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(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai) (Religious Jain Minority)

cluster the given data using K-Medoid technique. Use K=2

 $\{(2,6),(3,4),(3,8),(4,7),(6,2),(6,4),(7,3),(7,4),(8,5)(7,6)\}$

solution:

Using Manhatten/City Block distance measure to calculate the dissimilarity of the data objects.

$$d = |X_1 - X_2| + |Y_1 - Y_2|$$

	1 40.70		
X	4	C1 = (314)	C2=(714)
	or o	d= x-3 + 4-4	d=1x-71+14-4
2	6	12-31+16-41=3	
3	4	0+0=0	14+0=4 C1
3	8	0+3=4	4+4=8 4
4	7	1+3 1 = 4	3+3=6 G
6	2	3+2=5	1+2=3 62
6	4	3+0=3	1+0=1
7	3	4+1=5	0+1=11
17	4	4+0=4	0 + 0 + 0 02
8	5	5+1=6	1+1=2 (2
7	6	4+2=6	0+2=2 62

Initial Medoids = { (314), (714)}

Generated Clusters

based on distance values

from each medoid $C_1 = \frac{9}{2}(216), (314), (318), (417)$ $C_2 = \frac{9}{2}(612), (614), (7,3), (714), (815), (716)$ Let's compute the

Let's compute the cost for this iteration by adding the distance values.

Cost - Iteration 1 = (3+0+4+4) + (3+1+1+0+2+2) = 20 Iteration 2: select one of the non-medoid data-Object

Let new medoid be (7,3)

	X	Y	$c_1 = (3.4)$ d = x-3 + y-4	C2=(7,3) d= X-7 + Y-3	C			
	2	6	12-3 + 6-4 =	12-71 + 16-31	CI			
	3	4	0+0=0	4+1=5	CI			
Paralla language	3	8	0+4=14	4+5 = 9	CI			
d'astronopo	4	7	1+3 = 4	3+4=7				
de constitution of	6	2	3+2 = 5	1+1 = 2	C1 C2			
A. Achdesia and on-	6	4	3 to = 3	1+1 = 2	C2			
	7	3	4+1 = 5	0+0=10	C ₂			
- See Suppose	7	4	4+0 = 4	0+1=1	C2			
material control or	8	5	5+1=6	1+2=3	C2			
	7	6	4+2 = 6	0+3 =3	C2			
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	1,000,000	-						

Generating clusters

based on distance from newly chosen Medoid $C_1 = \{(2,6), (3,4), (3,8), (4,7)\}$ $(2 = \{(6,2), (6,4), (7,3), (7,4), (8,5), (7,6)\}$ Let's compute the cost for this iteration by adding their corresponding distance values.

cost _ Iteration 2 =
$$(3+0+4+4)+(2+2+0+1+3+3)$$

= $14+11$
= 22

Step 3: So cost of swapping medoid from It& I2

= Cost_Iteration2 - cost_iteration1

= 22 - 20

= 2

Swap cost is 2 which is >0, so the medoid chosen in iteration 2 is not a good idea. so we will go with the chosen medoids in Iteration 1.