

Machine Learning

H/W-6

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1) Single Link Proximity:

In single linkage, the distance between two clusters is the minimum distance

	p1	p2	p3	p4	p5	p6
p1	0	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0	0.1483	0.2042	0.1388	0.254
p3	0.2218	0.1483	0	0.1513	0.2843	0.11
p4	0.3688	0.2042	0.1513	0	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0	0.3921
p6	0.2347	0.254	0.11	0.2216	0.3921	0

From above data, the minimum distance is 0.11

So p3 and p6 forms 1st cluster.

	p1	p2	p36	p4	p5
p1	0	0.2357	0.2218	0.3688	0.3421
p2	0.2357	0	0.1483	0.2042	0.1388
p36	0.2218	0.1483	0	0.1513	0.2843
p4	0.3688	0.2042	0.1513	0	0.2932
p5	0.3421	0.1388	0.2843	0.2932	0

The minimum distance is 0.1388, so p2 and p5 forms 2nd cluster

	p1	p25	p36	p4
p1	0	0.2357	0.2218	0.3688
p25	0.2357	0	0.1483	0.2042
p36	0.2218	0.1483	0	0.1513
p4	0.3688	0.2042	0.1513	0

Minimum distance is 0.1483

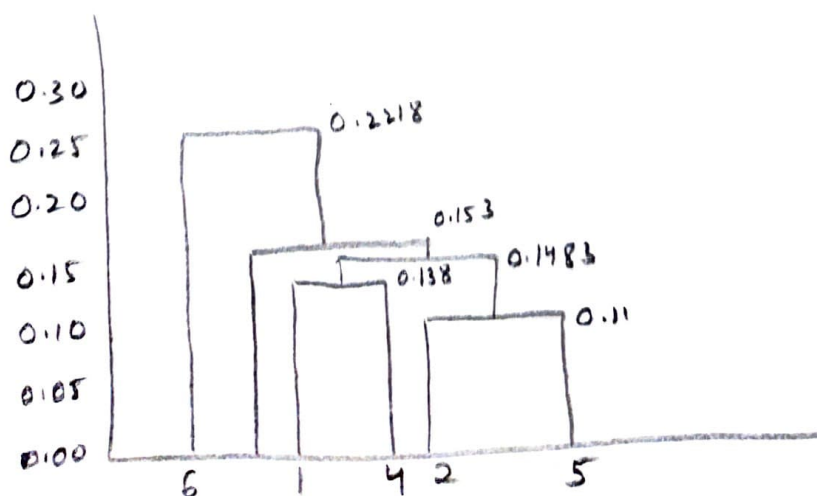
So p25 and p36 forms 3rd cluster

	p1	p(25)(36)	p4
p1	0	0.2218	0.3688
p(25)(36)	0.2218	0	0.1513
p4	0.3688	0.1513	0

Minimum distance is 0.1513

So p(25)(36) forms 4th cluster

	p1	p(25)(36)
p1	0	0.2218
p(25)(36)	0.2218	0



Complete Link Proximity

In Complete linkage, the distance between the two clusters is maximum distance.

	p1	p2	p3	p4	p5	p6
p1	0	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0	0.1483	0.2042	0.1388	0.2354
p3	0.2218	0.1483	0	0.1513	0.2843	0.11
p4	0.3688	0.2042	0.1513	0	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0	0.3921
p6	0.2347	0.2354	0.11	0.2216	0.3921	0

* Smallest distance is 0.11

So p3 and p6 forms 1st cluster.

	p1	p2	p36	p4	p5
p1	0	0.2357	0.2347	0.3688	0.3421
p2	0.2357	0	0.254	0.2042	0.1388
p36	0.2347	0.254	0	0.2216	0.3921
p4	0.3688	0.2042	0.2216	0	0.2932
p5	0.3421	0.1388	0.3921	0.2932	0

Smallest distance is 0.1388

So p2 and p5 forms 2nd cluster

	p^1	p^{25}	p^{36}	p^4
p^1	0	0.3421	0.2347	0.3688
p^{25}	0.3421	0	0.3921	0.2932
p^{36}	0.2347	0.3921	0	0.22616
p^4	0.3688	0.2932	0.2216	0

Minimum distance is 0.2216

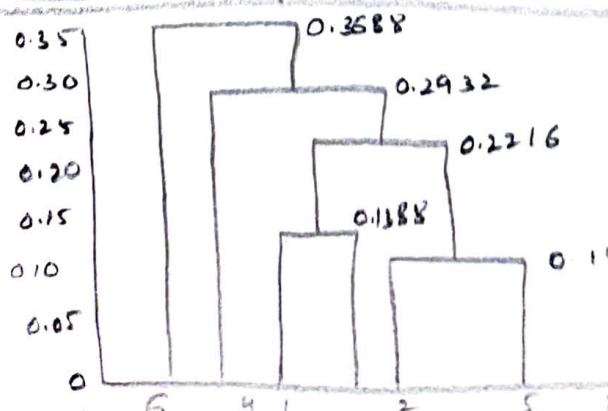
So p^{25} and p^{36} forms 3rd cluster

	p^1	$p^{(25)(36)}$	p^4
p^1	0	0.3421	0.3688
$p^{(25)(36)}$	0.3421	0	0.2932
p^4	0.3688	0.2932	0

Minimum distance is 0.2932

So $p^{(25)(36)}$ and p^1 forms 4th cluster

	$p^{1(25)(36)}$	p^4
$p^{1(25)(36)}$	0	0.1483
p^4	0.3688	0



Average Link Proximity:

In Average Link proximity, the distance between two clusters is the average of all distances.

	p1	p2	p3	p4	p5	p6
p1	0	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0	0.1483	0.2042	0.1388	0.254
p3	0.2218	0.1483	0	0.1513	0.2843	0.11
p4	0.3688	0.2042	0.1513	0	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0	0.3921
p6	0.2347	0.254	0.11	0.2216	0.3921	0

Minimum distance is 0.11

So p3 and p6 form 1st cluster.

	p1	p2	p36	p4	p5
p1	0	0.2357	0.2285	0.3688	0.3421
p2	0.2357	0	0.2015	0.2042	0.1388
p36	0.2285	0.2015	0	0.18645	0.3382
p4	0.3688	0.2042	0.18645	0	0.2932
p5	0.3421	0.1388	0.3382	0.2932	0

Minimum distance is 0.1388

So p2 and p5 forms 2nd cluster.

	p_1	p_{25}	p_{36}	p_4
p_1	0	0.2889	0.2347	0.3688
p_{25}	0.2889	0	0.286	0.2487
p_{36}	0.2347	0.2696	0	0.18645
p_4	0.3688	0.2487	0.18645	0

Minimum distance is 0.18645
 So p_{25} and p_{36} forms 3rd cluster.

	p_1	$p_{(25)(36)}$	p_4
p_1	0	0.2618	0.3688
$p_{(25)(36)}$	0.2618	0	0.21575
p_4	0.3688	0.217575	0

Minimum distance is 0.217575
 So $p_{(25)(36)}$ and p_1 forms 4th cluster

	$p_{(25)(36)}$	p_4
$p_{(25)(36)}$	0	0.3153
p_4	0.3153	0

