

Clustering english letters

Matrix

a1=0,55	a2=0,15	a3=0,85
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	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	1	0.8	0.1	0.1	0.2	0.2	0.2	0.3	0.1	0.4	0.3	0.5	0.5	0.6	0.7	0.4	0.2	0.1	0.1	0.1	0.9	0.8	0.2	0.1	0.1
B	0.8	1	0.1	0.8	0.7	0.6	0.2	0.3	0.2	0.1	0.5	0.2	0.2	0.3	0.8	0.2	0.9	0.2	0.1	0.6	0.2	0.1	0.1	0.2	0.1
C	0.1	0.1	1	0.6	0.1	0.1	0.9	0.2	0.1	0.1	0.2	0.1	0.1	0.8	0.1	0.8	0.2	0.5	0.2	0.1	0.1	0.1	0.2	0.2	0.2
D	0.1	0.8	0.6	1	0.7	0.6	0.2	0.2	0.1	0.4	0.5	0.2	0.2	0.1	0.5	0.1	0.4	0.1	0.2	0.3	0.1	0.2	0.3	0.3	0.3
E	0.2	0.7	0.1	0.7	1	0.8	0.2	0.6	0.5	0.4	0.4	0.3	0.3	0.1	0.9	0.1	0.8	0.1	0.5	0.1	0.2	0.2	0.1	0.1	0.1
F	0.2	0.6	0.1	0.6	0.8	1	0.1	0.3	0.5	0.4	0.4	0.4	0.3	0.1	0.9	0.1	0.8	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1
G	0.2	0.2	0.9	0.2	0.2	0.1	1	0.1	0.7	0.5	0.4	0.4	0.4	0.1	0.6	0.1	0.7	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2
H	0.3	0.3	0.2	0.2	0.6	0.3	0.1	1	0.7	0.5	0.4	0.3	0.3	0.1	0.6	0.1	0.5	0.2	0.3	0.3	0.1	0.2	0.3	0.2	0.2
I	0.1	0.2	0.1	0.1	0.5	0.5	0.7	0.7	1	0.6	0.6	0.5	0.5	0.1	0.7	0.1	0.6	0.1	0.8	0.2	0.2	0.2	0.1	0.2	0.1
K	0.4	0.1	0.1	0.4	0.4	0.4	0.5	0.5	0.6	1	0.3	0.2	0.4	0.1	0.6	0.1	0.6	0.1	0.7	0.2	0.2	0.3	0.1	0.1	0.1
L	0.3	0.5	0.2	0.5	0.4	0.4	0.4	0.4	0.6	0.3	1	0.4	0.4	0.1	0.4	0.1	0.6	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1
M	0.5	0.2	0.1	0.2	0.3	0.4	0.4	0.3	0.5	0.2	0.4	1	0.8	0.1	0.6	0.1	0.7	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2
N	0.5	0.2	0.1	0.2	0.3	0.3	0.4	0.3	0.5	0.4	0.4	0.8	1	0.1	0.5	0.1	0.4	0.1	0.5	0.3	0.3	0.3	0.2	0.2	0.2
O	0.6	0.3	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.9	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
P	0.7	0.8	0.1	0.5	0.9	0.9	0.6	0.6	0.7	0.6	0.4	0.6	0.5	0.1	1	0.1	0.9	0.1	0.2	0.1	0.2	0.3	0.3	0.1	0.1
Q	0.4	0.2	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9	0.1	1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
R	0.2	0.9	0.2	0.4	0.8	0.8	0.7	0.5	0.6	0.6	0.6	0.7	0.4	0.1	0.9	0.1	1	0.2	0.3	0.1	0.4	0.3	0.3	0.2	0.2
S	0.1	0.2	0.5	0.1	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.1	0.2	1	0.1	0.2	0.2	0.2	0.1	0.2	0.6
T	0.1	0.1	0.2	0.2	0.5	0.3	0.3	0.3	0.8	0.7	0.3	0.1	0.5	0.1	0.2	0.1	0.3	0.1	1	0.2	0.3	0.3	0.1	0.2	0.3
U	0.1	0.6	0.1	0.3	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.1	0.1	0.2	0.1	0.2	0.2	1	0.9	0.8	0.2	0.2	0.2
V	0.9	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.3	0.3	0.1	0.2	0.1	0.4	0.2	0.3	0.9	1	0.9	0.2	0.3	0.1
W	0.8	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.1	0.3	0.3	0.1	0.3	0.1	0.3	0.2	0.3	0.8	0.9	1	0.2	0.2	0.2
X	0.2	0.1	0.2	0.3	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.3	0.1	0.1	0.2	0.2	0.2	1	0.9	0.1
Y	0.1	0.2	0.2	0.3	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.9	1	0.1
Z	0.1	0.1	0.2	0.3	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.6	0.3	0.2	0.1	0.2	0.1	0.1	1

