104919, 2.032141727340886]
J:  0.8808709625104919 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.15278059101634556, 0.23181330284666882, 1.0, 0.0, 1.0792435832860672, 0.4884713855647
```

```
    7443, 0.7202846884114432, 0.07903271183032319], [1.0, 0.0, 0.32000000000000006, 0.67999
    99999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [2.449489742783178, 0.9203365462018752, 2.2021807373601288]
J:  0.9203365462018752 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.11366875971616108, 0.1724690973179216, 1.0, 0.0, 1.0589572259648339, 0.36342271086019
    22, 0.5358918081781137, 0.05880033760176045], [1.0, 0.0, 0.32000000000000006, 0.6799999
    999999999, 0.0, 0.6799999999999999, 0.6799999999999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.9226302306113017, 1.3599999999999999]
J:  1.3599999999999999 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.11366875971616108, 0.1724690973179216, 1.0, 0.0, 1.0589572259648339, 0.36342271086019
    22, 0.5358918081781137, 0.05880033760176045], [1.0, 0.0, 0.4940800000000001, 0.50591999
    99999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.3908749840680887, 2.0029928071763012]
J:  1.3908749840680887 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.14276796220349833, -
    0.03937881376869054, 1.0, 0.0, 1.0740502758118313, 0.4564589248404014, 0.41708011107171
    07, -
    0.18214677597218895], [1.0, 0.0, 0.4940800000000001, 0.5059199999999999, 0.0, 0.5059199
    999999999, 0.5059199999999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.7469389799895196, 2.0029928071763012]
J:  1.7469389799895196 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.10621936387940276, 0.2267021625560943, 1.0, 0.0, 1.0550934052040024, 0.33960544008125
    86, 0.5663076026373528, 0.12048279867669145], [1.0, 0.0, 0.4940800000000001, 0.50591999
    99999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]

Epoch ke: 4
Cetak Distance:  [0.0, 2.162385491199556, 1.4058663469903532]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.10621936387940276, 0.2267021625560943, 1.0, 0.0, 1.0550934052040024, 0.33960544008125
    86, 0.5663076026373528, 0.12048279867669145], [1.0, 0.0, 0.4940800000000001, 0.50591999
    99999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]
Cetak Distance:  [2.162385491199556, 0.0, 1.9248649409377205]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.10621936387940276, 0.2267021625560943, 1.0, 0.0, 1.0550934052040024, 0.33960544008125
    86, 0.5663076026373528, 0.12048279867669145], [1.0, 0.0, 0.4940800000000001, 0.50591999
    99999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]
Cetak Distance:  [1.4058663469903532, 1.9248649409377205, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.10621936387940276, 0.2267021625560943, 1.0, 0.0, 1.0550934052040024, 0.33960544008125
    86, 0.5663076026373528, 0.12048279867669145], [1.0, 0.0, 0.4940800000000001, 0.50591999
    99999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]
Cetak Distance:  [2.0, 0.8393079781253862, 2.000035046092943]
J:  0.8393079781253862 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.08446563815690106, 0.18027355966460618, 1.0, 0.0, 1.0438102758182226, 0.4748542459526
    169, 0.655127805617223, 0.09580792150770504], [1.0, 0.0, 0.4940800000000001, 0.50591999
    99999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]
```

```
Cetak Distance:  [2.449489742783178, 0.8398871918456444, 2.0059462070554135]
J:  0.8398871918456444 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.06716707546236772, 0.14335353464529482, 1.0, 0.0, 1.0348379313306506, 0.3776040963815209, 0.5209576310268156, 0.07618645918292703], [1.0, 0.0, 0.4940800000000001, 0.5059199999999999, 0.0, 0.5059199999999999, 0.5059199999999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8702134937201842, 1.0118399999999999]
J:  1.0118399999999999 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.06716707546236772, 0.14335353464529482, 1.0, 0.0, 1.0348379313306506, 0.3776040963815209, 0.5209576310268156, 0.07618645918292703], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.4018081777343148, 1.9603036500949713]
