Example of K-Medoids - Clustering

Scenario :- A Small online clothing botique, "Thread Threads" want to Segment it's Customer base to tailor marketing Campaigns more effectively. They believe that Customers can be grouped based on their Purchasing habits. Specially, the average amount Spent Per order and the frequency of Purchases (order Per Month). They have collected data for 8 of their recent Customers.

Data :-

Customer ID	Avg Spend Per order	Orders per Month
C_1	1500	2
C_2	2000	1
C_3	1000	3
C_4	2500	1
C_5	1200	2
C_6	1800	3
C_7	900	1
C_8	2200	2

Objective :- using the K-Medoids clustering algorithm with

$K = 2$

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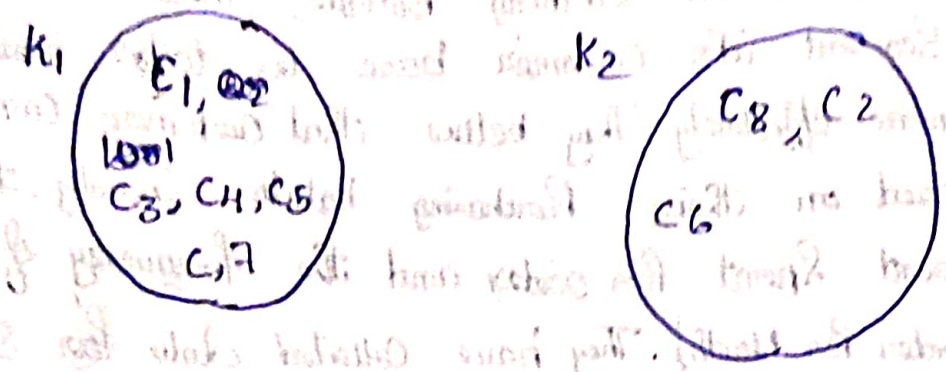
Question:- Demonstrate the K-Medoids Clustering process.



Formula:- $|x_2 - x_1| + |y_2 - y_1|$ (K_1)

$(C_1, C_1) \Rightarrow 0$

$(C_1, C_2) \Rightarrow (2000 - 1500) + 500(1-2) \Rightarrow 500 + 1 = 501$

$(C_1, C_3) \Rightarrow (1000 - 1500) + (3-2) \Rightarrow 500 + 1 = 501$

$(C_1, C_4) \Rightarrow (2500 - 1500) + (1-2) \Rightarrow 1000 + 1 = 1001$

$(C_1, C_5) \Rightarrow (1200 - 1500) + (2-2) \Rightarrow 300 + 0 = 300$

$(C_1, C_6) \Rightarrow (1800 - 1500) + (3-2) \Rightarrow 300 + 1 = 301$

$(C_1, C_7) \Rightarrow (900 - 1500) + (1-2) \Rightarrow 600 + 1 = 601$

$(C_1, C_8) \Rightarrow (2200 - 1500) + (2-2) = 700 + 0 = 700$

(C_8)

$(C_8, C_1) \Rightarrow (1500 - 2200) + (2-2) \Rightarrow 700 + 0 = 700$

$(C_8, C_2) \Rightarrow (2000 - 2200) + (1-2) \Rightarrow 200 + 1 = 201$

$(C_8, C_3) \Rightarrow (1000 - 2200) + (3-2) \Rightarrow 1200 + 1 = 1201$

$(C_8, C_4) \Rightarrow (2500 - 2200) + (1-2) \Rightarrow 300 + 1 = 301$

$(C_8, C_5) \Rightarrow (1200 - 2200) + (2-2) \Rightarrow 1000 + 0 = 1000$

$(C_8, C_6) \Rightarrow (1800 - 2200) + (3-2) \Rightarrow 400 + 1 = 401$

$(C_8, C_7) \Rightarrow (900 - 2200) + (1-2) \Rightarrow 1300 + 1 = 1301$

$(C_8, C_8) \Rightarrow 0$

	C_4 (K_1)	C_8 (K_2)	Total
C_1	501	700	501
C_2	501	201	201
C_3	1001	1201	1001
C_4	300	301	300
C_5	301	1000	301
C_6	601	401	401
C_7	700	1301	700

Total => 6,115