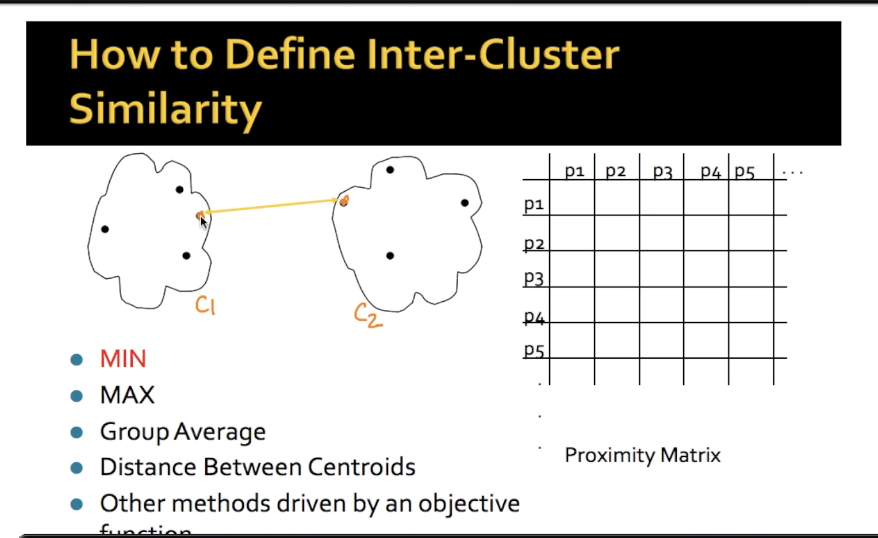
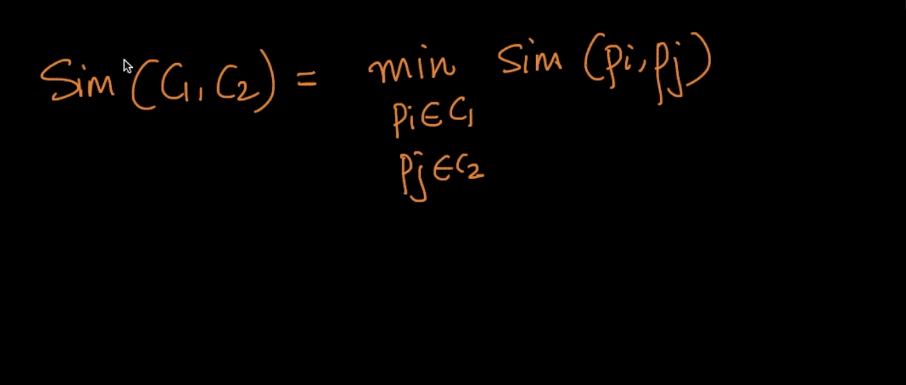
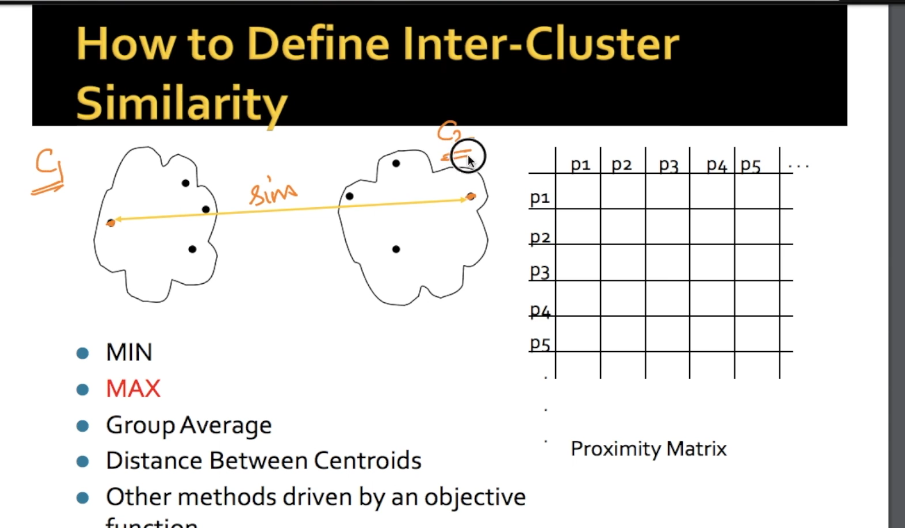
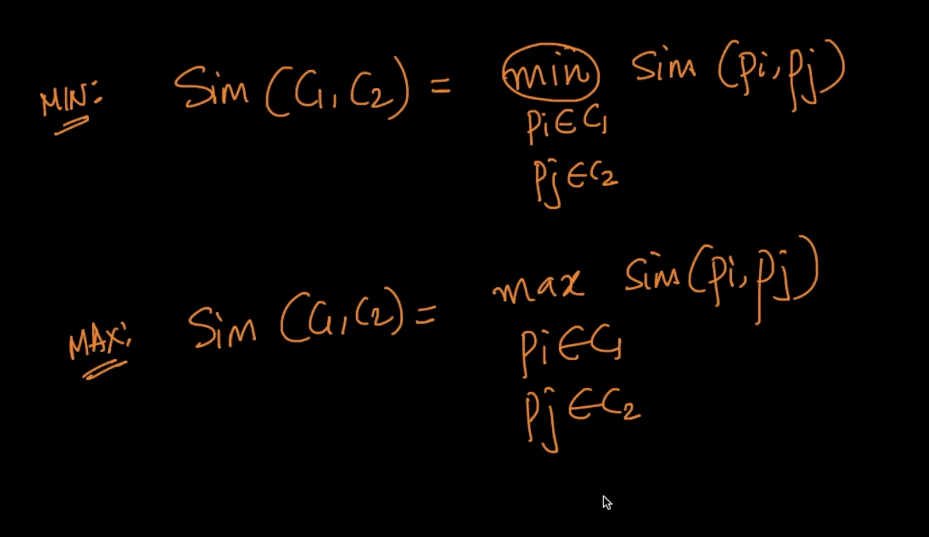
**Proximity methods: Advantages and Limitations**

