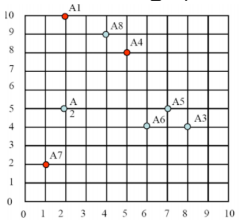
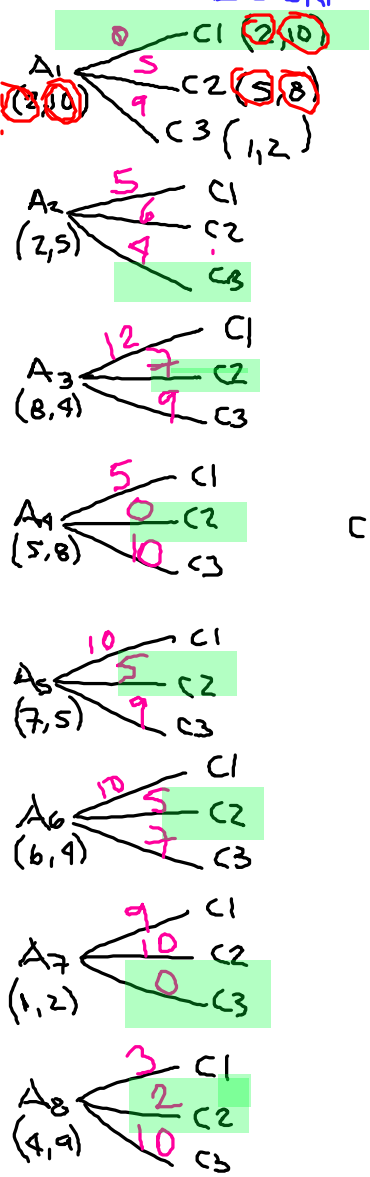
Ejercicio K-Means

- Distancia Manhattan $|x_2 - x_1| + |y_2 - y_1|$
- Centroides iniciales A1, A5, A4



1era ITERACIÓN



CLUSTERS

C1 (2,10)	C2 (5,8)	C3 (1,2)
A1 (2,10)	A8 (8,4) A4 (5,8) A5 (7,5) A6 (6,4) A8 (4,9)	A2 (2,5) A7 (1,2)

Recalcular centroides

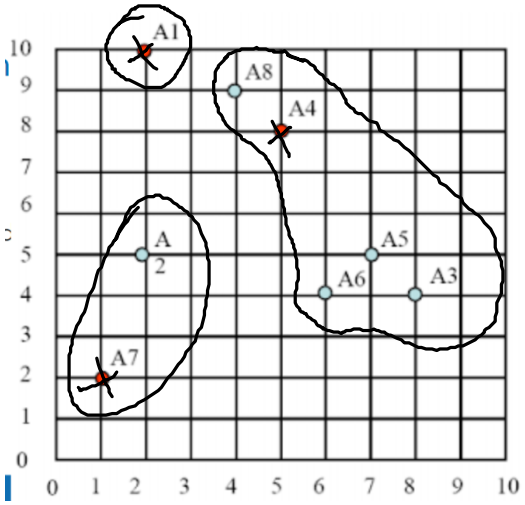
C1 (2,10) → C1 = (2,10)

C2: (8,4), (5,8), (7,5), (6,4), (4,9) → (30/5, 30/5) = (6, 6)

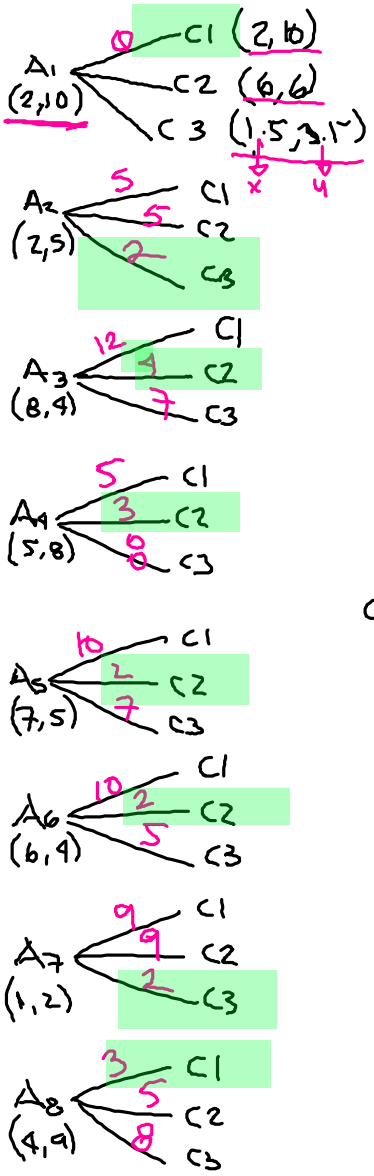
C3: (2,5), (1,2) → (3/2, 7/2) = (1.5, 3.5)

