Lab 7

Problem Statement: R-Class Perceptron Learning

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```
package AI;
import java.util.*;

public class RClass {
//    static int flag = 0;

   public static int signum(double net) {
       if (net > 0) {
           return 1;
       }
       return -1;
   }

   public static void main(String[] args) {
//        Scanner sc = new Scanner(System.in);
       double c = 0.1;
       /*
         c is learning constant
         c too big: might miss the global minima
```

```
          c too small: too slow

          c = 0: no updatation {same as prev w vector}

        */

        double E = Integer.MAX_VALUE;

        int cycle = 0;


        double[][] T = { { 0.1, 0.1, 1 }, { 0.2, 0.1, 1 }, { 0.5,
0.1, 2 }, { 0.6, 0.1, 2 }, { 0.3, 0.3, 3 }, { 0.4, 0.3, 3 } };

        double[][] W = { { -0.1, 0.15, 0.2 }, { -0.2, 0.11, 0.17
}, { 0.17, 0.16, 0.11 } };

        int[][] D = { { 1, -1, -1 }, { -1, 1, -1 }, { -1, -1, 1 }
};


        double[][] augmented = { { 0.1, 0.1, -1, 1 }, { 0.2, 0.1,
-1, 1 }, { 0.5, 0.1, -1, 2 }, { 0.6, 0.1, -1, 2 }, { 0.3, 0.3,
-1, 3 }, { 0.4, 0.3, -1, 3 } };


        /*

          -1 is augmented to introduce bias term

             - Affects threshold at which the output unit fires

        */


        int[] O = new int[3];

        double net;

        while (E != 0) {

            cycle++;

            System.out.println("Cycle number: " + cycle);
```

```
            E = 0;
            for (int i = 0; i < 6; i++) {
                for (int k = 0; k < 3; k++) {
                    net = 0;
                    for (int j = 0; j < 3; j++) {
                        net += W[k][j] * augmented[i][j];
                    }
                    O[k] = signum(net);
                    int wno = (int) augmented[i][3] - 1;
                    if (D[wno][k] - O[k] != 0) {
                        for (int a = 0; a < 3; a++) {
                            W[k][a] = W[k][a] + 0.5 * c *
(D[wno][k] - O[k]) * augmented[i][a];
                        }
                        E += 0.5 * Math.pow(D[wno][k] - O[k], 2);
                    }
                }
                for(int j = 0; j< 3; j++) {
                    System.out.println(Arrays.deepToString(W));
                }
                System.out.println("Error : " + E);
            }
            System.out.println("Cumulative Error after cycle " +
cycle + ": " + E);
            System.out.println("Weight Matrix after cycle " +
cycle + ":");
```

