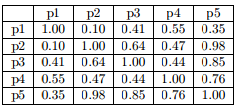
**ITCS 6190/ ITCS 8190 Cloud Computing for Data Analysis**

**In-Class Activity**

Use the similarity matrix in following table to perform single and complete link hierarchical clustering. Show your results by drawing a dendrogram. The dendrogram should clearly show the order in which the points are merged.



**Single link :**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **p1** | **p2** | **p3** | **p4** | **p5** |
| **p1** | **1** | **0.1** | **0.41** | **0.55** | **0.35** |
| **p2** | **0.1** | **1** | **0.64** | **0.47** | **0.98** |
| **p3** | **0.41** | **0.64** | **1** | **0.44** | **0.85** |
| **p4** | **0.55** | **0.47** | **0.44** | **1** | **0.76** |
| **p5** | **0.35** | **0.98** | **0.85** | **0.76** | **1** |

-0.30

-0.25

-0.20

-0.15

-0.10

-0.05

3

6

2

5

**Dendrogram**

P2 p5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **p1** | **(p2,p5)** | **p3** | **p4** |
| **p1** | **1** | **0.35** | **0.41** | **0.55** |
| **(p2,p5)** | **0.35** | **1** | **0.85** | **0.76** |
| **p3** | **0.41** | **0.85** | **1** | **0.44** |
| **p4** | **0.55** | **0.76** | **0.44** | **1** |

**Dendrogram**

P2 p5 p3

|  |  |  |  |
| --- | --- | --- | --- |
|  | **p1** | **(p2,p5,p3)** | **p4** |
| **p1** | **1** | **0.41** | **0.55** |
| **(p2,p5,p3)** | **0.41** | **1** | **0.76** |
| **p4** | **0.55** | **0.76** | **1** |

**Dendrogram**

P2 p5 p3 p4

|  |  |  |
| --- | --- | --- |
|  | **p1** | **(p2,p5,p3,p4)** |
| **p1** | **1** | **0.55** |
| **(p2,p5,p3,p4)** | **0.55** | **1** |

**Dendogram**

P2 p5 p3 p4 p1

**Complete link:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **p1** | **p2** | **p3** | **p4** | **p5** |
| **p1** | **1** | **0.1** | **0.41** | **0.55** | **0.35** |
| **p2** | **0.1** | **1** | **0.64** | **0.47** | **0.98** |
| **p3** | **0.41** | **0.64** | **1** | **0.44** | **0.85** |
| **p4** | **0.55** | **0.47** | **0.44** | **1** | **0.76** |
| **p5** | **0.35** | **0.98** | **0.85** | **0.76** | **1** |

**Dendrogram**

P2 p5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **p1** | **(p2,p5)** | **p3** | **p4** |
| **p1** | **1** | **0.1** | **0.41** | **0.55** |
| **(p2,p5)** | **0.1** | **1** | **0.64** | **0.47** |
| **p3** | **0.41** | **0.64** | **1** | **0.44** |
| **p4** | **0.55** | **0.47** | **0.44** | **1** |

**Dendrogram**

P2 p5 p3

|  |  |  |  |
| --- | --- | --- | --- |
|  | **p1** | **(p2,p5,p3)** | **p4** |
| **p1** | **1** | **0.1** | **0.55** |
| **(p2,p5,p3)** | **0.1** | **1** | **0.44** |
| **p4** | **0.55** | **0.44** | **1** |

|  |  |  |
| --- | --- | --- |
|  | **(p1,p4)** | **(p2,p5,p3)** |
| **(p1,p4)** | **1** | **0.1** |
| **(p2,p5,p3)** | **0.1** | **1** |

**Dendogram**

P2 p5 p3 p1 p4