Step 1 Calculate matrix

	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	1	0.8	0.6	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.6	0.8	0.6	0.8	0.4	0.5	0.9	0.9	0.9	0.3	0.3	0.2
B	0.8	1	0.6	0.8	0.8	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0.5	0.6	0.9	0.4	0.9	0.4	0.5	0.6	0.8	0.8	0.3	0.3	0.3
C	0.6	0.6	1	0.6	0.6	0.6	0.9	0.2	0.7	0.5	0.5	0.4	0.4	0.8	0.6	0.8	0.7	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.5
D	0.8	0.8	0.6	1	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.8	0.6	0.8	0.5	0.5	0.6	0.4	0.3	0.3	0.3	0.3
E	0.7	0.8	0.6	0.7	1	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.5	0.3	0.9	0.2	0.9	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3
F	0.7	0.8	0.6	0.7	0.9	1	0.7	0.6	0.7	0.6	0.6	0.7	0.5	0.3	0.9	0.2	0.9	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3
G	0.6	0.7	0.9	0.6	0.7	0.7	1	0.7	0.7	0.6	0.6	0.7	0.5	0.8	0.7	0.8	0.7	0.5	0.7	0.3	0.4	0.3	0.3	0.2	0.3
H	0.6	0.6	0.2	0.6	0.6	0.6	0.7	1	0.7	0.6	0.6	0.6	0.5	0.3	0.7	0.3	0.6	0.4	0.7	0.3	0.4	0.3	0.3	0.3	0.3
I	0.7	0.7	0.7	0.7	0.5	0.7	0.7	0.7	1	0.7	0.6	0.6	0.5	0.2	0.7	0.2	0.7	0.4	0.8	0.3	0.4	0.3	0.3	0.2	0.3
K	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.7	1	0.6	0.6	0.5	0.4	0.6	0.4	0.6	0.4	0.7	0.3	0.4	0.4	0.3	0.3	0.3
L	0.5	0.7	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	1	0.6	0.5	0.3	0.6	0.3	0.6	0.4	0.6	0.5	0.4	0.3	0.3	0.3	0.3
M	0.6	0.7	0.4	0.5	0.7	0.7	0.7	0.6	0.6	0.6	0.6	1	0.8	0.5	0.7	0.4	0.7	0.4	0.5	0.3	0.5	0.5	0.3	0.3	0.2
N	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	1	0.5	0.6	0.4	0.7	0.4	0.5	0.3	0.5	0.5	0.3	0.3	0.2
O	0.6	0.6	0.8	0.6	0.3	0.3	0.8	0.3	0.2	0.4	0.3	0.5	0.5	1	0.6	0.9	0.3	0.5	0.2	0.3	0.6	0.6	0.2	0.2	0.2
P	0.8	0.9	0.6	0.8	0.9	0.9	0.7	0.7	0.7	0.6	0.6	0.7	0.6	0.6	1	0.4	0.9	0.4	0.7	0.6	0.7	0.7	0.3	0.3	0.4
Q	0.6	0.4	0.8	0.6	0.2	0.2	0.8	0.3	0.2	0.4	0.3	0.4	0.4	0.9	0.4	1	0.2	0.5	0.2	0.2	0.4	0.4	0.4	0.2	0.2
R	0.8	0.9	0.7	0.8	0.9	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0.3	0.9	0.2	1	0.4	0.6	0.6	0.4	0.4	0.3	0.3	0.3
S	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	1	0.3	0.2	0.2	0.3	0.3	0.2	0.6
T	0.5	0.5	0.3	0.5	0.5	0.5	0.7	0.7	0.8	0.7	0.6	0.5	0.5	0.2	0.7	0.2	0.6	0.3	1	0.3	0.3	0.3	0.3	0.3	0.3
U	0.9	0.6	0.3	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.6	0.2	0.6	0.2	0.3	1	0.9	0.9	0.3	0.3	0.3
V	0.9	0.8	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.4	0.4	0.2	0.3	0.9	1	0.9	0.3	0.3	0.3
W	0.9	0.8	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.5	0.5	0.6	0.7	0.4	0.4	0.3	0.3	0.9	0.9	1	0.3	0.3
X	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	1	0.9	0.3
Y	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.9	1	0.3
Z	0.2	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.4	0.2	0.3	0.6	0.3	0.3	0.3	0.3	0.3	0.3