```
            for (int i = 0; i < 3; i++) {
                System.out.println(Arrays.toString(W[i]));
            }
        }
        System.out.println("Cycles required: " + cycle);
    }
}
```

Output:

"C:\Program Files\Java\jdk-17.0.5\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=63268:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8 -classpath "C:\Users\Admin\Documents\college stuff\General (personal)\PythonClassUdemy\out\production\DSA" AI.RClass

Cycle number: 1

[[-0.09, 0.16, 0.1], [-0.2, 0.11, 0.17], [0.17, 0.16, 0.11]]

[[-0.09, 0.16, 0.1], [-0.2, 0.11, 0.17], [0.17, 0.16, 0.11]]

[[-0.09, 0.16, 0.1], [-0.2, 0.11, 0.17], [0.17, 0.16, 0.11]]

Error : 2.0

[[-0.06999999999999999, 0.17, 0.0], [-0.2, 0.11, 0.17], [0.17, 0.16, 0.11]]

[[-0.06999999999999999, 0.17, 0.0], [-0.2, 0.11, 0.17], [0.17, 0.16, 0.11]]

[[-0.06999999999999999, 0.17, 0.0], [-0.2, 0.11, 0.17], [0.17, 0.16, 0.11]]

Error : 4.0

[[-0.06999999999999999, 0.17, 0.0], [-0.15000000000000002, 0.12, 0.07], [0.17, 0.16, 0.11]]

[[-0.06999999999999999, 0.17, 0.0], [-0.15000000000000002, 0.12, 0.07], [0.17, 0.16, 0.11]]

[[-0.06999999999999999, 0.17, 0.0], [-0.15000000000000002, 0.12, 0.07], [0.17, 0.16, 0.11]]

Error : 6.0

[[-0.06999999999999999, 0.17, 0.0], [-0.09000000000000002, 0.13, -0.03], [0.11000000000000001, 0.15, 0.21000000000000002]]

[[-0.06999999999999999, 0.17, 0.0], [-0.09000000000000002, 0.13, -0.03], [0.11000000000000001, 0.15, 0.21000000000000002]]

[[-0.06999999999999999, 0.17, 0.0], [-0.09000000000000002, 0.13, -0.03], [0.11000000000000001, 0.15, 0.21000000000000002]]

Error : 10.0

[[-0.09999999999999999, 0.14, 0.1], [-0.12000000000000002, 0.1, 0.07], [0.14, 0.18, 0.11000000000000001]]

[[-0.09999999999999999, 0.14, 0.1], [-0.12000000000000002, 0.1, 0.07], [0.14, 0.18, 0.11000000000000001]]

[[-0.09999999999999999, 0.14, 0.1], [-0.12000000000000002, 0.1, 0.07], [0.14, 0.18, 0.11000000000000001]]

Error : 16.0

[[-0.09999999999999999, 0.14, 0.1], [-0.12000000000000002, 0.1, 0.07], [0.18000000000000002, 0.21, 0.010000000000000009]]

[[-0.09999999999999999, 0.14, 0.1], [-0.12000000000000002, 0.1, 0.07], [0.18000000000000002, 0.21, 0.010000000000000009]]

[[-0.09999999999999999, 0.14, 0.1], [-0.12000000000000002, 0.1, 0.07], [0.18000000000000002, 0.21, 0.010000000000000009]]

Error : 18.0

Cumulative Error after cycle 1: 18.0

Weight Matrix after cycle 1:

[-0.09999999999999999, 0.14, 0.1]

[-0.12000000000000002, 0.1, 0.07]

[0.18000000000000002, 0.21, 0.010000000000000009]

Cycle number: 2

[[-0.09, 0.15000000000000002, 0.0], [-0.12000000000000002, 0.1, 0.07], [0.17, 0.19999999999999998, 0.11000000000000001]]

[[-0.09, 0.15000000000000002, 0.0], [-0.12000000000000002, 0.1, 0.07], [0.17, 0.19999999999999998, 0.11000000000000001]]

[[-0.09, 0.15000000000000002, 0.0], [-0.12000000000000002, 0.1, 0.07], [0.17, 0.19999999999999998, 0.11000000000000001]]

Error : 4.0

[[-0.06999999999999999, 0.16000000000000003, -0.1], [-0.12000000000000002, 0.1, 0.07], [0.17, 0.19999999999999998, 0.11000000000000001]]

[[-0.06999999999999999, 0.16000000000000003, -0.1], [-0.12000000000000002, 0.1, 0.07], [0.17, 0.19999999999999998, 0.11000000000000001]]

[[-0.06999999999999999, 0.16000000000000003, -0.1], [-0.12000000000000002, 0.1, 0.07], [0.17, 0.19999999999999998, 0.11000000000000001]]

Error : 6.0

[[-0.12, 0.15000000000000002, 0.0], [-0.07000000000000002, 0.11000000000000001, -0.03], [0.17, 0.19999999999999998, 0.11000000000000001]]

[[-0.12, 0.15000000000000002, 0.0], [-0.07000000000000002, 0.11000000000000001, -0.03], [0.17, 0.19999999999999998, 0.11000000000000001]]

[[-0.12, 0.15000000000000002, 0.0], [-0.07000000000000002, 0.11000000000000001, -0.03], [0.17, 0.19999999999999998, 0.11000000000000001]]

Error : 10.0

[[-0.12, 0.15000000000000002, 0.0], [-0.010000000000000023, 0.12000000000000002, -0.13], [0.11000000000000001, 0.18999999999999997, 0.21000000000000002]]

[[-0.12, 0.15000000000000002, 0.0], [-0.010000000000000023, 0.12000000000000002, -0.13], [0.11000000000000001, 0.18999999999999997, 0.21000000000000002]]

[[-0.12, 0.15000000000000002, 0.0], [-0.010000000000000023, 0.12000000000000002, -0.13], [0.11000000000000001, 0.18999999999999997, 0.21000000000000002]]

Error : 14.0

[[-0.15, 0.12000000000000002, 0.1], [-0.04000000000000002, 0.09000000000000002, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.15, 0.12000000000000002, 0.1], [-0.04000000000000002, 0.09000000000000002, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.15, 0.12000000000000002, 0.1], [-0.04000000000000002, 0.09000000000000002, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

Error : 20.0

[[-0.15, 0.12000000000000002, 0.1], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.15, 0.12000000000000002, 0.1], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.15, 0.12000000000000002, 0.1], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

Error : 22.0

Cumulative Error after cycle 2: 22.0

Weight Matrix after cycle 2:

[-0.15, 0.12000000000000002, 0.1]

[-0.08000000000000003, 0.060000000000000026, 0.07]

[0.14, 0.21999999999999997, 0.11000000000000001]

Cycle number: 3

