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Tugas 10 Data Mining Kluster

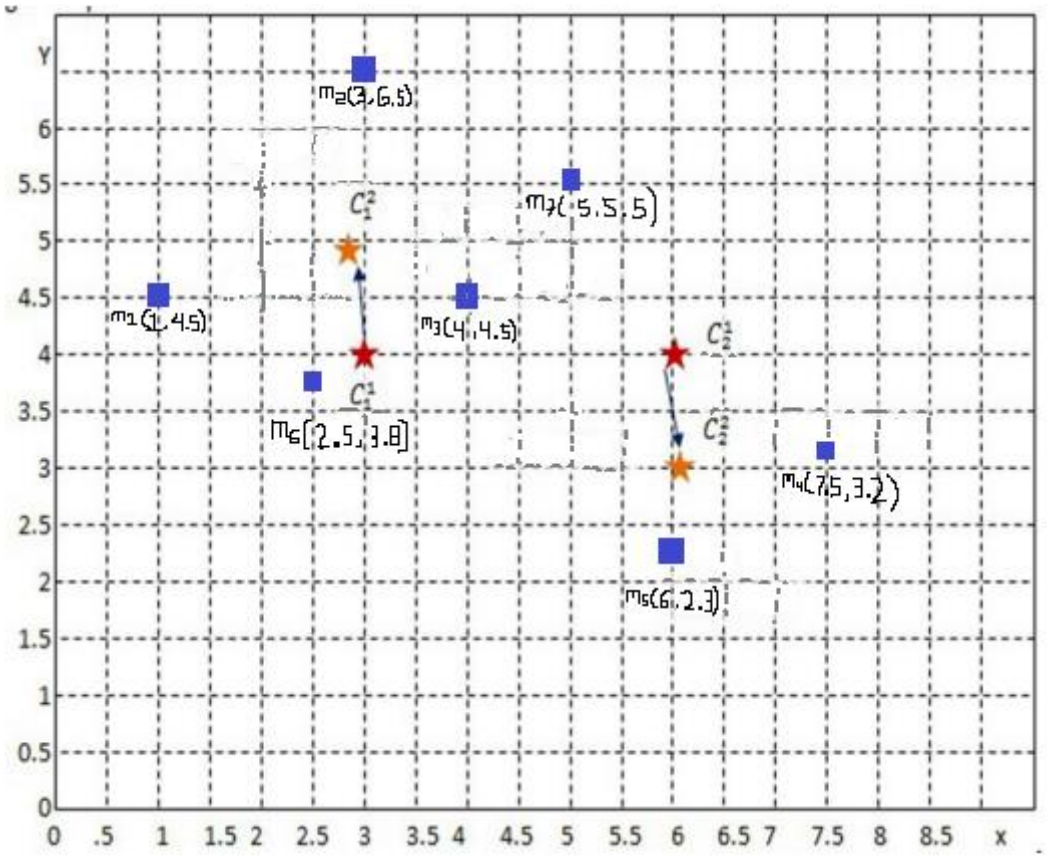
Latihan Soal (Kuis)

- Tentukan anggota klasternya, jika dikelompokan menjadi 2 klaster?

  M1 = (1, 4.5),
  M2 = (3, 6.5),
  M3 = (4, 4.5),
  M4 = (7.5, 3.2),
  M5 = (6, 2.3),
  M6 = (2.5, 3.8),
  M7 = (5, 5.5)

- Titik Pusat Cluster => **$C_1(3,4)$, $C_2(6,4)$**

Graph



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Tugas 1o Data mining

Contoh kasus - Iterasi 1

Iterasi 1

② menghitung Euclidian distance dari semua data ketiap titik pusat pertama sehingga didapatkan

$D_{11} = \sqrt{(M_{1x}-C_{1x})^2 + (M_{1y}-C_{1y})^2} = \sqrt{(1-3)^2+(4.5-4)^2} = 2,06$

$D_{12} = \sqrt{(M_{2x}-C_{1x})^2 + (M_{2y}-C_{1y})^2} = \sqrt{(3-3)^2+(6.5-4)^2} = 1,58$

$D_{13} = \sqrt{(M_{3x}-C_{1x})^2 + (M_{3y}-C_{1y})^2} = \sqrt{(4-3)^2+(4.5-4)^2} = 1,22$

