Lab – 10

☆ **K-medioids** Example :-

Sr.	X	Y
0	8	7
1	3	7
2	4	9
3	9	6
4	8	5
5	5	8
6	7	3
7	8	4
8	7	5
9	4	5

→ Here, $K=2$ and we assume
$C1 = (4, 5)$ and $C2 = (8, 5)$

Sr.	X	Y	Dissimilarity from $C_1 (4,5)$	Dissimilarity from $C_2 (8,5)$
0	8	7	$\|8-4\|+\|7-5\|=6$	$\|8-8\| + \|7-5\|=2$
1	3	7	3	7
2	4	9	4	8
3	9	6	6	2
5	5	8	4	6
6	7	3	5	3
7	8	4	5	1
8	7	5	3	1

The cost = 3+4+4 + 2+2+3+1+1

$$= 20$$

$C1 \rightarrow$ 1, 2, 5
$C2 \rightarrow$ 0, 3, 6, 7, 8

$\rightarrow$ let $C1 = (4, 5)$ and $C2 = (8, 4)$

Sr	x	y	Dissimilarity from C_1	Dissimilarity from C_2
0	8	7	6	3
1	3	7	3	8
2	4	9	4	9
3	9	6	6	3
4	8	5	4	1
5	5	8	4	7
6	7	3	5	2
8	7	5	3	2

new
cost = 3 + 4 + 4   +   3 + 3 + 1 + 2 + 2

$$= 22$$

$C1 \rightarrow$ 1, 2, 5
$C2 \rightarrow$ 0, 3, 4, 6, 8

swap cost $=$ new cost $-$ prev cost

$$= 22 - 20$$

$$= 2$$

$\therefore 2 > 0$, so our previous medioid was better than this.