[[-0.13999999999999999, 0.13000000000000003, 0.0], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.13999999999999999, 0.13000000000000003, 0.0], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.13999999999999999, 0.13000000000000003, 0.0], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

Error : 2.0

[[-0.11999999999999998, 0.14000000000000004, -0.1], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.11999999999999998, 0.14000000000000004, -0.1], [-0.08000000000000003, 0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.11999999999999998, 0.14000000000000004, -0.1], [-0.08000000000000003,
0.060000000000000026, 0.07], [0.14, 0.21999999999999997, 0.11000000000000001]]

Error : 4.0

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.030000000000000027,
0.07000000000000003, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.030000000000000027,
0.07000000000000003, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.030000000000000027,
0.07000000000000003, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

Error : 8.0

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.030000000000000027,
0.07000000000000003, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.030000000000000027,
0.07000000000000003, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.030000000000000027,
0.07000000000000003, -0.03], [0.14, 0.21999999999999997, 0.11000000000000001]]

Error : 8.0

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.060000000000000026,
0.040000000000000036, 0.07], [0.17, 0.24999999999999997, 0.010000000000000009]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.060000000000000026,
0.040000000000000036, 0.07], [0.17, 0.24999999999999997, 0.010000000000000009]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.060000000000000026,
0.040000000000000036, 0.07], [0.17, 0.24999999999999997, 0.010000000000000009]]

Error : 12.0

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.060000000000000026,
0.040000000000000036, 0.07], [0.17, 0.24999999999999997, 0.010000000000000009]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.060000000000000026,
0.040000000000000036, 0.07], [0.17, 0.24999999999999997, 0.010000000000000009]]

[[-0.16999999999999998, 0.13000000000000003, 0.0], [-0.060000000000000026,
0.040000000000000036, 0.07], [0.17, 0.24999999999999997, 0.010000000000000009]]

Error : 12.0

Cumulative Error after cycle 3: 12.0

Weight Matrix after cycle 3:

[-0.16999999999999998, 0.13000000000000003, 0.0]

[-0.060000000000000026, 0.040000000000000036, 0.07]

[0.17, 0.24999999999999997, 0.010000000000000009]

Cycle number: 4

[[-0.15999999999999998, 0.14000000000000004, -0.1], [-0.060000000000000026, 0.040000000000000036, 0.07], [0.16, 0.23999999999999996, 0.11000000000000001]]

[[-0.15999999999999998, 0.14000000000000004, -0.1], [-0.060000000000000026, 0.040000000000000036, 0.07], [0.16, 0.23999999999999996, 0.11000000000000001]]

[[-0.15999999999999998, 0.14000000000000004, -0.1], [-0.060000000000000026, 0.040000000000000036, 0.07], [0.16, 0.23999999999999996, 0.11000000000000001]]

Error : 4.0

[[-0.15999999999999998, 0.14000000000000004, -0.1], [-0.060000000000000026, 0.040000000000000036, 0.07], [0.16, 0.23999999999999996, 0.11000000000000001]]

[[-0.15999999999999998, 0.14000000000000004, -0.1], [-0.060000000000000026, 0.040000000000000036, 0.07], [0.16, 0.23999999999999996, 0.11000000000000001]]

[[-0.15999999999999998, 0.14000000000000004, -0.1], [-0.060000000000000026, 0.040000000000000036, 0.07], [0.16, 0.23999999999999996, 0.11000000000000001]]

Error : 4.0

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.010000000000000023, 0.05000000000000004, -0.03], [0.16, 0.23999999999999996, 0.11000000000000001]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.010000000000000023, 0.05000000000000004, -0.03], [0.16, 0.23999999999999996, 0.11000000000000001]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.010000000000000023, 0.05000000000000004, -0.03], [0.16, 0.23999999999999996, 0.11000000000000001]]

Error : 8.0

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.010000000000000023, 0.05000000000000004, -0.03], [0.1, 0.22999999999999995, 0.21000000000000002]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.010000000000000023, 0.05000000000000004, -0.03], [0.1, 0.22999999999999995, 0.21000000000000002]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.010000000000000023, 0.05000000000000004, -0.03], [0.1, 0.22999999999999995, 0.21000000000000002]]

Error : 10.0

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 14.0

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.20999999999999996, 0.13000000000000003, 0.0], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 14.0

Cumulative Error after cycle 4: 14.0

Weight Matrix after cycle 4:

[-0.20999999999999996, 0.13000000000000003, 0.0]

[-0.04000000000000002, 0.02000000000000004, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 5

[[-0.19999999999999996, 0.14000000000000004, -0.1], [-0.04000000000000002, 0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.19999999999999996, 0.14000000000000004, -0.1], [-0.04000000000000002,
0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.19999999999999996, 0.14000000000000004, -0.1], [-0.04000000000000002,