$D_{14} = \sqrt{(M_{4x}-C_{1x})^2 + (M_{4y}-C_{1y})^2} = \sqrt{(7.5-3)^2+(3.2-4)^2} = 4,57$

$D_{15} = \sqrt{(M_{5x}-C_{1x})^2 + (M_{5y}-C_{1y})^2} = \sqrt{(6-3)^2+(2.3-4)^2} = 3,44$

$D_{16} = \sqrt{(M_{6x}-C_{1x})^2 + (M_{6y}-C_{1y})^2} = \sqrt{(2.5-3)^2+(3.8-4)^2} = 0,53$

$D_{17} = \sqrt{(M_{7x}-C_{1x})^2 + (M_{7y}-C_{1y})^2} = \sqrt{(5-3)^2+(5.5-4)^2} = 2,50$

pusat kedua

$D_{21} = \sqrt{(M_{1x}-C_{2x})^2 + (M_{1y}-C_{2y})^2} = \sqrt{(1-6)^2+(4.5-6)^2} = 5,02$

$D_{22} = \sqrt{(M_{2x}-C_{2x})^2 + (M_{2y}-C_{2y})^2} = \sqrt{(3-6)^2+(6.5-4)^2} = 3,90$

$D_{23} = \sqrt{(M_{3x}-C_{2x})^2 + (M_{3y}-C_{2y})^2} = \sqrt{(4-6)^2+(4.5-4)^2} = 2,06$

$D_{24} = \sqrt{(M_{4x}-C_{2x})^2 + (M_{4y}-C_{2y})^2} = \sqrt{(7.5-6)^2+(3.2-4)^2} = 1,7$

$D_{25} = \sqrt{(M_{5x}-C_{2x})^2 + (M_{5y}-C_{2y})^2} = \sqrt{(6-6)^2+(2.3-4)^2} = 1,7$

$D_{26} = \sqrt{(M_{6x}-C_{2x})^2 + (M_{6y}-C_{2y})^2} = \sqrt{(2.5-6)^2+(3.8-4)^2} = 3,50$

$D_{27} = \sqrt{(M_{7x}-C_{2x})^2 + (M_{7y}-C_{2y})^2} = \sqrt{(5-6)^2+(5.5-4)^2} = 1,80$

$D_{11} = 2,06$	$D_{21} = 5,02$
$D_{12} = 1,58$	$D_{22} = 3,90$
$D_{13} = 1,22$	$D_{23} = 2,06$
$D_{14} = 4,57$	$D_{24} = 1,7$
$D_{15} = 3,44$	$D_{25} = 1,7$
$D_{16} = 0,53$	$D_{26} = 3,50$
$D_{17} = 2,50$	$D_{27} = 1,80$

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(b) Dari penghitungan Euclidean distance, kito dapat membandingkan

	M_1	M_2	M_3	M_4	M_5	M_6	M_7
Jarak ke C1	2,06	1,58	1,22	4,57	3,44	0,53	2,50
Jarak ke C2	5,02	3,90	2,06	1,7	1,7	3,50	1,80

diambil nominal kecil maka $\{M_1, M_2, M_3, M_6\}$ anggota C1
dan $\{M_4, M_5, M_7\}$ anggota C2

(c) Hitung titik pusat baru

$M_1 = (1, 4.5)$, $M_2 = (3, 6.5)$, $M_3 = (4, 4.5)$, $M_4 (7.5, 3.2)$, $M_5 (6, 2.3)$,
$M_6 = (2.5, 3.8)$, $M_7 (5.5)$

$$C_1 = \left(\frac{1+3+4\,2,5}{4}, \frac{4,5+6,5+4,5+2,5}{4} \right) = (2,62, 4,5)$$

$$C_2 = \left(\frac{7,5+6+5}{3}, \frac{3,2+2.3+5.5}{3} \right) = (6,16, 3,66)$$

Hasil akhir

klaster 1 (C1) = $\{M_1, m_2, m_3, M_6\}$: $C_1 = (2,62, 4,5)$
klaster 2 (C2) = $\{m_4, m_5, m_7\}$: $C_2 = (6,16, 3,66)$