A1=0.55 step 2

	a1=0.55																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
1	A	0	0.8	0.6	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0	0.6	0	0.6	0.8	0.6	0.8	0	0	0.9	0.9	0.9	0	0	0
2	B	0.8	0	0.6	0.8	0.8	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0	0.6	0.9	0	0.9	0	0	0.6	0.8	0.8	0	0	0
3	C	0.6	0.6	0	0.6	0.6	0.6	0.9	0	0.7	0	0	0	0	0.8	0.6	0.8	0.7	0	0	0	0	0	0	0	0
4	D	0.8	0.8	0.6	0	0.7	0.7	0.6	0.6	0	0	0	0	0	0.6	0.8	0.6	0.8	0	0	0.6	0	0	0	0	0
5	E	0.7	0.8	0.6	0.7	0	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0	0	0.9	0	0.9	0	0	0.6	0	0	0	0	0
6	F	0.7	0.8	0.6	0.7	0.9	0	0.7	0.6	0.7	0.6	0.6	0.7	0	0	0.9	0	0.9	0	0	0.6	0	0	0	0	0
7	G	0.6	0.7	0.9	0.6	0.7	0.7	0	0.7	0.7	0.6	0.6	0.7	0	0.8	0.7	0.8	0.7	0	0.7	0	0	0	0	0	0
8	H	0.6	0.6	0	0.6	0.6	0.6	0.7	0	0.7	0.6	0.6	0.6	0	0	0.7	0	0.6	0	0.7	0	0	0	0	0	0
9	I	0.7	0.7	0.7	0	0.7	0.7	0.7	0.7	0	0.7	0.6	0.6	0	0	0.7	0	0.7	0	0.8	0	0	0	0	0	0
10	K	0.6	0.6	0	0	0.6	0.6	0.6	0.6	0.7	0	0.6	0.6	0	0	0.6	0	0.6	0	0.7	0	0	0	0	0	0
11	L	0	0.7	0	0	0.6	0.6	0.6	0.6	0.6	0.6	0	0.6	0	0	0.6	0	0.6	0	0.6	0	0	0	0	0	0
12	M	0.6	0.7	0	0	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0	0.8	0	0.7	0	0.7	0	0	0	0	0	0	0	0
13	N	0	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	0.6	0	0.7	0	0	0	0	0	0	0
14	O	0.6	0.6	0.8	0.6	0	0	0.8	0	0	0	0	0	0	0	0.6	0.9	0	0	0	0	0.6	0.6	0	0	0
15	P	0.8	0.9	0.6	0.8	0.9	0.9	0.7	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0	0	0.9	0	0.7	0.6	0.7	0.7	0	0	0
16	Q	0.6	0	0.8	0.6	0	0	0.8	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0
17	R	0.8	0.9	0.7	0.8	0.9	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0	0.9	0	0	0	0.6	0.6	0	0	0	0	0
18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
19	T	0	0	0	0	0	0	0.7	0.7	0.8	0.7	0.6	0	0	0	0.7	0	0.6	0	0	0	0	0	0	0	0
20	U	0.9	0.6	0	0.6	0.6	0.6	0	0	0	0	0	0	0	0	0.6	0	0.6	0	0	0	0.9	0.9	0	0	0
21	V	0.9	0.8	0	0	0	0	0	0	0	0	0	0	0	0.6	0.7	0	0	0	0	0.9	0	0.9	0	0	0
22	W	0.9	0.8	0	0	0	0	0	0	0	0	0	0	0	0.6	0.7	0	0	0	0	0.9	0.9	0	0	0	0
23	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0
25	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0

