HIERARCHICAL (AGGLOMERATWE) CLUSTERING

SUBMITTED BY: SWATHI ANANDRAM

SINGLE LINK:

$P_1(2,2)$
$P_2(2,6)$
$P_3(3,7)$
$P_4(5,2)$
$P_5(5,5)$
$P_6(5,8)$
$P_7(6,6)$
$P_8(7,3)$
$P_9(8,4)$
$P_{10}(10,6)$
$P_{11}(12,8)$

EUCLIDEAN DISTANCE:-

$(P_1,P_2) = \sqrt{(2-2)^2 + (2-6)^2} = 4$

$(P_1,P_3) = \sqrt{(2-3)^2 + (2-7)^2} = 5.09$

$(P_1,P_4) = \sqrt{(2-5)^2 + (2-2)^2} = 3$

$(P_1,P_5) = \sqrt{(2-5)^2 + (2-5)^2} = 4.24$

$(P_1,P_6) = \sqrt{(2-5)^2 + (2-8)^2} = 6.70$

$(P_1,P_7) = \sqrt{(2-6)^2 + (2-6)^2} = 5.65$

$(P_1,P_8) = \sqrt{(2-7)^2 + (2-3)^2} = 5.09$

$(P_1,P_9) = \sqrt{(2-8)^2 + (2-4)^2} = 6.32$

$(P_{11},P_{10}) = \sqrt{(2-10)^2 + (2-6)^2} = 8.94$

$(P_1,P_{11}) = \sqrt{(2-12)^2 + (2-8)^2} = 11.66$

$(P_2, P_3) = \sqrt{(2-3)^2 + (6-7)^2} = 1.41$

$(P_2, P_4) = \sqrt{(2-5)^2 + (6-2)^2} = 5$

$(P_2, P_5) = \sqrt{(2-5)^2 + (6-5)^2} = 3.16$

$(P_2, P_6) = \sqrt{(2-5)^2 + (6-8)^2} = 3.60$

$(P_2, P_7) = \sqrt{(2-6)^2 + (6-6)^2} = 4$

$(P_2, P_8) = \sqrt{(2-7)^2 + (6-3)^2} = 5.83$

$(P_2, P_9) = \sqrt{(2-8)^2 + (6-4)^2} = 6.32$

$(P_2, P_{10}) = \sqrt{(2-10)^2 + (6-6)^2} = 8$

$(P_2, P_{11}) = \sqrt{(2-12)^2 + (6-8)^2} = 10.19$

$(P_3, P_4) = \sqrt{(3-5)^2 + (7-2)^2} = 5.38$

$(P_3, P_5) = \sqrt{(3-5)^2 + (7-5)^2} = 2.82$

$(P_3, P_6) = \sqrt{(3-5)^2 + (3-8)^2} = 2.23$

$(P_3, P_7) = \sqrt{(3-6)^2 + (7-6)^2} = 3.16$

$(P_3, P_8) = \sqrt{(3-7)^2 + (7-3)^2} = 5.65$

$(P_3, P_9) = \sqrt{(3-8)^2 + (7-4)^2} = 5.83$

$(P_3, P_{10}) = \sqrt{(3-10)^2 + (7-6)^2} = 7.07$

$(P_3, P_{11}) = \sqrt{(3-12)^2 + (7-8)^2} = 9.05$

$(P_4, P_5) = \sqrt{(5-5)^2 + (2-5)^2} = 3$

$(P_4, P_6) = \sqrt{(5-5)^2 + (2-8)^2} = 6$

$(P_4, P_7) = \sqrt{(5-6)^2 + (2-6)^2} = 4.12$

$(P_4, P_8) = \sqrt{(5-7)^2 + (2-3)^2} = 2.23$

$(P_4, P_9) = \sqrt{(5-8)^2 + (2-4)^2} = 3.60$

$(P_4, P_{10}) = \sqrt{(5-10)^2 + (2-6)^2} = 6.40$

$(P_4, P_{11}) = \sqrt{(5-12)^2 + (2-8)^2} = 9.21$

$(P_5, P_6) = \sqrt{(5-5)^2 + (5-8)^2} = 3$

$(P_5, P_7) = \sqrt{(5-6)^2 + (5-6)^2} = 1.41$

$(P_5, P_8) = \sqrt{(5-7)^2 + (5-3)^2} = 2.82$

$(P_5, P_9) = \sqrt{(5-8)^2 + (5-4)^2} = 3.16$

$(P_5, P_{10}) = \sqrt{(5-10)^2 + (5-6)^2} = 5.09$

$(P_5, P_{11}) = \sqrt{(5-12)^2 + (5-8)^2} = 7.61$

$(P_6, P_7) = \sqrt{(5-6)^2 + (8-6)^2} = 2.23$

$(P_6, P_8) = \sqrt{(5-7)^2 + (8-3)^2} = 5.38$

$(P_6, P_9) = \sqrt{(5-8)^2 + (8-4)^2} = 5$

$(P_6, P_{10}) = \sqrt{(5-10)^2 + (8-6)^2} = 5.38$

$(P_6, P_{11}) = \sqrt{(5-12)^2 + (8-8)^2} = 7$

$(P_7, P_8) = \sqrt{(6-7)^2 + (6-3)^2} = 3.16$