Nuevos centroides

C1 = (2, 10)
C2 = (6, 6)
C3 = (1.5, 3.5)



2ª ITERACIÓN



CLUSTERS

C1 (2,10)	C2 (6,6)	C3 (1.5, 3.5)
A1 (2,10)	A3 (8,4)	A2 (2,5)
A8 (4,9)	A4 (5,8)	A7 (1,2)
	A5 (7,5)	
	A6 (6,4)	

Recalcular centroides

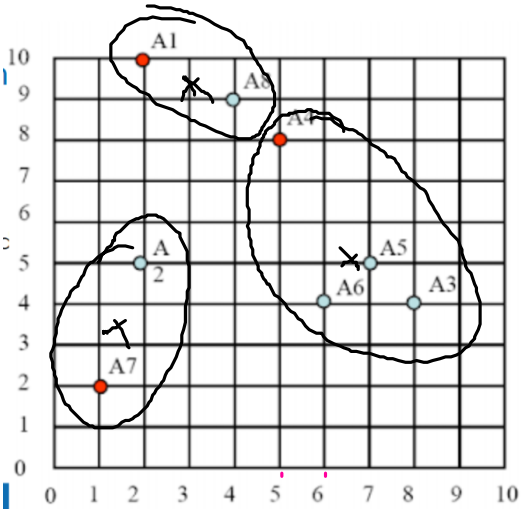
C1 (2,10) (4,9) → 2|(6,19) = C1 = (3, 9.5)

C2 (8,4) (5,8) (7,5) (6,4) → 4|(26,21) = (6.5, 5.25)

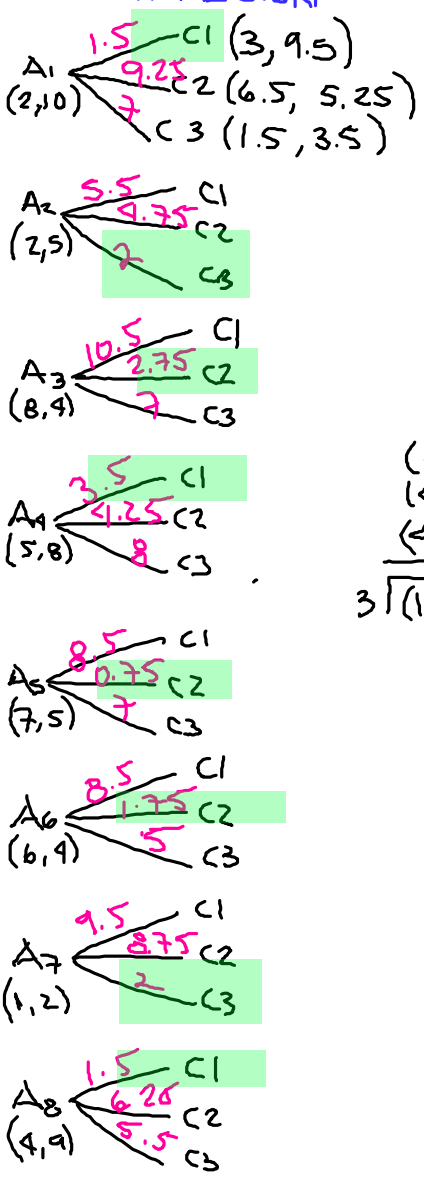
C3 (2,5) (1,2) → 2|(3,7) = (1.5, 3.5)

