Distance Matrix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 |
| A1 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| A2 |  | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| A3 |  |  | 0 |  |  |  |  |  |  |  |  |  |  |  |  |
| A4 |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  |  |
| A5 |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  |
| A6 |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |
| A7 |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |
| A8 |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |
| A9 |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |
| A10 |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |
| A11 |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |
| A12 |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |
| A13 |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |
| A14 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 |
| A15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |

Part 1

Initial seed: A1 A5 A9 A12

A1: A2: A3: A4:

d(A1,A1) = 0 d(A2,A1) = d(A3,A1) = d(A4,A1) =

A1 in Cluster 1 d(A2,A5) = d(A3,A5) = d(A4,A5) =

d(A2,A9) = d(A3,A9) = d(A4,A9) =

d(A2,A12) = d(A3,A12) = d(A4,A12) =

A2 in cluster 1 A3 in cluster 1 A4 in cluster 1

A5: A6: A7: A8:

d(A5,A5) = 0 d(A6,A1) = d(A7,A1) = d(A8,A1) =

A1 in Cluster 2 d(A6,A5) = d(A7,A5) = d(A8,A5) =

d(A6,A9) = d(A7,A9) = d(A8,A9) =

d(A6,A12) = d(A7,A12) = d(A8,A12) =

A6 in cluster 2 A7 in cluster 2 A8 in cluster 2

A9: A10: A11: A12:

d(A9,A9) = 0 d(A10,A1) = d(A11,A1) = d(A12,A12) = 0

A9 in Cluster 3 d(A10,A5) = d(A11,A5) =

d(A10,A9) = d(A11,A9) =

d(A10,A12) = d(A11,A12) =

A10 in cluster 3 A11 in cluster 3 A12 in cluster 4

A13: A14: A15:

d(A13,A1) = d(A14,A1) = d(A15,A1) =

d(A13,A5) = d(A14,A5) = d(A15,A5) =

d(A13,A9) = d(A14,A9) = d(A15,A9) =

d(A13,A12) = d(A14,A12) = d(A15,A12) =

A13 in cluster 4 A14 in cluster 4 A15 in cluster 4

New Clusters:

1: A1, A2, A3, A4

2: A5, A6, A7, A8

3: A9, A10, A11

4: A12, A13, A14, A15

Part 2

|  |  |
| --- | --- |
| Clusters | Centers |
| A1, A2, A3, A4 | (10, 5.25) |
| A5, A6, A7, A8 | (6, 2.75) |
| A9, A10, A11 | (5.333… , 10.666…) |
| A12, A13, A14, A15 | (1.5 , 8.25) |

Part 3

2 epoch

|  |  |
| --- | --- |
| Clusters | Centers |
| A1, A2, A3, A4 | (10, 5.25) |
| A5, A6, A7 | (6, 2.75) |
| A9, A10, A11 | (5.333… , 10.666…) |
| A12, A13, A14, A15 | (1.5 , 8.25) |

Already converged.