J:  1.4018081777343148 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.08092289251706064, -0.032087661459348854, 1.0, 0.0, 1.0419727396671679, 0.45493741532045645, 0.4228497538611074, -0.11301055397640959], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.6888984925343027, 1.9603036500949713]
J:  1.6888984925343027 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.06434988412956662, 0.17928389160752586, 1.0, 0.0, 1.033376722583332, 0.3617662326628269, 0.5410501242703527, 0.11493400747795919], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]

Epoch ke: 5
Cetak Distance:  [0.0, 2.1371515006118895, 1.5585072654869687]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.06434988412956662, 0.17928389160752586, 1.0, 0.0, 1.033376722583332, 0.3617662326628269, 0.5410501242703527, 0.11493400747795919], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [2.1371515006118895, 0.0, 1.83324535441097]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.06434988412956662, 0.17928389160752586, 1.0, 0.0, 1.033376722583332, 0.3617662326628269, 0.5410501242703527, 0.11493400747795919], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [1.5585072654869687, 1.83324535441097, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.06434988412956662, 0.17928389160752586, 1.0, 0.0, 1.033376722583332, 0.3617662326628269, 0.5410501242703527, 0.11493400747795919], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [2.0, 0.8176703389902531, 2.009521145092947]
J:  0.8176703389902531 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.05380679911377842, 0.1499100188065488, 1.0, 0.0, 1.0279082803552788, 0.4663344531033494, 0.6162444719098982, 0.09610321969277034], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [2.449489742783178, 0.7953665555125293, 1.909818203017153]
J:  0.7953665555125293 -> 2
```

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J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.04499109314697696, 0.12534876132528383, 1.0, 0.0, 1.0233357877018698, 0.3899302163068966, 0.5152789776321804, 0.08035766817830685], [1.0, 0.0, 0.5976924160000001, 0.4023075839999999, 0.0, 0.4023075839999999, 0.4023075839999999, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8488468968443417, 0.8046151679999998]
J:  0.8046151679999998 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.04499109314697696, 0.12534876132528383, 1.0, 0.0, 1.0233357877018698, 0.3899302163068966, 0.5152789776321804, 0.08035766817830685], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [2.23606797749979, 1.4143286776270678, 1.9441850102013614]
J:  1.4143286776270678 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.05236243384817767, -0.017954097619181736, 1.0, 0.0, 1.027159123158944, 0.4538163829466186, 0.43586228532743687, -0.07031653146735943], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [2.23606797749979, 1.6460522881694868, 1.9441850102013614]
J:  1.6460522881694868 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.04378337268649223, 0.14882750173474504, 1.0, 0.0, 1.0227093724205827, 0.37946310676464456, 0.5282906084993897, 0.10504412904825282], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]

Epoch ke: 6
Cetak Distance:  [0.0, 2.1261869312955985, 1.6617744423558298]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.04378337268649223, 0.14882750173474504, 1.0, 0.0, 1.0227093724205827, 0.37946310676464456, 0.5282906084993897, 0.10504412904825282], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [2.1261869312955985, 0.0, 1.795414854283792]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.04378337268649223, 0.14882750173474504, 1.0, 0.0, 1.0227093724205827, 0.37946310676464456, 0.5282906084993897, 0.10504412904825282], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [1.6617744423558298, 1.795414854283792, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.04378337268649223, 0.14882750173474504, 1.0, 0.0, 1.0227093724205827, 0.37946310676464456, 0.5282906084993897, 0.10504412904825282], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [2.0, 0.8019927552887965, 2.0265903224423005]
J:  0.8019927552887965 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.03804459846172832, 0.12932038342736854, 1.0, 0.0, 1.019732809558672, 0.46079811843478913, 0.5901185018621578, 0.09127578496564022], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [2.449489742783178, 0.766463670325716, 1.858128728793177]