Nuevos centroides

C1 = (3, 9.5)
C2 = (6.5, 5.25)
C3 = (1.5, 3.5)



3ª ITERACIÓN



CLUSTERS

C1 (3,9.5)	C2 (6.5, 5.25)	C3 (1.5, 3.5)
A1 (2,10)	A3 (8,9)	A2 (2,5)
A4 (5,8)	A5 (7,5)	A7 (1,2)
A8 (4,9)	A6 (6,9)	

Recalcular centroides

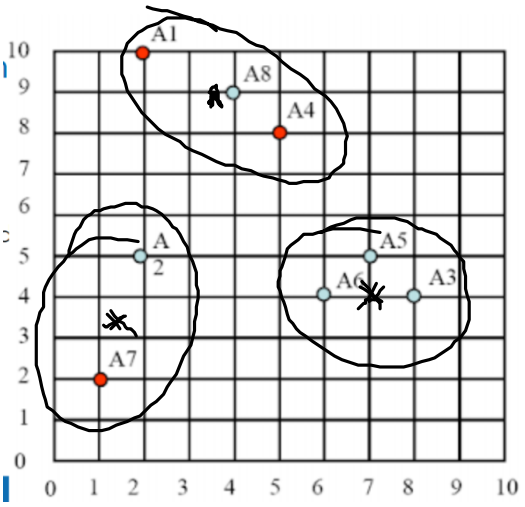
C1
(2,10)
(5,8)
(4,9)
3 | (11,27)

C2
(8,9)
(7,5)
(6,9)
3 | (21,19)

C3
(2,5)
(1,2)
2 | (3,7)

Nuevos centroides

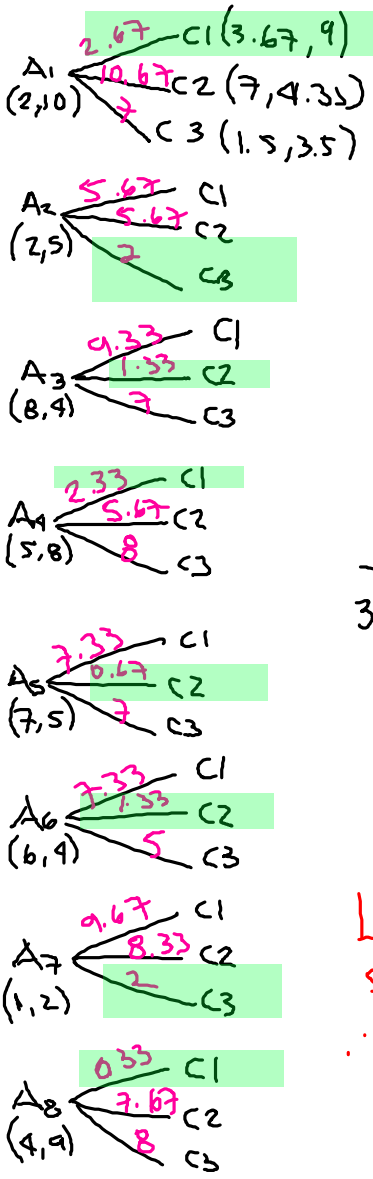
C1 = (3.67, 9)
C2 = (7, 9.33)
C3 = (1.5, 3.5)



4ta ITERACIÓN

CLUSTERS

C1 (3.67, 9)	C2 (7, 4.33)	C3 (1.5, 3.5)
A1 (2,10)	A3 (8,4)	A2 (2,5)
A4 (5,8)	A5 (7,5)	A7 (1,2)
A8 (4,9)	A6 (6,4)	



Recalcular centroides

C1: (2,10), (5,8), (4,9) → 3 | (11, 27)

