5. Sep. R1

Q Consider the following 6 data points:
A[1,2], B[2,2], C[7,6], D[8,7], E[2,3], F[25,8].

Epsilon in ③ & Minimum number of points required to form a cluster in ②

Apply DBSCAN algo to categorize the above data points as core, border or noise data points. Use Euclidean distance to find the distance b/w points.

	Core	Core	Core	Core	Core	Boundary	Noise
	A	B	C	D	E	F	
A	0	1	7.211	8.602	1.414	24.738	
B	1	0	6.403	7.810	1	23.769	
C	7.211	6.403	0	1.414	5.830	18.110	
D	8.602	7.810	1.414	0	7.211	17.029	
E	1.414	1	5.830	7.211	0	23.537	
F	24.738	23.769	18.110	17.029	17.029	0	

↳ First fill lower part than mirror the values in upper part.

↳ For A :

$$d(A,B) = \sqrt{(1-2)^2 + (2-2)^2} = 1$$
$$d(A,C) = \sqrt{(1-7)^2 + (2-6)^2} = 7.211$$
$$d(A,D) = \sqrt{(1-8)^2 + (2-7)^2} = 8.602$$
$$d(A,E) = \sqrt{(1-2)^2 + (2-3)^2} = 1.414$$
$$d(A,F) = \sqrt{(1-25)^2 + (2-8)^2} = 24.738$$

For B:

$$d(B,C) = \sqrt{(2-7)^2+(2-6)^2} \quad = 6.403$$
$$d(B,D) = \sqrt{(2-8)^2+(2-7)^2} \quad = 7.810$$
$$d(B,E) = \sqrt{(2-2)^2+(2-3)^2} \quad = 1$$
$$d(B,F) = \sqrt{(2-25)^2+(2-8)^2} \quad = 23.769$$

For C:

$$d(C,D) = \sqrt{(7-8)^2+(6-7)^2} \quad = 1.414$$
$$d(C,E) = \sqrt{(7-2)^2+(6-3)^2} \quad = 5.830$$
$$d(C,F) = \sqrt{(7-25)^2+(6-8)^2} = 18.110$$

For D:

$$d(D,E) = \sqrt{(8-2)^2+(7-3)^2} \quad = 7.211$$
$$d(D,F) = \sqrt{(8-25)^2+(7-8)^2} = 17.029$$

For E:

$$d(E,F) = \sqrt{(2-25)^2+(8-8)^2} = 23.537$$

→ Now check column 1 by 1 its value lessor equal than $\epsilon = 3$

→ And mark the point on bases of criteria core, boundary & Noise