

1. Compute all pairwise Euclidean distances between customers.

2. Create a matrix that will contain all the distances.

	A	B	C	D	E	F
A	0	10.0	45.3	60.4	50.8	25.2
B	10.0	0	35.2	50.4	40.8	15.1
C	45.3	35.2	0	15.1	6.4	20.1
D	60.4	50.4	15.1	0	10.2	35.2
E	50.8	40.8	6.4	10.2	0	25.7
F	25.2	15.1	20.1	35.2	25.7	0

$$d(A,B) = \sqrt{(10-20)^2 + (1-2)^2} = d(B,C) = \sqrt{(20-55)^2 + (2-6)^2}$$

$$d(A,B) = 10.0$$

$$d(B,C) = 35.2278 \approx 35.2$$

$$d(A,C) = \sqrt{(10-55)^2 + (1-6)^2}$$

$$d(B,D) = \sqrt{(20-70)^2 + (2-8)^2}$$

$$d(A,C) = 45.2769 \approx 45.3$$

$$d(B,D) = 50.3587 \approx 50.4$$

$$d(A,D) = \sqrt{(10-70)^2 + (1-8)^2}$$

$$d(B,E) = \sqrt{(20-60)^2 + (2-10)^2}$$

$$d(A,D) = 60.4069 \approx 60.4$$

$$d(B,E) = 40.7921 \approx 40.8$$

$$d(A,E) = \sqrt{(10-60)^2 + (1-10)^2}$$

$$d(B,F) = \sqrt{(20-35)^2 + (2-4)^2}$$

$$d(A,E) = 50.8035 \approx 50.8$$

$$d(B,F) = 15.1327 \approx 15.1$$

$$d(A,F) = \sqrt{(10-35)^2 + (1-4)^2}$$

$$d(D,E) = \sqrt{(70-60)^2 + (8-10)^2}$$

$$d(A,F) = 25.1793 \approx 25.2$$

$$d(D,E) = 10.1980 \approx 10.2$$

$$d(C,D) = \sqrt{(55-70)^2 + (6-8)^2}$$

$$d(D,F) = \sqrt{(70-35)^2 + (8-4)^2}$$

$$d(C,D) = 15.1327 \approx 15.1$$

$$d(D,F) = 35.2278 \approx 35.2$$

$$d(C,E) = \sqrt{(55-60)^2 + (6-10)^2}$$

$$d(E,F) = \sqrt{(60-35)^2 + (10-4)^2}$$

$$d(C,E) = 6.4031 \approx 6.4$$

$$d(E,F) = 25.7099 \approx 25.7$$

$$d(C,F) = \sqrt{(55-35)^2 + (6-4)^2}$$

$$d(C,F) = 20.0997 \approx 20.1$$

3. Using single linkage, determine the merging order step by step

4. Record the distance at which each merge occurs

$C - E = 6.4$

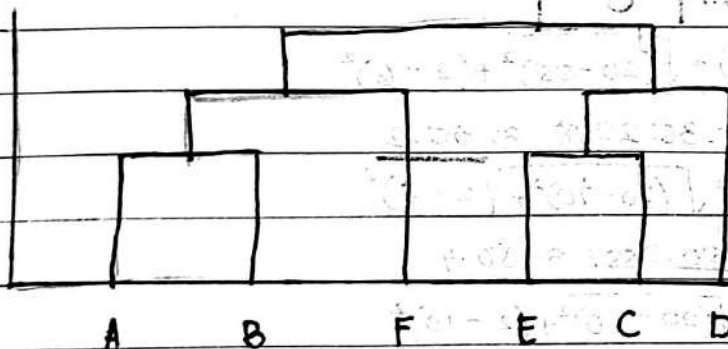
$A - B = 10.0$

$CE - D = 10.2 = CED$

$AB - F = 15.1 = ABF$

$C - F = 20.1 = CED + ABF$

5. Draw the corresponding dendrogram



6. Interpret the clusters. What customer behaviors does each cluster represent

Based on the dendrogram, there are two types of clusters of customers

in the establishment, which are low betting customers having lower visits, than

customers that are high betters that visit the casino frequently. In a business

insight the target customers are those who are low betters having low visits per

month, the use of promos to entice them to spend more and visit more frequently,

whilst, for customers of high bets and more frequent visits, VIP perks can be used

to encourage them to gamble more, while enjoying the luxury of being a VIP.