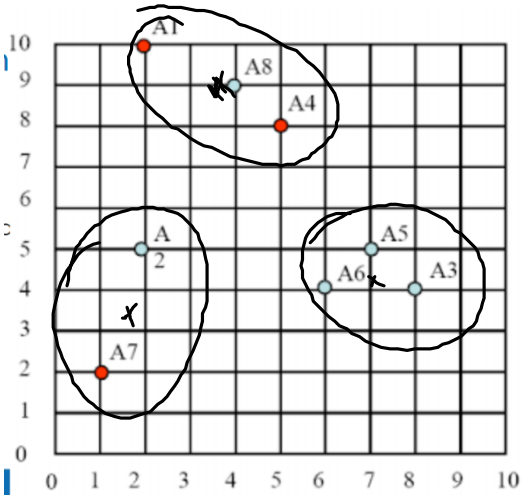
C2: (8,4), (7,5), (6,4) → 3 | (21, 13)

C3: (2,5), (1,2) → 2 | (3, 7)

Nuevos centroides

C1 = (3.67, 9)
C2 = (7, 4.33)
C3 = (1.5, 3.5)

Los nuevos centroides son iguales a los anteriores, ∴ el alg. termina

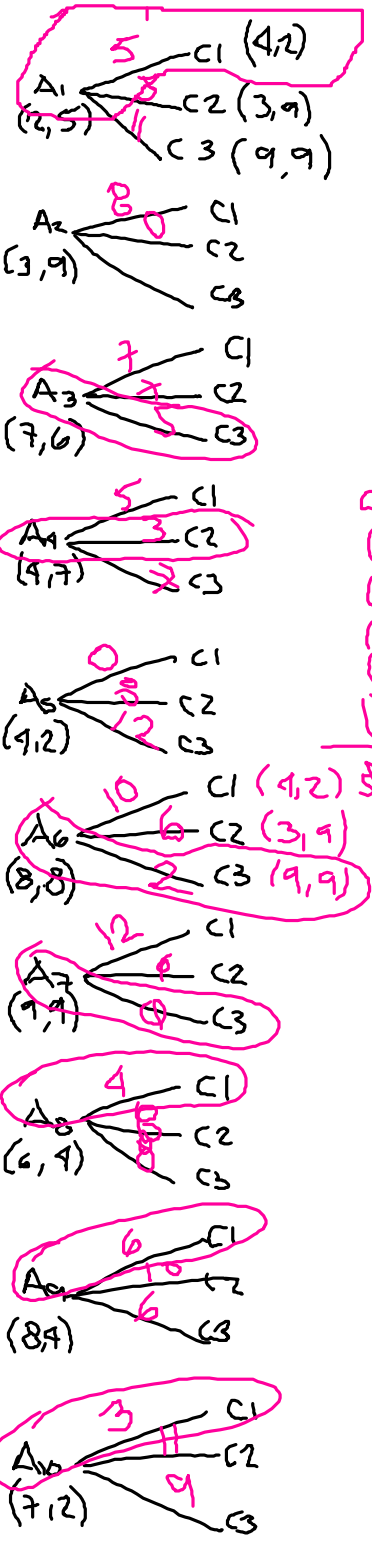


SOLUCIÓN EXAMEN 2do PARCIAL

Solución 1

1ra ITERACIÓN

Distancia Manhattan $|x_1 - x_2| + |y_1 - y_2|$



CLUSTERS

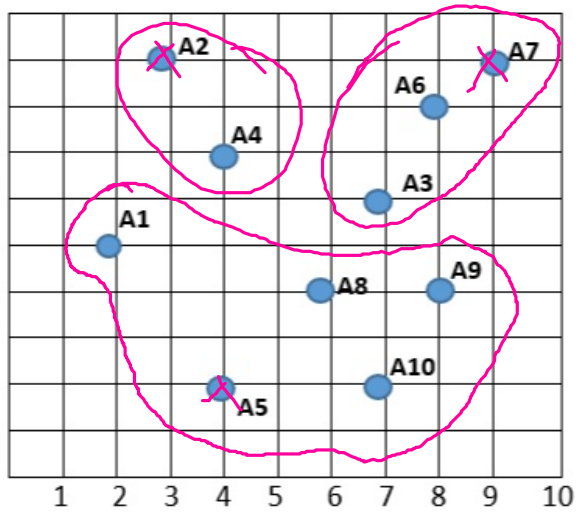
C1 (4,2)	C2 (3,9)	C3 (9,9)
A1 (2,5)	A2 (3,9)	A3 (7,6)
A5 (4,2)	A4 (4,7)	A6 (8,8)
A8 (6,4)		A7 (9,9)
A9 (8,4)		
A10 (7,2)		