Find s,t,u,v... and clustering a1=0.55

1itr																										
a s.t	max	aij		i<j												rez										
a1.20	a1.21	a1.22	a2.15	a2.17	a3.7	a5.6	a5.15	a5.17	a6.17	a14.16	a15.17	a20.21	a20.22	a21.22	a23.24	0.9										
I		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
s=1	t=20																									
C={1;20}																										
u=21	t=22																									
C={1;20;21;22}	A	U	V	W																						
A	0	0.8	0.6	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0	0.6	0	0.6	0.8	0.6	0.8	0	0	0.9	0.9	0.9	0	0	0	
U	0.9	0.6	0	0.6	0.6	0.6	0	0	0	0	0	0	0	0	0.6	0	0.6	0	0	0	0.9	0.9	0.9	0	0	
V	0.9	0.8	0	0	0	0	0	0	0	0	0	0	0	0.6	0.7	0	0	0	0	0.9	0	0.9	0	0	0	
W	0.9	0.8	0	0	0	0	0	0	0	0	0	0	0	0.6	0.7	0	0	0	0	0.9	0.9	0	0	0	0	
2itr																										
a s.t	max	aij		i<j												rez										
			a2.15	a2.17	a3.7	a5.6	a5.15	a5.17	a6.17	a14.16	a15.17				a23.24	0.9										
I		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				23	24	25	
s=2	t=15																									
C={2;15}																										
u=17	t=5																									
C={2;15;17;5;10;11}	B	P	R	E	L	K																				
B	0.8	0	0.6	0.8	0.8	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0	0.6	0.9	0	0.9	0	0	0.6	0.8	0.8	0	0	0	
P	0.8	0.9	0.6	0.8	0.9	0.9	0.7	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0	0	0.9	0	0.7	0.6	0.7	0.7	0	0	0	
R	0.8	0.9	0.7	0.8	0.9	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0	0.9	0	0	0	0.6	0.6	0	0	0	0	0	
E	0.7	0.8	0.6	0.7	0	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0	0	0.9	0	0.9	0	0	0.6	0	0	0	0	0	
L	0	0.7	0	0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0	0.6	0	0.6	0	0.6	0	0.6	0	0	0	0	0	0	
K	0.6	0.6	0	0	0.6	0.6	0.6	0.6	0.7	0	0.6	0.6	0	0	0.6	0	0.6	0	0.7	0	0	0	0	0	0	
3itr																										
a s.t	max	aij		i<j																						
					a3.7					a14.16					a23.24	0.9										
I			3	4		6	7	8	9				12	13	14		16		18	19			23	24	25	
s=3	t=7																									
C={3;7}																										
u=14	t=16																									
C={3;7;14;16}	C	G	O	Q																						
C	0.6	0.6	0	0.6	0.6	0.6	0.9	0	0.7	0	0	0	0	0.8	0.6	0.8	0.7	0	0	0	0	0	0	0	0	
G	0.6	0.7	0.9	0.6	0.7	0.7	0	0.7	0.7	0.6	0.6	0.7	0	0.8	0.7	0.8	0.7	0	0.7	0	0	0	0	0	0	
O	0.6	0.6	0.8	0.6	0	0	0.8	0	0	0	0	0	0	0	0.6	0.9	0	0	0	0	0.6	0.6	0	0	0	
Q	0.6	0	0.8	0.6	0	0	0.8	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	
4itr																										
a s.t	max	aij		i<j																						
I				4		6		8	9				12	13			a23.24	0.9					23	24	25	
s=23	t=24																									
C={23;24}																										
u=no	t=no																									
C={23;4}	X	Y																								
X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0	
Clustering																										
1	A	U	V	W																						
2	B	P	R	E																						
3	C	G	O	Q	L	K																				
4	X	Y																								
5	D	F	H	I	M	N	S	T	Z																	

