Initial Distance Matrix
```
                  [1]          [2]          [3]          [4]          [5]          [6]          [7]          [8]
        [1]       0.0000       2.2361      13.0384       7.2111      13.4536       8.0623      12.0416       1.4142
        [2]       2.2361       0.0000      13.0000       7.2801      14.4222       8.4853      11.6619       1.0000
        [3]      13.0384      13.0000       0.0000       5.8310      26.2488      21.0950       2.2361      13.4164
        [4]       7.2111       7.2801       5.8310       0.0000      20.5183      15.2643       5.0000       7.6158
        [5]      13.4536      14.4222      26.2488      20.5183       0.0000       6.3246      25.4558      13.6015
        [6]       8.0623       8.4853      21.0950      15.2643       6.3246       0.0000      20.0000       7.8102
        [7]      12.0416      11.6619       2.2361       5.0000      25.4558      20.0000       0.0000      12.2066
        [8]       1.4142       1.0000      13.4164       7.6158      13.6015       7.8102      12.2066       0.0000
```
The minimum distance is 1.0000 between clusters [2] and [8].
The median of the merged cluster [2, 8] is [2.0, 0.5], calculated from (2, 0) and (2, 1).
```
                  [1]          [3]          [4]          [5]          [6]          [7]       [2, 8]
        [1]       0.0000      13.0384       7.2111      13.4536       8.0623      12.0416       1.8028
        [3]      13.0384       0.0000       5.8310      26.2488      21.0950       2.2361      13.2004
        [4]       7.2111       5.8310       0.0000      20.5183      15.2643       5.0000       7.4330
        [5]      13.4536      26.2488      20.5183       0.0000       6.3246      25.4558      14.0089
        [6]       8.0623      21.0950      15.2643       6.3246       0.0000      20.0000       8.1394
        [7]      12.0416       2.2361       5.0000      25.4558      20.0000       0.0000      11.9269
     [2, 8]       1.8028      13.2004       7.4330      14.0089       8.1394      11.9269       0.0000
```
The minimum distance is 1.8028 between clusters [1] and [2, 8].
The median of the merged cluster [1, 2, 8] is [1.5, 1.25], calculated from (1, 2) and [2.0, 0.5].
```
                  [3]          [4]          [5]          [6]          [7]    [1, 2, 8]
        [3]       0.0000       5.8310      26.2488      21.0950       2.2361      13.0886
        [4]       5.8310       0.0000      20.5183      15.2643       5.0000       7.2672
        [5]      26.2488      20.5183       0.0000       6.3246      25.4558      13.7045
        [6]      21.0950      15.2643       6.3246       0.0000      20.0000       8.0506
        [7]       2.2361       5.0000      25.4558      20.0000       0.0000      11.9504
  [1, 2, 8]      13.0886       7.2672      13.7045       8.0506      11.9504       0.0000
```
The minimum distance is 2.2361 between clusters [3] and [7].
The median of the merged cluster [3, 7] is [-9.0, -5.5], calculated from (-10, -5) and (-8, -6).
```
                  [4]          [5]          [6]    [1, 2, 8]     [3, 7]
        [4]       0.0000      20.5183      15.2643       7.2672       5.3151
        [5]      20.5183       0.0000       6.3246      13.7045      25.8312
        [6]      15.2643       6.3246       0.0000       8.0506      20.5244
  [1, 2, 8]       7.2672      13.7045       8.0506       0.0000      12.4825
     [3, 7]       5.3151      25.8312      20.5244      12.4825       0.0000
```
The minimum distance is 5.3151 between clusters [4] and [3, 7].
The median of the merged cluster [4, 3, 7] is [-7.0, -3.75], calculated from (-5, -2) and [-9.0, -5.5].
```
                  [5]          [6]    [1, 2, 8]    [4, 3, 7]
        [5]       0.0000       6.3246      13.7045      23.1746
        [6]       6.3246       0.0000       8.0506      17.8903
  [1, 2, 8]      13.7045       8.0506       0.0000       9.8615
  [4, 3, 7]      23.1746      17.8903       9.8615       0.0000
```
The minimum distance is 6.3246 between clusters [5] and [6].
The median of the merged cluster [5, 6] is [9.0, 9.0], calculated from (10, 12) and (8, 6).
```
             [1, 2, 8]    [4, 3, 7]      [5, 6]
```

```
48      [1, 2, 8]       0.0000       9.8615      10.7848
49      [4, 3, 7]       9.8615       0.0000      20.4588
50         [5, 6]      10.7848      20.4588       0.0000
51 The minimum distance is 9.8615 between clusters [1, 2, 8] and [4, 3, 7].
52 The median of the merged cluster [1, 2, 8, 4, 3, 7] is [-2.75, -1.25], calculated from [1.5, 1.25] and [-7.0, -3.75].
53                        [5, 6][1, 2, 8, 4, 3, 7]
54         [5, 6]       0.0000      15.5925
55 [1, 2, 8, 4, 3, 7]   15.5925       0.0000
56 The minimum distance is 15.5925 between clusters [5, 6] and [1, 2, 8, 4, 3, 7].
57 The median of the merged cluster [5, 6, 1, 2, 8, 4, 3, 7] is [3.125, 3.875], calculated from [9.0, 9.0] and [-2.75, -1.25].
```