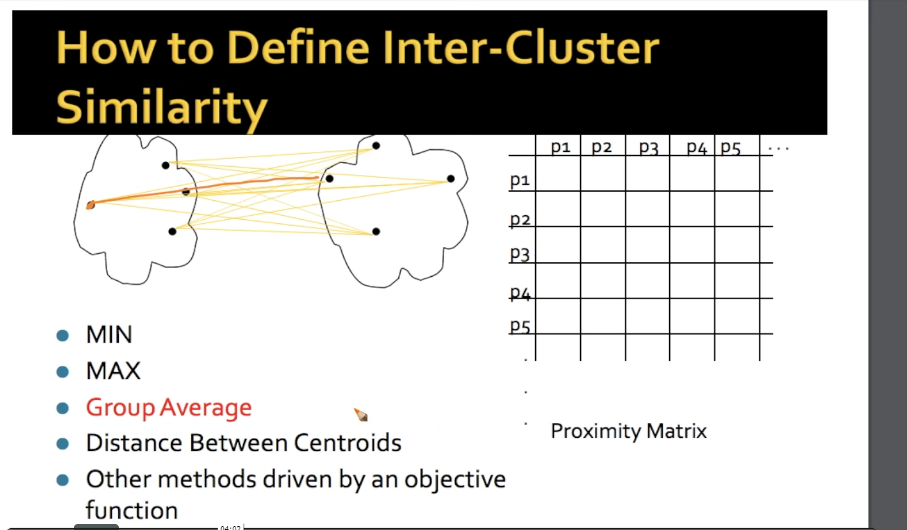
In min method we find the points which are in different cluster and have minimum distance between them.