A2=0.15

		a=0.15																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	A	0	0.8	0.6	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.6	0.8	0.6	0.8	0.4	0.5	0.9	0.9	0.9	0.3	0.3	0.2
2	B	0.8	0	0.6	0.8	0.8	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0.5	0.6	0.9	0.4	0.9	0.4	0.5	0.6	0.8	0.8	0.3	0.3	0.3
3	C	0.6	0.6	0	0.6	0.6	0.6	0.9	0.2	0.7	0.5	0.5	0.4	0.4	0.8	0.6	0.8	0.7	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.5
4	D	0.8	0.8	0.6	0	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.8	0.6	0.8	0.5	0.5	0.6	0.4	0.3	0.3	0.3	0.3
5	E	0.7	0.8	0.6	0.7	0	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.5	0.3	0.9	0.2	0.9	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3
6	F	0.7	0.8	0.6	0.7	0.9	0	0.7	0.6	0.7	0.6	0.6	0.7	0.5	0.3	0.9	0.2	0.9	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3
7	G	0.6	0.7	0.9	0.6	0.7	0.7	0	0.7	0.7	0.6	0.6	0.7	0.5	0.8	0.7	0.8	0.7	0.5	0.7	0.3	0.4	0.3	0.3	0.2	0.3
8	H	0.6	0.6	0.2	0.6	0.6	0.6	0.7	0	0.7	0.6	0.6	0.6	0.6	0.5	0.3	0.7	0.3	0.6	0.4	0.7	0.3	0.4	0.3	0.3	0.3
9	I	0.7	0.7	0.7	0.5	0.7	0.7	0.7	0.7	0	0.7	0.6	0.6	0.5	0.2	0.7	0.2	0.7	0.4	0.8	0.3	0.4	0.3	0.3	0.2	0.3
10	K	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0	0.6	0.6	0.5	0.4	0.6	0.4	0.6	0.4	0.7	0.3	0.4	0.4	0.3	0.3	0.3
11	L	0.5	0.7	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0	0.6	0.5	0.3	0.6	0.3	0.6	0.4	0.6	0.5	0.4	0.3	0.3	0.3	0.3
12	M	0.6	0.7	0.4	0.5	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0	0.8	0.5	0.7	0.4	0.7	0.4	0.5	0.3	0.5	0.5	0.3	0.3	0.2
13	N	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0	0.5	0.6	0.4	0.7	0.4	0.5	0.3	0.5	0.5	0.3	0.3	0.2
14	O	0.6	0.6	0.8	0.6	0.3	0.3	0.8	0.3	0.2	0.4	0.3	0.5	0.5	0	0.6	0.9	0.3	0.5	0.2	0.3	0.6	0.6	0.2	0.2	0.2
15	P	0.8	0.9	0.6	0.8	0.9	0.9	0.7	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0	0.4	0.9	0.4	0.7	0.6	0.7	0.7	0.3	0.3	0.4
16	Q	0.6	0.4	0.8	0.6	0.2	0.2	0.8	0.3	0.2	0.4	0.3	0.4	0.4	0.9	0.4	0	0.2	0.5	0.2	0.2	0.4	0.4	0.4	0.2	0.2
17	R	0.8	0.9	0.7	0.8	0.9	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0.3	0.9	0.2	0	0.4	0.6	0.6	0.4	0.4	0.3	0.3	0.3
18	S	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0	0.3	0.2	0.2	0.3	0.3	0.2	0.6
19	T	0.5	0.5	0.3	0.5	0.5	0.5	0.7	0.7	0.8	0.7	0.6	0.5	0.5	0.2	0.7	0.2	0.6	0.3	0	0.3	0.3	0.3	0.3	0.3	0.3
20	U	0.9	0.6	0.3	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.6	0.2	0.6	0.2	0.3	0	0.9	0.9	0.3	0.3	0.3
21	V	0.9	0.8	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.4	0.4	0.2	0.3	0.9	0	0.9	0.3	0.3	0.3
22	W	0.9	0.8	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.5	0.5	0.6	0.7	0.4	0.4	0.3	0.3	0.9	0.9	0	0.3	0.3	0.3
23	X	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0	0.9	0.3
24	Y	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.9	0	0.3
25	Z	0.2	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.4	0.2	0.3	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0