Recalcular centroides

C1
(2,5)
(4,2)
(6,4)
(8,4)
(7,2)
5 | (27,17) = (5.4, 3.4)

C2
(3,9)
(4,7)
2 | (7,16) = (3.5, 8)

C3
(7,6)
(8,8)
(9,9)
3 | 24,23
(8, 7.7)



Nuevos centroides

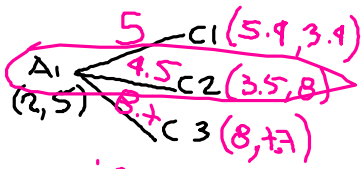
C1 (5.4, 3.4)

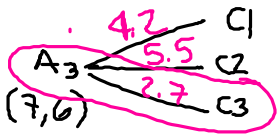
C2 (3.5, 8)

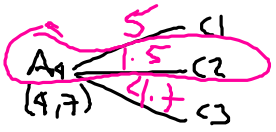
C3 (8, 7.7)

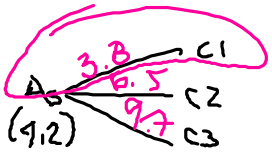
2da ITERACIÓN

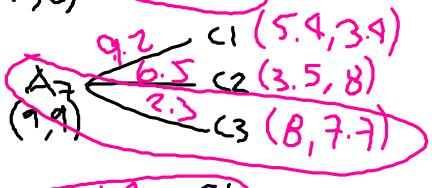
Distancia Manhattan $|x_1 - x_2| + |y_1 - y_2|$

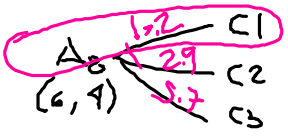


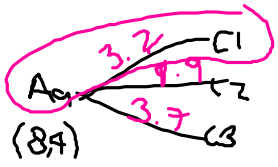


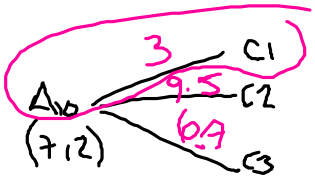












C1 (5.4, 3.4)	C2 (3.5, 8)	C3 (8, 7.7)
A5 (4, 2) A8 (6, 4) A9 (8, 4) A10 (7, 2)	A2 (3, 9) A4 (4, 7) A1 (2, 5)	A3 (7, 6) A6 (8, 8) A7 (9, 9)

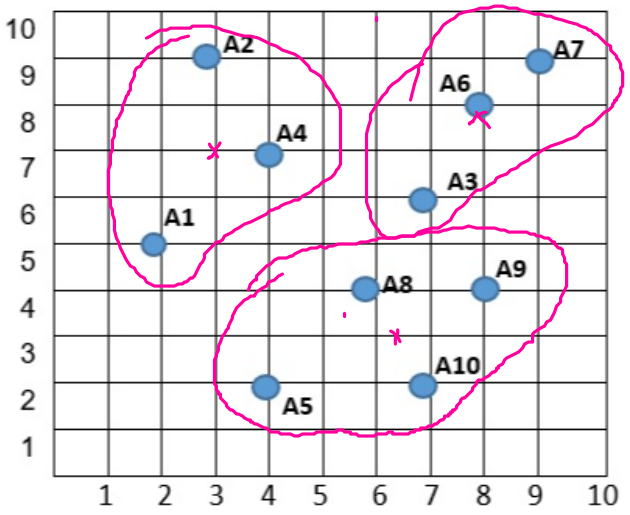
Recalcular centroides

C1 (6.25, 3)

C2 (3, 7)

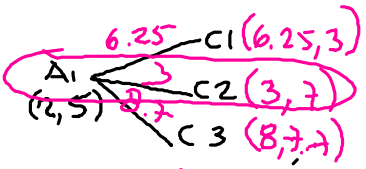
C3 (8, 7.7)

