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Data ⇒ $x = \{(0.5, 1.0), (0.0, 4.0), (3.5, 2.0), (0.5, -4.5), (-0.5, -3.5)\}$

Initial centroid, $M1 = (-2.5, 0.5)$

$M2 = (2.5, 4.5)$

2 means cluster for iterations = 2

centroid / distance	C_1^M (0.5, 1.0)	C^M (0.0, 4.0)	C^M (3.5, 2.0)	C^M (0.5, -4.5)	C^M (-0.5, -3.5)
M1 = -2.5, 0.5	3.04	4.30	6.18	5.83	4.47
M2 = 2.5, 4.5	4.03	2.54	2.69	9.21	8.54
clusters =	M1	M2	M2	M1	M1

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data = (0.5, 1.0)

M1 = (-2.5, 0.5)

$\sqrt{(2.5-0.5)^2+(0.5-1.0)^2} = 3.04$

$\sqrt{(2.5-0.0)^2+(0.5-4.0)^2} = 4.30$

$\sqrt{(-2.5-3.5)^2+(0.5-2.0)^2} = 6.18$

$\sqrt{(-2.5-0.5)^2+(0.5-(-4.5))^2} = 5.83$

$\sqrt{(-2.5-(-0.5))^2+(0.5-(-3.5))^2} = 4.47$

M2 = 2.5, 4.5

$\sqrt{(2.5-0.5)^2+(4.5-1.0)^2} = 4.03$

$\sqrt{(2.5-0.0)^2+(4.5-4.0)^2} = 2.54$

$\sqrt{(2.5-3.5)^2+(4.5-2.0)^2} = 2.69$

$\sqrt{(2.5-0.5)^2+(4.5-(-4.5))^2} = 9.21$

$\sqrt{(2.5-(-0.5))^2+(4.5-(-3.5))^2} = 8.54$

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New c_1 = Mean M1

$c_1 = (0.5 + 0.5 - 0.5)/3 = 0.167$

$M_1 = (1.0 + 4.5 - 3.5)/3 = 2.33$

[0.167, 2.33]

New c_2, Mean M_2

$c_2 = (0.0 + 3.5)/2 = 1.75$

$M_2 = (4.0 + 2.0)/2 = 3.0$

(1.75, 3.0)

new. $M1 = [0.167, 2.33]$ | $M2 = [1.75, 3.0]$

new centroids	(0.5, 1.0)	(0.0, 4.0)	(3.5, 2.0)	(0.5, -4.5)	(-0.5, -3.5)
M1 = (0.167, 2.33)	1.37	1.67	3.34	6.83	5.86
M2 = (1.75, 3.0)	2.35	2.01	2.01	7.60	6.87
clusters =	M1	M1	M2	M1	M1

$\sqrt{(0.167-0.5)^2+(2.33-1.0)^2} = 1.37$

$\sqrt{(0.167-0.0)^2+(2.33-4.0)^2} = 1.67$

$\sqrt{(0.167-3.5)^2+(2.33-2.0)^2} = 3.34$

$\sqrt{(0.167-0.5)^2+(2.33-(-4.5))^2} = 6.83$

$\sqrt{(0.167-(-0.5))^2+(2.33-(-3.5))^2} = 5.86$

$\sqrt{(1.75-0.5)^2+(3.0-1.0)^2} = 2.35$

$\sqrt{(1.75-0.0)^2+(3.0-4.0)^2} = 2.01$

$\sqrt{(1.75-3.5)^2+(3.0-2.0)^2} = 2.01$

$\sqrt{(1.75-0.5)^2+(3.0-(-4.5))^2} = 7.60$

$\sqrt{(1.75-(-0.5))^2+(3.0-(-3.5))^2} = 6.87$

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New c1 M1

$c_1 = (0.5 + 0.0 + 0.5 - 0.5)/4 = 0.125$

$M_1 = (1.0 + 4.0 - 4.5 - 3.5)/4 = -0.75$

New c2, M2

$c_2 = 3.5$

$M_2 = 2.0$

$(c_2, M_2) = (3.5, 2.0)$

So, $\{(0.125, -0.75), (3.5, 2.0)\}$