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Prodi: Sistem Informasi

❖ Metode k-Means cluster untuk mengelompokkan data.

No	Y1	Y2
1	2	2
2	3	2
3	1	1
4	3	1
5	1,5	0,5

Jawab:

Initial Centroid

Cluster	Y1	Y2
k1	2	2
k2	3	2

k=2
calculate
$d(k_1, k_1) = \sqrt{(2-2)^2 + (2-2)^2} = 0$
$d(k_1, k_2) = \sqrt{(2-3)^2 + (2-2)^2} = 1+0$
$= 1$ //

⇓

Cluster	Centroid		
	Y1	Y2	Assignment
k1	0	1	1
k2	1	0	0

k=2
Calculate
$d(k_1, n_3) = \sqrt{(2-1)^2 + (2-1)^2}$
$= \sqrt{1+1} = \sqrt{2}$
$= 1,414$ //

$d(k_2, n_3) = \sqrt{(3-1)^2 + (2-1)^2}$
$= \sqrt{2^2+1} = \sqrt{5}$
$= 2,236$ //

Dataset	Euclidean		
	cluster 1	Cluster 2	Assignment
3	1,414	2,236	1

↓ update cluster (k_2)

Cluster	Y1	Y2
k1	2	2
k2	2	1,5

$k_2(y_1) = \frac{(3+1)}{2} = 2$
$k_2(y_2) = \frac{(1+2)}{2} = 1,5$

No.

Date . .

k = 2

Calculate

$d(k_1, n_4) = \sqrt{(2-3)^2 + (2-1)^2}$

$= \sqrt{1+1} = \sqrt{2}$

$= 1,414$

$d(k_2, n_4) = \sqrt{(2-3)^2 + (1,5-1)^2}$

$= \sqrt{1 + 0,25}$

$= 1,118$

Dataset	Euclidean		
	cluster 1	Cluster 2	Assignment
3	1,414	2,236	2
4	1,414	1,118	2

⇓ update cluster 2 (k_2)

cluster	Y_1	Y_2
k_1	2,5	0,5
k_2	2	1,5

$k_2(y_1) = \frac{(2,5 + 1,5)}{2} = 2$ //

$k_2(y_2) = \frac{(2+1)}{2} = 1,5$ //

k = 2

$d(k_1, n_5) = \sqrt{(2,5-1,5)^2 + (0,5-0,5)^2}$

$= \sqrt{1} = 1$

$d(k_2, n_5) = \sqrt{(2-1,5)^2 + (1,5-0,5)^2}$

$= \sqrt{0,25 + 1}$

$= 1,118$

Dataset	Euclidean		
	Cluster 1	Cluster 2	Assignment
3	1,414	2,236	2
4	1,414	1,118	2
5	1	1,118	2

⇓ update Cluster 2

cluster	Y_1	Y_2
k_1	2	0,5
k_2	2	1,5

$k_2(y_1) = \frac{(2,5 + 1,5)}{2} = 2$

$k_2(y_2) = \frac{(0,5 + 0,5)}{2} = 0,5$

*) final

No	Y_1	Y_2	Assignment
1	2	2	1
2	3	2	0
3	1	1	2
4	3	1	2
5	1,5	0,5	2