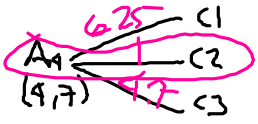
Nuevos centroides

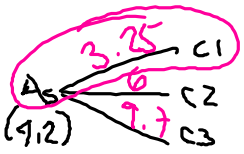


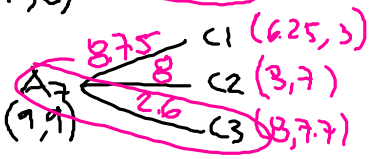
3ª ITERACIÓN

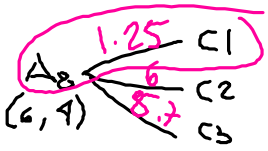
Distancia Manhattan $|x_1 - x_2| + |y_1 - y_2|$

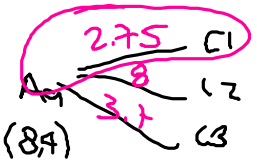


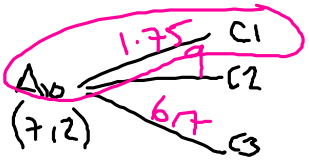












CLUSTERS

C1 (6.25,3)	C2 (3,7)	C3 (8,7.7)
A5 (4,2)	A1 (2,5)	A3 (7,6)
A8 (6,4)	A2 (3,9)	A6 (8,8)
A10 (7,2)	A4 (4,7)	A7 (9,9)
A9 (8,4)		

Recalcular centroides

C1

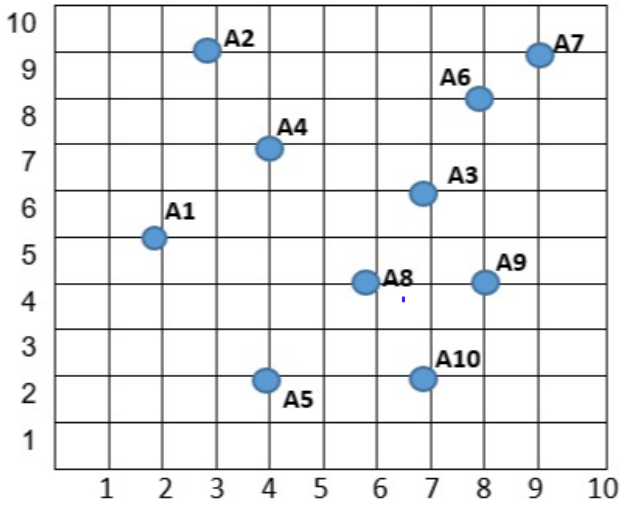
4 | 25, 12

C2

3 | 9, 21

C3

3 | 24, 23



Nuevos centroides

C1 → (6.25, 3)

C2 → (3, 7)

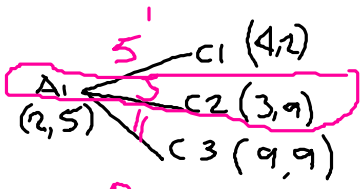
C3 → (8, 7.7)

↳ Termina

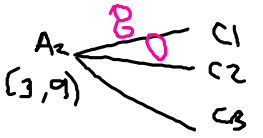
Solución 2

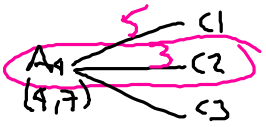
1ra ITERACIÓN

Distancia Manhattan $|x_1 - x_2| + |y_1 - y_2|$



C1 (4,2)	C2 (3,9)	C3 (9,9)
A5 (4,2)	A2 (3,9)	A3 (7,6)
A8 (6,4)	A4 (4,7)	A6 (8,8)
A9 (8,4)	A7 (2,5)	A10 (7,2)

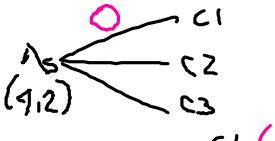


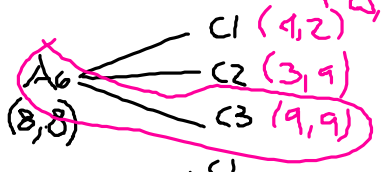


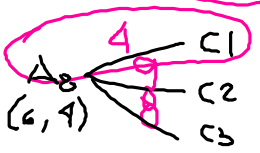
C1: (4,2), (6,4), (8,4), (7,2) → 4 | 25,12