J:  0.766463670325716 -> 2
J2 == Target
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W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.033058016852152664, 0.11237010213077649, 1.0, 0.0, 1.0171463907441978, 0.40040038745530443, 0.512770489586081, 0.07931208527862382], [1.0, 0.0, 0.6636064905625602, 0.33639350943743984, 0.0, 0.33639350943743984, 0.33639350943743984, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8399301529726706, 0.6727870188748797]
J:  0.6727870188748797 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.033058016852152664, 0.11237010213077649, 1.0, 0.0, 1.0171463907441978, 0.40040038745530443, 0.512770489586081, 0.07931208527862382], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [2.23606797749979, 1.4264126223472715, 1.9383389147964778]
J:  1.4264126223472715 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.03739099723699802, -0.0039733238427384215, 1.0, 0.0, 1.0193938024718212, 0.4528816670398461, 0.4489083431971077, -0.04136432107973645], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [2.23606797749979, 1.6133753775835729, 1.9383389147964778]
J:  1.6133753775835729 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.032490084447150215, 0.12761946765997706, 1.0, 0.0, 1.0168518179942347, 0.3935215611775994, 0.5211410288375764, 0.09512938321282682], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]

Epoch ke: 7
Cetak Distance:  [0.0, 2.120971317797862, 1.7330168240394128]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.032490084447150215, 0.12761946765997706, 1.0, 0.0, 1.0168518179942347, 0.3935215611775994, 0.5211410288375764, 0.09512938321282682], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [2.120971317797862, 0.0, 1.7800546177850654]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.032490084447150215, 0.12761946765997706, 1.0, 0.0, 1.0168518179942347, 0.3935215611775994, 0.5211410288375764, 0.09512938321282682], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [1.7330168240394128, 1.7800546177850654, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.032490084447150215, 0.12761946765997706, 1.0, 0.0, 1.0168518179942347, 0.3935215611775994, 0.5211410288375764, 0.09512938321282682], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [2.0, 0.7898087923368248, 2.0426831055935906]
J:  0.7898087923368248 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.029083252168224716, 0.11423759656787424, 1.0, 0.0, 1.0150847768037226, 0.4571154347242632, 0.5713530312921373, 0.08515434439964951], [1.0, 0.0, 0.7076982606315443, 0.2923017393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [2.449489742783178, 0.7461726904125501, 1.8280484751098092]
J:  0.7461726904125501 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.026033652145669873, 0.10225891636199871, 1.0, 0.0, 1.0135030233115485, 0.409183407316
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    12024, 0.5114423236781189, 0.07622526421632882], [1.0, 0.0, 0.7076982606315443, 0.29230
    17393684557, 0.0, 0.2923017393684557, 0.2923017393684557, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8365060286633572, 0.5846034787369114]
J:  0.5846034787369114 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.026033652145669873, 0.10225891636199871, 1.0, 0.0, 1.0135030233115485, 0.409183407316
    12024, 0.5114423236781189, 0.07622526421632882], [1.0, 0.0, 0.7383483194975461, 0.26165
    16805024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]
Cetak Distance:  [2.23606797749979, 1.4374555862085563, 1.9366318820659039]
J:  1.4374555862085563 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.028763478428899668, 0.00812394091031858, 1.0, 0.0, 1.0149189179287414, 0.452089397367
    11107, 0.4602133382774296, -
    0.020639537518581108], [1.0, 0.0, 0.7383483194975461, 0.2616516805024539, 0.0, 0.261651
    6805024539, 0.2616516805024539, 1.0]]
Cetak Distance:  [2.23606797749979, 1.5881837290849787, 1.9366318820659039]
J:  1.5881837290849787 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.025747409113193478, 0.11212968396392081, 1.0, 0.0, 1.0133545560001367, 0.404684388173