0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.19999999999999996, 0.14000000000000004, -0.1], [-0.04000000000000002,
0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.19999999999999996, 0.14000000000000004, -0.1], [-0.04000000000000002,
0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.19999999999999996, 0.14000000000000004, -0.1], [-0.04000000000000002,
0.02000000000000004, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.24999999999999994, 0.13000000000000003, 0.0], [0.009999999999999981,
0.03000000000000004, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [0.009999999999999981,
0.03000000000000004, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [0.009999999999999981,
0.03000000000000004, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 6.0

[[-0.24999999999999994, 0.13000000000000003, 0.0], [0.009999999999999981,
0.03000000000000004, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [0.009999999999999981,
0.03000000000000004, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [0.009999999999999981,
0.03000000000000004, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 6.0

[[-0.24999999999999994, 0.13000000000000003, 0.0], [-0.020000000000000018,
4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [-0.020000000000000018,
4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.24999999999999994, 0.13000000000000003, 0.0], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.24999999999999994, 0.13000000000000003, 0.0], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 5: 8.0

Weight Matrix after cycle 5:

[-0.24999999999999994, 0.13000000000000003, 0.0]

[-0.020000000000000018, 4.163336342344337E-17, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 6

[[-0.23999999999999994, 0.14000000000000004, -0.1], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.23999999999999994, 0.14000000000000004, -0.1], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [-0.020000000000000018, 4.163336342344337E-17, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.23999999999999994, 0.14000000000000004, -0.1], [0.029999999999999985,
0.010000000000000044, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [0.029999999999999985,
0.010000000000000044, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [0.029999999999999985,
0.010000000000000044, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.23999999999999994, 0.14000000000000004, -0.1], [0.029999999999999985,
0.010000000000000044, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [0.029999999999999985,
0.010000000000000044, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.23999999999999994, 0.14000000000000004, -0.1], [0.029999999999999985,
0.010000000000000044, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.2699999999999999, 0.11000000000000004, 0.0], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2699999999999999, 0.11000000000000004, 0.0], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2699999999999999, 0.11000000000000004, 0.0], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.2699999999999999, 0.11000000000000004, 0.0], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2699999999999999, 0.11000000000000004, 0.0], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2699999999999999, 0.11000000000000004, 0.0], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 6: 8.0

Weight Matrix after cycle 6:

[-0.2699999999999999, 0.11000000000000004, 0.0]

[-1.3877787807814457E-17, -0.019999999999999955, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 7

[[-0.2599999999999999, 0.12000000000000005, -0.1], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.2599999999999999, 0.12000000000000005, -0.1], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [-1.3877787807814457E-17,
-0.019999999999999955, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.2599999999999999, 0.12000000000000005, -0.1], [0.04999999999999999,
-0.009999999999999953, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [0.04999999999999999,
-0.009999999999999953, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [0.04999999999999999,
-0.009999999999999953, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.2599999999999999, 0.12000000000000005, -0.1], [0.04999999999999999,
-0.009999999999999953, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [0.04999999999999999,
-0.009999999999999953, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2599999999999999, 0.12000000000000005, -0.1], [0.04999999999999999,
-0.009999999999999953, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.2899999999999999, 0.09000000000000005, 0.0], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2899999999999999, 0.09000000000000005, 0.0], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2899999999999999, 0.09000000000000005, 0.0], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.2899999999999999, 0.09000000000000005, 0.0], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2899999999999999, 0.09000000000000005, 0.0], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2899999999999999, 0.09000000000000005, 0.0], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 7: 8.0

Weight Matrix after cycle 7:

[-0.2899999999999999, 0.09000000000000005, 0.0]