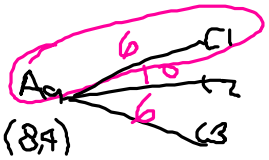
C2: (3,9), (4,7), (2,5) → 3 | 9,21

C3: (7,6), (8,8), (9,9) → 3 | 24,23 → (8,7.7)



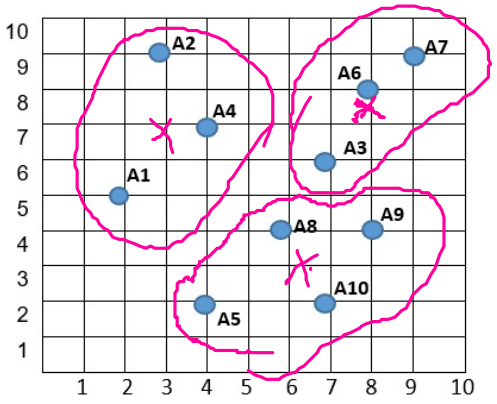






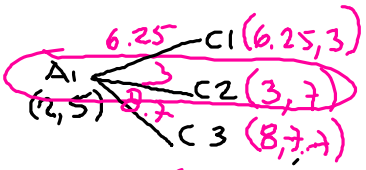
C1 (6.25, 3)
C2 (3, 7)
C3 (8, 7.7)

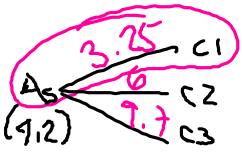
Nuevos centroides

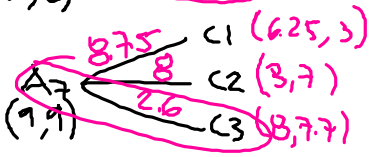


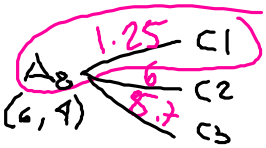
2ª ITERACIÓN

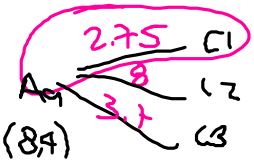
Distancia Manhattan $|x_1-x_2| + |y_1-y_2|$

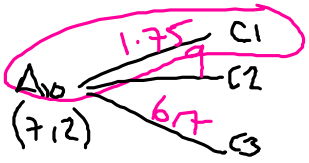












CLUSTERS

C1 (6.25,3)	C2 (3,7)	C3 (8,7.7)
A5 (9,2)	A1 (2,5)	A3 (7,6)
A8 (6,4)	A2 (3,9)	A6 (8,8)
A10 (7,2)	A4 (9,7)	A7 (9,9)
A9 (8,4)		

Recalcular centroides

C1

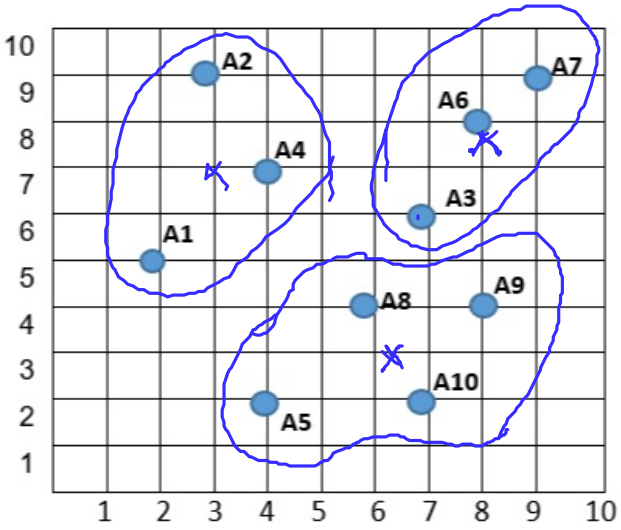
4 | 25, 12

C2

3 | 9, 21

C3

3 | 24, 23



Nuevos centroides

C1 → (6.25, 3)

C2 → (3, 7)

C3 → (8, 7.7)

→ Termina