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Stephen Acc F.Sy COM231 Exercise 2

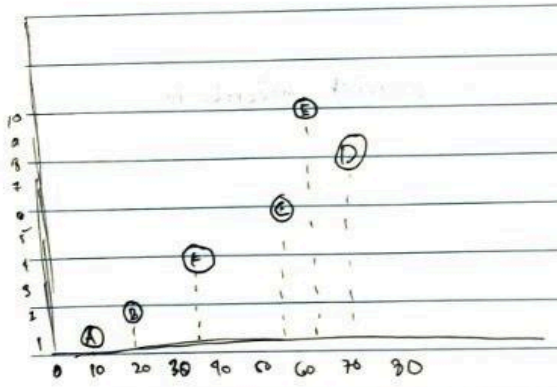
Casino Customers

	x_1	x_2
Customer	Avg Bet per Visit (USD)	Visits per Month
A	10	1
B	20	2
C	55	6
D	70	8
E	60	10
F	35	9

Tasks

1. Compute all pairwise Euclidian distances between customers

Scatter plot



A B F C E D

②

	A	B	C	D	E	F
A	0	10.04	48.3	60.41	50.2	25.2
B	10.04	0	38.2	50.9	40.4	5.1
C	48.3	38.2	0	15.1	6.4	20.1
D	60.41	50.9	15.1	0	10.2	35.2
E	50.2	40.2	6.4	10.2	0	25.2
F	25.2	5.1	20.1	35.2	25.2	0

③ 3.

1 BF 2 CE 3 DE 4 CD 5 CF 6 AF 7 EF

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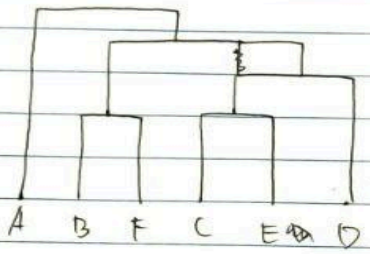
5.



C. Cluster BF has the lowest avg dist from the other betters
they might be lust for fun in the casino

Cluster CE and DE are the same

While the others Clusters are risky betters and somewhat addicted to gambling.

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$d(A,B) = \sqrt{(A_{bet} - B_{bet})^2 + (A_{visit} - B_{visit})^2}$

$(10 - 20)^2 + (1 - 2)^2$

$100 + 1$

$\sqrt{101}$

10.095

$d_1(A,C) \sqrt{(A_{bet} - C_{bet})^2 + (A_{visit} - C_{visit})^2}$

$(10 - 55)^2 + (1 - 6)^2$

$2025 + 25$

$\sqrt{2050}$

45.28

$d_2(A,D) \sqrt{(A_{bet} - D_{bet})^2 + (A_{visit} - D_{visit})^2}$

$(10 - 70)^2 + (1 - 8)^2$

$3600 + 49$

$\sqrt{3649}$

60.91

$d_3(A,E) \sqrt{(A_{bet} - E_{bet})^2 + (A_{visit} - E_{visit})^2}$

$(10 - 60)^2 + (1 - 10)^2$

$2500 + 81$

50.80

$d_4(A,F) \sqrt{(A_{bet} - F_{bet})^2 + (A_{visit} - F_{visit})^2}$

$(10 - 35)^2 + (1 - 9)^2$

$625 + 9$

$\sqrt{634}$

25.18

$(B,C) \sqrt{(B_{bet} - C_{bet})^2 + (B_{visit} - C_{visit})^2}$

$(20 - 55)^2 \quad (2 - 6)^2$

$1225 + 16$

35.2

$(B,D) \sqrt{(B_{bet} - D_{bet})^2 + (B_{visit} - D_{visit})^2}$

$(20 - 70)^2 + (2 - 8)^2$

$2500 + 36$

$\sqrt{2536}$

50.4

$(B,E) \sqrt{(B_{bet} - E_{bet})^2 + (B_{visit} - E_{visit})^2}$

$(20 - 60)^2 + (2 - 10)^2$

$1600 + 64$

$\sqrt{1664}$

40.2

$(B,F) \sqrt{(B_{bet} - F_{bet})^2 + (B_{visit} - F_{visit})^2}$

$(20 - 35)^2 + (2 - 9)^2$

$225 + 9$

$\sqrt{229}$

15.1

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(C, D) $\sqrt{(\text{last} - \text{first})^2 + (\text{Cvisit} - \text{Dvisit})^2}$

$(55 - 20)^2 + (6 - 6)^2$

$225 + 4$

$\sqrt{229}$

(15)

(C, E) $\sqrt{(\text{last} - \text{Fset})^2 + (\text{Cvisit} - \text{Evisit})^2}$

$(55 - 60)^2 + (6 - 10)^2$

$25 + 16$

6.4

(C, F) $\sqrt{(\text{Clast} - \text{Fset})^2 + (\text{Cvisit} - \text{Fvisit})^2}$

$(55 - 35)^2 + (6 - 9)^2$

$400 + 4$

$\sqrt{409}$

20.1

D, E

(D, E) $\sqrt{(Dx_1 - Ex_1)^2 + (Dx_2 - Ex_2)^2}$

$(70 - 60)^2 + (5 - 10)^2$

$100 + 9$

$\sqrt{109}$

10.2

(D, F) $\sqrt{(Dx_1 - Fx_1)^2 + (Dx_2 - Fx_2)^2}$

$(75 - 35)^2 + (8 - 4)^2$

$1225 + 16$

$\sqrt{1241}$

35.2

(E, F) $\sqrt{(Ex_1 - Fx_1)^2 + (Ex_2 - Fx_2)^2}$

$(60 - 35) + (10 - 4)^2$

$625 + 36$

$\sqrt{661}$

25.7

VICTORY