[0.01999999999999999, -0.03999999999999995, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 8

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.01999999999999999,
-0.03999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.06999999999999999,
-0.02999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.06999999999999999,
-0.02999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.06999999999999999,
-0.02999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.06999999999999999,
-0.02999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.06999999999999999,
-0.02999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.2799999999999999, 0.10000000000000006, -0.1], [0.06999999999999999,
-0.02999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.30999999999999994, 0.07000000000000006, 0.0], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.30999999999999994, 0.07000000000000006, 0.0], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.30999999999999994, 0.07000000000000006, 0.0], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.30999999999999994, 0.07000000000000006, 0.0], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.30999999999999994, 0.07000000000000006, 0.0], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.30999999999999994, 0.07000000000000006, 0.0], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 8: 8.0

Weight Matrix after cycle 8:

[-0.30999999999999994, 0.07000000000000006, 0.0]

[0.039999999999999994, -0.05999999999999995, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 9

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.039999999999999994,
-0.05999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.09, -0.04999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.09, -0.04999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.09, -0.04999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.09, -0.04999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.09, -0.04999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.29999999999999993, 0.08000000000000007, -0.1], [0.09, -0.04999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.32999999999999996, 0.05000000000000007, 0.0], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.32999999999999996, 0.05000000000000007, 0.0], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.32999999999999996, 0.05000000000000007, 0.0], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.32999999999999996, 0.05000000000000007, 0.0], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.32999999999999996, 0.05000000000000007, 0.0], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.32999999999999996, 0.05000000000000007, 0.0], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 9: 8.0

Weight Matrix after cycle 9:

[-0.32999999999999996, 0.05000000000000007, 0.0]

[0.06, -0.07999999999999995, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 10

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.06, -0.07999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.11, -0.06999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.11, -0.06999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.11, -0.06999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.11, -0.06999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.11, -0.06999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.31999999999999995, 0.060000000000000074, -0.1], [0.11, -0.06999999999999995, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.35, 0.030000000000000075, 0.0], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.35, 0.030000000000000075, 0.0], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.35, 0.030000000000000075, 0.0], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.35, 0.030000000000000075, 0.0], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.35, 0.030000000000000075, 0.0], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.35, 0.030000000000000075, 0.0], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 10: 8.0

Weight Matrix after cycle 10:

[-0.35, 0.030000000000000075, 0.0]

[0.08, -0.09999999999999995, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 11

[[-0.33999999999999997, 0.040000000000000008, -0.1], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.040000000000000008, -0.1], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.040000000000000008, -0.1], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.08, -0.09999999999999995, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.13, -0.08999999999999994, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.13, -0.08999999999999994, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.13, -0.08999999999999994, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.13, -0.08999999999999994, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.13, -0.08999999999999994, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.33999999999999997, 0.04000000000000008, -0.1], [0.13, -0.08999999999999994, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.37, 0.010000000000000078, 0.0], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.37, 0.010000000000000078, 0.0], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.37, 0.010000000000000078, 0.0], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