    74947, 0.5168140721376703, 0.0863822748507273], [1.0, 0.0, 0.7383483194975461, 0.261651
    6805024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]

Epoch ke: 8
Cetak Distance:  [0.0, 2.1183663101006434, 1.783432915368392]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.025747409113193478, 0.11212968396392081, 1.0, 0.0, 1.0133545560001367, 0.404684388173
    74947, 0.5168140721376703, 0.0863822748507273], [1.0, 0.0, 0.7383483194975461, 0.261651
    6805024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]
Cetak Distance:  [2.1183663101006434, 0.0, 1.7744872562488994]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.025747409113193478, 0.11212968396392081, 1.0, 0.0, 1.0133545560001367, 0.404684388173
    74947, 0.5168140721376703, 0.0863822748507273], [1.0, 0.0, 0.7383483194975461, 0.261651
    6805024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]
Cetak Distance:  [1.783432915368392, 1.7744872562488994, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.025747409113193478, 0.11212968396392081, 1.0, 0.0, 1.0133545560001367, 0.404684388173
    74947, 0.5168140721376703, 0.0863822748507273], [1.0, 0.0, 0.7383483194975461, 0.261651
    6805024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]
Cetak Distance:  [2.0, 0.7802214783280974, 2.0560252152221326]
J:  0.7802214783280974 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.0235875598925314, 0.10272356432454863, 1.0, 0.0, 1.0122342946471448, 0.45462308121265
    527, 0.5573466455372039, 0.0791360044320172], [1.0, 0.0, 0.7383483194975461, 0.26165168
    05024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]
Cetak Distance:  [2.449489742783178, 0.731326273338421, 1.8093773535774766]
J:  0.731326273338421 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-
    0.02160889195638172, 0.09410648718973438, 1.0, 0.0, 1.0112080076276309, 0.4164865330522
    0396, 0.5105930202419384, 0.07249759523335264], [1.0, 0.0, 0.7383483194975461, 0.261651
    6805024539, 0.0, 0.2616516805024539, 0.2616516805024539, 1.0]]
```

```
Cetak Distance:  [2.23606797749979, 1.835622338371192, 0.5233033610049078]
J:  0.5233033610049078 -> 3
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.02160889195638172, 0.09410648718973438, 1.0, 0.0, 1.0112080076276309, 0.41648653305220396, 0.5105930202419384, 0.07249759523335264], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [2.23606797749979, 1.447230650275191, 1.9366011808583932]
J:  1.447230650275191 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.023421577195746113, 0.01811463150265137, 1.0, 0.0, 1.012148203452123, 0.4514239556827438, 0.46953858718539526, -0.005306945693094756], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [2.23606797749979, 1.568633156382628, 1.9366011808583932]
J:  1.568633156382628 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.021456832897377577, 0.10048114607524948, 1.0, 0.0, 1.011129138285482, 0.4135557696224247, 0.5140369156976743, 0.0790243131778719], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]

Epoch ke: 9
Cetak Distance:  [0.0, 2.117042170168932, 1.8199471567888938]
J:  0.0 -> 1
J1 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.021456832897377577, 0.10048114607524948, 1.0, 0.0, 1.011129138285482, 0.4135557696224247, 0.5140369156976743, 0.0790243131778719], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [2.117042170168932, 0.0, 1.7732590886857758]
J:  0.0 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.021456832897377577, 0.10048114607524948, 1.0, 0.0, 1.011129138285482, 0.4135557696224247, 0.5140369156976743, 0.0790243131778719], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [1.8199471567888938, 1.7732590886857758, 0.0]
J:  0.0 -> 3
J3 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.021456832897377577, 0.10048114607524948, 1.0, 0.0, 1.011129138285482, 0.4135557696224247, 0.5140369156976743, 0.0790243131778719], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [2.0, 0.7726593756854112, 2.066644294575809]
J:  0.7726593756854112 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.02001688921659674, 0.09373797050872143, 1.0, 0.0, 1.0103822744578443, 0.4529113757224181, 0.5466493462311396, 0.07372108129212468], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [2.449489742783178, 0.7201973996152077, 1.7971726759278042]
