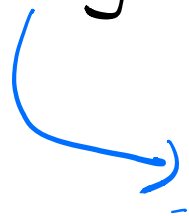


Based on similarity & single linkage



cluster	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

Step 1.

- Find maximum similarity.

$\max = \text{sim}(P2, P5)$ ————— join P2 & P5 on the dendrogram.

- Recalculate similarity.

$$\max(P25, P1) = \max(\text{sim}(P1, P2), \text{sim}(P1, P5))$$

\Rightarrow

$$\max(P25, P1) = 0.35$$

$$\max(P25, P3) = 0.85$$

$$\max(P25, P4) = 0.76$$

Table. First Update

cluster	P1	P25	P3	P4
P1	1	0.35	0.41	0.55
P25	0.35	1	0.85	0.76
P3	0.41	0.85	1	0.44
P4	0.55	0.76	0.44	1

Step 2.

• $\max = \text{sim}(P_{25}, P_3) = 0.85$ ——— join 2, 3 & 5.

• Update the table.

$$\max(P_{253}, P_1) = 0.41$$

$$\max(P_{253}, P_4) = 0.76$$

Table. Second Update

cluster	P1	P253	P4
P1	1	0.41	0.55
P253	0.41	1	0.76
P4	0.55	0.76	1

Step 3.

• $\max = \text{sim}(P_{253}, P_4) = 0.76$ ——— join 2, 3, 5 & 4.

• Update.

$$\max(P_{2534}, P_1) = 0.41.$$

Table. Third Update

cluster	P1	P2534
P1	1	0.41
P2534	0.41	1

Step 4.

• Merge 2, 5, 3, 4 & 1.

Plot.

I transfer the similarity to the dissimilarity by the formula.

$$\text{dis} = 1 - \text{sim}.$$

So.

$$\text{dis}(P_2, P_5) = 0.02$$

$$\text{dis}(P_3, P_5) = 0.15$$

$$\text{dis}(P_4, P_5) = 0.24$$

$$\text{dis}(P_1, P_{2534}) = 0.59.$$