[[-0.37, 0.010000000000000078, 0.0], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.37, 0.010000000000000078, 0.0], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.37, 0.010000000000000078, 0.0], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 8.0

Cumulative Error after cycle 11: 8.0

Weight Matrix after cycle 11:

[-0.37, 0.010000000000000078, 0.0]

[0.1, -0.11999999999999994, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 12

[[-0.36, 0.020000000000000008, -0.1], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.020000000000000008, -0.1], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.020000000000000008, -0.1], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.020000000000000008, -0.1], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.020000000000000008, -0.1], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.020000000000000008, -0.1], [0.1, -0.11999999999999994, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.020000000000000008, -0.1], [0.15000000000000002, -0.10999999999999993, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.15000000000000002, -0.10999999999999993, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.15000000000000002, -0.10999999999999993, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.36, 0.02000000000000008, -0.1], [0.15000000000000002, -0.10999999999999993, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.15000000000000002, -0.10999999999999993, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.15000000000000002, -0.10999999999999993, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 6.0

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 6.0

Cumulative Error after cycle 12: 6.0

Weight Matrix after cycle 12:

[-0.36, 0.02000000000000008, -0.1]

[0.12000000000000002, -0.13999999999999993, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 13

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.12000000000000002, -0.13999999999999993, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.17000000000000004, -0.12999999999999992, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.17000000000000004, -0.12999999999999992, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.17000000000000004, -0.12999999999999992, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.02000000000000008, -0.1], [0.17000000000000004, -0.12999999999999992, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.17000000000000004, -0.12999999999999992, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.17000000000000004, -0.12999999999999992, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

Cumulative Error after cycle 13: 4.0

Weight Matrix after cycle 13:

[-0.36, 0.02000000000000008, -0.1]

[0.14000000000000004, -0.15999999999999992, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 14

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.14000000000000004, -0.15999999999999992, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.19000000000000006, -0.1499999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.19000000000000006, -0.1499999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.19000000000000006, -0.1499999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.02000000000000008, -0.1], [0.19000000000000006, -0.1499999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.19000000000000006, -0.1499999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.19000000000000006, -0.1499999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

Cumulative Error after cycle 14: 4.0

Weight Matrix after cycle 14:

[-0.36, 0.02000000000000008, -0.1]

[0.16000000000000006, -0.1799999999999999, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 15

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.16000000000000006, -0.1799999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.21000000000000008, -0.1699999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.21000000000000008, -0.1699999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.21000000000000008, -0.1699999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.02000000000000008, -0.1], [0.21000000000000008, -0.1699999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.21000000000000008, -0.1699999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.21000000000000008, -0.1699999999999999, -0.03], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 2.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 4.0

Cumulative Error after cycle 15: 4.0

Weight Matrix after cycle 15:

[-0.36, 0.02000000000000008, -0.1]

[0.18000000000000008, -0.1999999999999999, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycle number: 16

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

[[-0.36, 0.02000000000000008, -0.1], [0.18000000000000008, -0.1999999999999999, 0.07], [0.13, 0.25999999999999995, 0.11000000000000001]]

Error : 0.0

Cumulative Error after cycle 16: 0.0

Weight Matrix after cycle 16:

[-0.36, 0.02000000000000008, -0.1]

[0.18000000000000008, -0.1999999999999999, 0.07]

[0.13, 0.25999999999999995, 0.11000000000000001]

Cycles required: 16

Process finished with exit code 0