

PAULOS, RAE S. COM232 EXERCISE 2

CASINO CUSTOMERS

CUSTOMER	AVG BET (USD)	VISIT PER MONTH
A	10	1
B	20	2
C	55	6
D	70	8
E	60	10
F	35	4

1. COMPUTE ALL PAIRWISE EUCLIDEAN DISTANCES

	A	B	C	D	E	F
A	0	10.05	45.28	60.41	50.8	25.18
B	10.05	0	35.23	50.36	40.79	15.13
C	45.28	35.23	0	15.13	6.4	20.1
D	60.41	50.36	15.13	0	10.2	35.23
E	50.8	40.79	6.4	10.2	0	25.71
F	25.18	15.13	20.1	35.23	25.71	0

$$\text{FORMULA} = D(A, B) = \sqrt{(A_0 - B_0)^2 + (A_1 - B_1)^2}$$

$$1. D(A, B) = \sqrt{(10 - 20)^2 + (1 - 2)^2} = 10.05$$

$$8. D(B, E) = \sqrt{(20 - 60)^2 + (2 - 10)^2} = 40.79$$

$$2. D(A, C) = \sqrt{(10 - 55)^2 + (1 - 6)^2} = 45.28$$

$$9. D(B, F) = \sqrt{(20 - 35)^2 + (2 - 4)^2} = 15.13$$

$$3. D(A, D) = \sqrt{(10 - 70)^2 + (1 - 8)^2} = 60.41$$

$$10. D(C, D) = \sqrt{(55 - 70)^2 + (6 - 8)^2} = 15.13$$

$$4. D(A, E) = \sqrt{(10 - 60)^2 + (1 - 10)^2} = 50.8$$

$$11. D(C, E) = \sqrt{(55 - 60)^2 + (6 - 10)^2} = 6.4$$

$$5. D(A, F) = \sqrt{(10 - 35)^2 + (1 - 4)^2} = 25.18$$

$$12. D(C, F) = \sqrt{(55 - 35)^2 + (6 - 4)^2} = 20.1$$

$$6. D(B, C) = \sqrt{(20 - 55)^2 + (2 - 6)^2} = 35.23$$

$$13. D(D, E) = \sqrt{(70 - 60)^2 + (8 - 10)^2} = 10.2$$

$$7. D(B, D) = \sqrt{(20 - 70)^2 + (2 - 8)^2} = 50.36$$

$$14. D(D, F) = \sqrt{(70 - 35)^2 + (8 - 4)^2} = 35.23$$

$$15. D(F, E) = \sqrt{(35 - 60)^2 + (4 - 10)^2} = 25.71$$

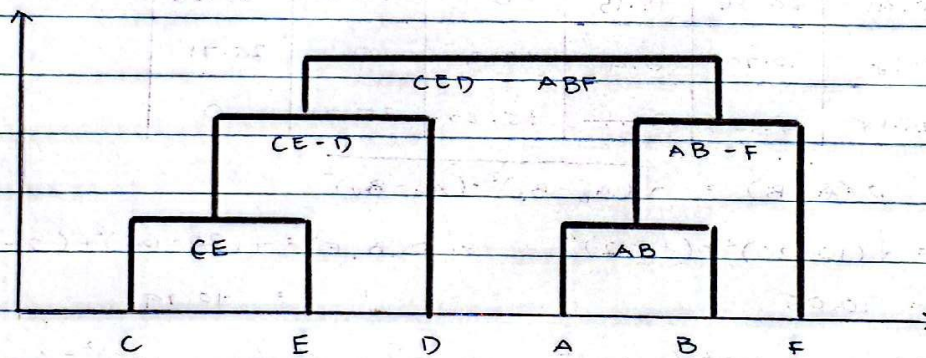
3. DETERMINE THE MERGING ORDER

1. C - E
2. A - B
3. C - E - D
4. A - B - F
5. CED - ABF

4. RECORD THE DISTANCE AT WHICH EACH MERGE OCCURED

1. CE = 6.4
2. AB = 10.05
3. CE-D = 15.13
4. AB-F = 15.13
5. CED-ABF = 20.1

5. DRAW THE CORRESPONDING DENDROGRAM



6. INTERPRET THE CLUSTERS

CLUSTERS CED ARE THE PEOPLE WHO FREQUENTLY VISITS CASINOS AND TEND TO SPEND MORE ON AVERAGE. WHILE ON THE OTHER HAND, CLUSTER ABF REPRESENTS THE PEOPLE WHO SELDOMLY GOES TO CASINOS AND WHEN THEY DO, THEY DON'T SPEND AS MUCH. WITH THIS IN MIND, WE CAN INFER THAT CLUSTERS CED COULD POTENTIALLY BE SUFFERING FROM GAMBLING ADDICTION WHILE THE LATTER ARE THOSE WHO COULD JUST BE STARTING OUT FROM GAMBLING OR ARE THOSE WHO ARE MORE FINANCIALLY RESPONSIBLE. ALTHOUGH, THE INTERPRETATION IS LIMITED WITH ONLY HAVING THEIR AVERAGE SPENDING AND VISITS PER MONTH AS THE BASIS.

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TO INCREASE CASINO REVENUE, SEVERAL STRATEGIES COULD BE IMPLEMENTED TO ENCOURAGE GUESTS TO CONTINUE GAMBLING. ONE APPROACH IS TO INTRODUCE TIERED REWARD SYSTEMS THAT CATER TO DIFFERENT KINDS OF SPENDERS. FOR HIGH SPENDERS, THE CASINO CAN ESTABLISH MULTIPLE VIP TIERS WHERE REWARDS AND PERKS INCREASE AS THEIR SPENDING GROWS. THESE PEOPLE ARE ALREADY HIGH SPENDERS AND ALREADY FREQUENT THE CASINO, SO OUR CONCERN HERE IS MAKING SURE WE RETAIN THEM.

A SIMILAR REWARD STRUCTURE COULD ALSO BE IMPLEMENTED FOR LOW SPENDERS. THESE GUESTS MAY BE MORE CAUTIOUS WITH THEIR MONIES OR CONCERNED ABOUT FALLING INTO DEBT, SO INCENTIVES SHOULD BE TAILORED TO THEM FEELING COMFORTABLE WHILE STILL ENGAGING IN GAMBLING. THE CASINO COULD MARKET THEM GAMES THAT ARE LOW-RISK WITH APPEALING REWARDS. THESE INCENTIVES COULD MOTIVATE THEM TO STAY LONGER AND PLAY MORE WHICH WOULD MEAN MORE REVENUE FOR THE CASINO.