$(P_7, P_9) = \sqrt{(6-8)^2 + (6-4)^2} = 2.82$

$(P_7, P_{10}) = \sqrt{(6-10)^2 + (6-6)^2} = 4$

$(P_7, P_{11}) = \sqrt{(6-12)^2 + (6-8)^2} = 6.32$

$(P_8, P_9) = \sqrt{(7-8)^2 + (3-4)^2} = 1.41$

$(P_8, P_{10}) = \sqrt{(7-10)^2 + (3-6)^2} = 4.24$

$(P_8, P_{11}) = \sqrt{(7-12)^2 + (3-8)^2} = 7.07$

$(P_9, P_{10}) = \sqrt{(8-10)^2 + (4-6)^2} = 2.82$

$(P_9, P_{11}) = \sqrt{(8-12)^2 + (4-8)^2} = 5.65$

$(P_{10}, P_{11}) = \sqrt{(10-12)^2 + (6-8)^2} = 2.82$

	P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8	P_9	P_{10}	P_{11}
P_1	0										
P_2	4	0									
P_3	5.09	1.41	0								
P_4	3	5	5.38	0							
P_5	1.24	3.16	2.82	3	0						
P_6	6.7	5.6	2.23	6	3	0					
P_7	5.65	4	3.16	4.12	1.41	2.23	0				
P_8	5.09	5.85	5.65	2.23	2.82	5.38	3.16	0			
P_9	6.32	6.32	5.83	3.60	3.16	5	2.82	1.41	0		
P_{10}	8.94	8	7.07	6.40	5.09	5.38	4	4.24	2.82	0	
P_{11}	11.66	10.19	9.05	9.21	7.61	7	6.32	7.07	5.65	2.82	0

	P_1	P_2P_3	P_4	P_5	P_6	P_7	P_8	P_9	P_{10}	P_{11}
P_1	0									
P_2P_3	4	0								
P_4	3	5	0							
P_5	1.24	2.82	3	0						
P_6	6.7	2.83	6	3	0					
P_7	5.65	3.16	4.12	1.41	2.23	0				
P_8	5.09	5.65	2.23	2.82	5.38	3.16	0			
P_9	6.32	5.83	3.6	3.16	5	2.82	1.41	0		
P_{10}	8.94	7.07	6.4	5.09	5.38	4	1.29	2.82	0	
P_{11}	11.60	9.05	9.21	7.61	7	6.32	7.07	5.65	2.82	0

	P_1	P_2P_3	P_4	P_5P_7	P_6	P_8	P_9	P_{10}	P_{11}
P_1	0								
P_2P_3	4	0							
P_4	3	5	0						
P_5P_7	4.24	2.82	5	0					
P_6	6.7	2.23	6	2.23	0				
P_8	5.09	5.65	2.23	2.82	5.38	0			
P_9	6.32	5.83	3.60	2.82	5	1.41	0		
P_{10}	8.94	7.07	6.40	4	5.36	4.29	2.82	0	
P_{11}	11.66	9.05	9.21	6.32	7	6.32	5.65	2.82	0

	P_1	$P_2P_3P_6$	P_4	P_5P_7	P_8P_9	P_{10}	P_{11}
P_1	0						
$P_2P_3P_6$	4	0					
P_4	3	5	0				
P_5P_7	4.24	2.23	3	0			
P_8P_9	5.09	5	2.23	2.82	0		
P_{10}	8.94	5.36	6.1	4	2.82	0	
P_{11}	11.4	7	9.21	6.32	5.65	2.82	0

	P_1	$P_2P_3P_6P_5P_7$	P_4	P_8P_9	P_{10}	P_{11}
P_1	0					
$P_2P_3P_6P_5P_7$	4	0				
P_4	3	3	0			
P_8P_9	5.09	2.82	2.23	0		
P_{10}	8.94	4	6.4	2.82	0	
P_{11}	11.66	6.32	9.21	5.65	2.82	0

	P_1	$P_2P_3P_6P_5P_7$	$P_4P_8P_9$	P_{10}	P_{11}
P_1	0				
$P_2P_3P_6P_5P_7$	4	0			
$P_4P_8P_9$	3	2.82	0		
P_{10}	8.94	4	2.82	0	
P_{11}	11.66	6.32	5.65	2.82	0

	P_1	$P_2P_3P_6P_5P_7P_4P_8P_9$	P_{10}	P_{11}
P_1	0			
$P_2P_3P_6P_5P_7$ $P_4P_8P_9$	3	0		
P_{10}	8.94	2.82	0	
P_{11}	11.66	5.65	2.82	0

	P_1	$P_2P_3P_6P_5P_7P_4P_8P_9P_{10}$	P_{11}
P_1	0		
$P_2P_3P_6P_5P_7P_4$ $P_8P_9P_{10}$	3	0	
P_{11}	11.66	2.82	0

	P_1	$P_2P_3P_6P_5P_7P_4P_8P_9P_{10}P_{11}$
P_1	0	
$P_2P_3P_6P_5P_7$ $P_4P_8P_9P_{10}P_{11}$	3	0