Find s,t,u,v... and clustering a1=0.15

1itr																											
a s.t	max	aij		i<j													rez										
a1.20	a1.21	a1.22	a2.15	a2.17	a3.7	a5.6	a5.15	a5.17	a6.15	a6.17	a14.16	a15.17	a20.21	a20.22	a21.22	a23.24	0.9										
l	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
s=1	t=20																										
C={1;20}																											
u=21	t=22																										
1	A	0	0.8	0.6	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.6	0.8	0.6	0.8	0.4	0.5	0.9	0.9	0.9	0.3	0.3	0.2	
20	U	0.9	0.6	0.3	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.6	0.2	0.6	0.2	0.3	0	0.9	0.9	0.3	0.3	0.3	
21	V	0.9	0.8	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.4	0.4	0.2	0.3	0.9	0	0.9	0.3	0.3	0.3	
22	W	0.9	0.8	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.5	0.5	0.6	0.7	0.4	0.4	0.3	0.3	0.9	0.9	0	0.3	0.3	0.3	
2	B	0.8	0	0.6	0.8	0.8	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0.5	0.6	0.9	0.4	0.9	0.4	0.5	0.6	0.8	0.8	0.3	0.3	0.3	
15	P	0.8	0.9	0.6	0.8	0.9	0.9	0.7	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0	0.4	0.9	0.4	0.7	0.6	0.7	0.7	0.3	0.3	0.4	
17	R	0.8	0.9	0.7	0.8	0.9	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0.3	0.9	0.2	0	0.4	0.6	0.6	0.4	0.4	0.3	0.3	0.3	
5	E	0.7	0.8	0.6	0.7	0	0.9	0.7	0.6	0.7	0.6	0.6	0.7	0.5	0.3	0.9	0.2	0.9	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3	
6	F	0.7	0.8	0.6	0.7	0.9	0	0.7	0.6	0.7	0.6	0.6	0.7	0.5	0.3	0.9	0.2	0.9	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3	
clastering go to end because step 5 repet to end																											
clastering	>>>	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	

Clusterin go to 1->25 because step 5 repeat to end

A3=0.85

[illegible]

Find s,t,u,v... and clustering a1=0.15

1itr																															
a s.t	max	aij		<j	rez																										
a1.20	a1.21	a1.22	a2.15	a2.17	a3.7	a5.6	a5.15	a5.17	a6.15	a6.17	a14.16	a15.17	a20.21	a20.22	a21.22	a23.24	0.9														
l		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25					
s=1	t=20																														
C={1;20}																															
u=21	t=22																														
	C	A	U	V	W																										
	1	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0.9	0.9	0	0	0					
	20	U	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0.9	0	0	0				
	21	V	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0.9	0	0	0				
	22	W	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0.9	0	0	0	0				
2itr																															
a s.t	max	aij		<j	rez																										
			a2.15	a2.17	a3.7	a5.6	a5.15	a5.17	a6.15	a6.17	a14.16	a15.17				a23.24	0.9														
l			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				23	24	25					
s=2	t=15																														
C={2;15}																															
u=17	t=no																														
	C	B	P	R																											
	2	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0	0	0	0				
	15	P	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0	0				
	17	R	0	0.9	0	0	0.9	0.9	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0				
no t because no maximum																															
3itr																															
a s.t	max	aij		<j	rez																										
					a3.7	a5.6											a14.16						a23.24	0.9							
l			3	4	5	6	7	8	9	10	11	12	13	14				16	17	18	19				23	24	25				
s=3	t=7																														
C={3;7}																															
u=no	t=no																														
	C	C	G																												
	3	C	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	7	G	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4itr																															
a s.t	max	aij		<j	rez																										
					a5.6											a14.16						a23.24	0.9								
l			2	4	5	6				8	9	10	11	12	13	14				16	17	18	19				23	24	25		
s=5	t=6																														
C={5;6}																															
u=17	t=15																														
	C	E	F	R	P																										
	5	E	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0	0	0	0			
	6	F	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0	0	0	0			
	17	R	0	0.9	0	0	0.9	0.9	0	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0			
	15	P	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0	0	0			
5itr																															
a s.t	max	aij		<j	rez																										
			2	4											a14.16						a23.24	0.9									
l			2	4				8	9	10	11	12	13	14				16	17	18	19				23	24	25				
s=14	t=16																														
C={14;16}																															
u=no	t=no																														
	C	O	Q																												
	14	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0			
	16	Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0			
5itr																															
C	X	Y																													
Cistering																															
	1	A	U	V	W																										
	2	B	P	R																											
	3	C	G																												
	4	X	Y																												
	5	O	Q																												
	6	B	D	H	I	K	L	M	N	S	T	Z																			
	7	E	F	R	P																										