J:  0.7201973996152077 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.018673578520457083, 0.08744732179421563, 1.0, 0.0, 1.0096855318132423, 0.4225170078050094, 0.5099643295992251, 0.06877374327375854], [1.0, 0.0, 0.7602972533003094, 0.2397027466996906, 0.0, 0.2397027466996906, 0.2397027466996906, 1.0]]
Cetak Distance:  [2.23606797749979, 1.8359124018814454, 0.4794054933993812]
J:  0.4794054933993812 -> 3
```

```
J3 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.018673578520457083, 0.08744732179421563, 1.0, 0.0, 1.0096855318132423, 0.4225170078050094, 0.5099643295992251, 0.06877374327375854], [1.0, 0.0, 0.7763834323290054, 0.2236165676709946, 0.0, 0.2236165676709946, 0.2236165676709946, 1.0]]
Cetak Distance:  [2.23606797749979, 1.4556898103400386, 1.937210453720978]
J:  1.4556898103400386 -> 2
J2 != Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.01992674116177976, 0.02620694821966786, 1.0, 0.0, 1.0103355168504649, 0.4508716442194827, 0.4770785924391507, 0.006280207057888086], [1.0, 0.0, 0.7763834323290054, 0.2236165676709946, 0.0, 0.2236165676709946, 0.2236165676709946, 1.0]]
Cetak Distance:  [2.23606797749979, 1.5533794998483341, 1.937210453720978]
J:  1.5533794998483341 -> 2
J2 == Target
W1, W2, W3:  [[1.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0], [-0.01858948019919068, 0.09155709369573917, 1.0, 0.0, 1.0096419120557774, 0.42061416036610105, 0.5121712540618403, 0.07296761349654846], [1.0, 0.0, 0.7763834323290054, 0.2236165676709946, 0.0, 0.2236165676709946, 0.2236165676709946, 1.0]]


 Testing Data 2 Data
[0, 0, 1, 0, 0, 0, 0, 1]
Cetak Distance:  [2.8698550446842765, 1.9697992972945515, 1.7712221574576137]
-> 3
[0, 0, 0, 1, 1, 1, 1, 1]
Cetak Distance:  [1.967194714481583, 2.3263005859305648, 2.486424560174204]
-> 1


 Testing Data 10 Data
[1, 0, 0, 1, 1, 1, 1, 1]
Cetak Distance:  [1.402567187154178, 2.608707470211117, 2.4284788440820466]
J:  1.402567187154178
-> 1
[0, 1, 1, 0, 0, 0, 1, 1]
Cetak Distance:  [2.720765919213591, 2.3933199841370425, 2.276238824483908]
J:  2.276238824483908
-> 3
[1, 0, 0, 1, 0, 1, 1, 1]
Cetak Distance:  [1.9289286972860327, 2.8092094773180083, 2.1650228083010528]
J:  1.9289286972860327
-> 1
[0, 0, 1, 0, 1, 1, 1, 0]
Cetak Distance:  [2.4349391567934573, 1.8431006003790036, 2.5437323001772216]
J:  1.8431006003790036
-> 2
[0, 0, 1, 0, 1, 0, 0, 0]
Cetak Distance:  [2.9042966716217986, 1.5154147204756594, 2.3966121458269063]
J:  1.5154147204756594
-> 2
[1, 0, 1, 0, 0, 0, 0, 1]
Cetak Distance:  [2.811458104191097, 2.2089190688315896, 1.6114061012590006]
J:  1.6114061012590006
-> 3
[0, 1, 1, 0, 1, 0, 1, 1]
Cetak Distance:  [2.7948985856719553, 2.0757910109109377, 2.3160722016519344]
J:  2.0757910109109377
-> 2
[0, 1, 1, 0, 1, 0, 1, 1]
Cetak Distance:  [2.7919345597044276, 2.0434725990475133, 2.463504930715133]
```

```
J:  2.0434725990475133
-> 2
[0, 0, 1, 0, 0, 0, 0, 1]
Cetak Distance:  [2.9651196535223376, 2.090502899022455, 1.914033021675164]
J:  1.914033021675164
-> 3
[0, 0, 0, 1, 1, 1, 1, 1]
Cetak Distance:  [1.9912608200640964, 2.352100766937674, 2.5149787191256774]
J:  1.9912608200640964
-> 1

Process finished with exit code 0
```

Kesimpulan:

Nama	Target	Hasil Akhir
Beruang	1	1
Angsa	3	3
Gajah	1	1
Piranha	2	2
Gurita	2	2
Tawon	3	3
Burung Pelikan	3	2
Pinguin	2	2
Rayap	1	3
Lumba-Lumba	2	1

Dari hasil diatas didapat 7 pengujian yang benar yaitu pada pengujian hewan beruang, angsa, gajah, ikan pirarnha, gurita, tawon, burung pinguin. Sedangkan untuk hewan yang salah terindentifikasi adalah burung pelikan, rayap, dan lumba-lumba. Burung pelikan dapat salah teridentifikasi karena burung tersebut hidup dengan mencari ikan dilaut, sehingga memungkin burung untuk dapat bergerak dengan berenang diair, lalu rayap salah teridentifikasi karena mungkin dapat terbang ketika sudah menjadi laron, dan kemudian lumba-lumba yang salah teridentifikasi karena lumba-lumba bernafas dengan menggunakan paru-paru sehingga memungkin lumba-lumba untuk bergerak di darat walaupun hanya sebentar.

Refrensi: https://archive.ics.uci.edu/ml/datasets/Zoo