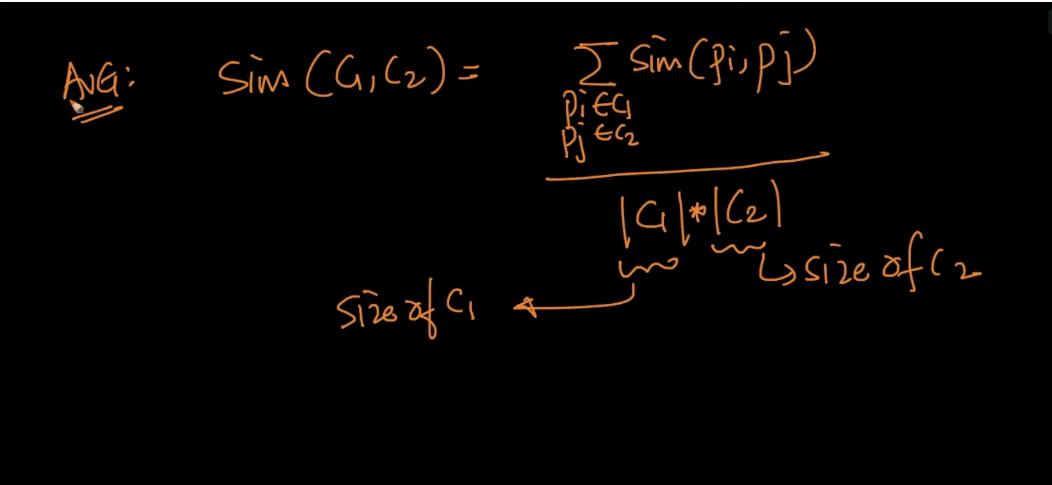




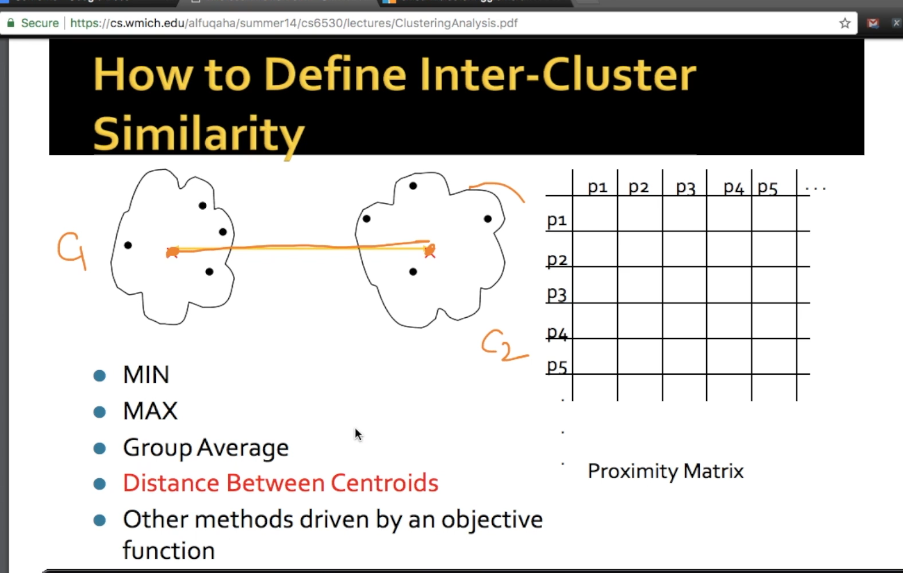




Here we take multiplication of size of both clusters because we want group average therefore we take all combinations.

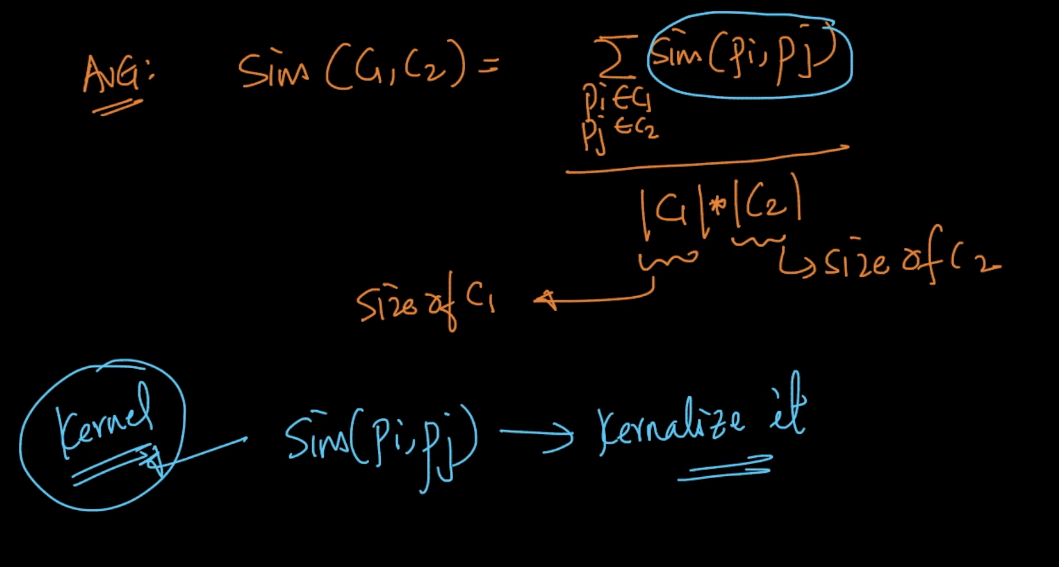


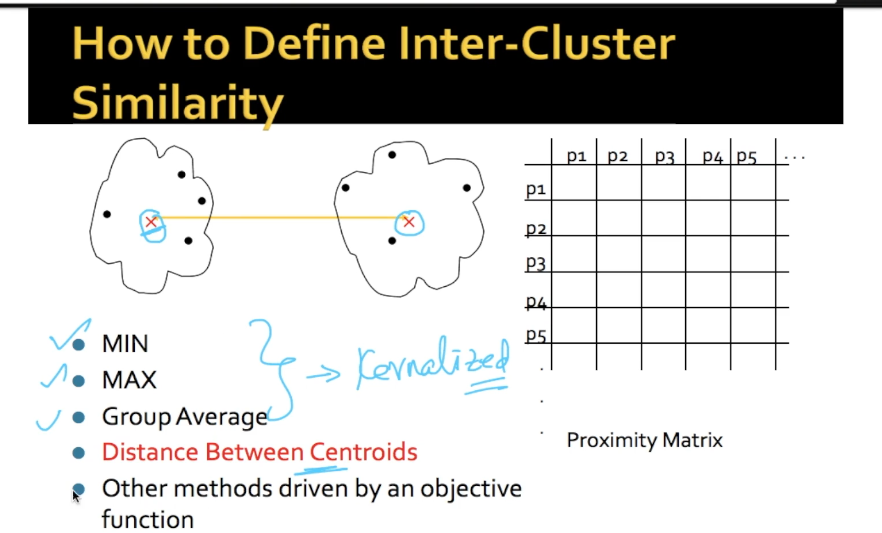
In centroid method we find the centroid of the cluster(it may not be the actual point) and then find distance b/w this two centroids

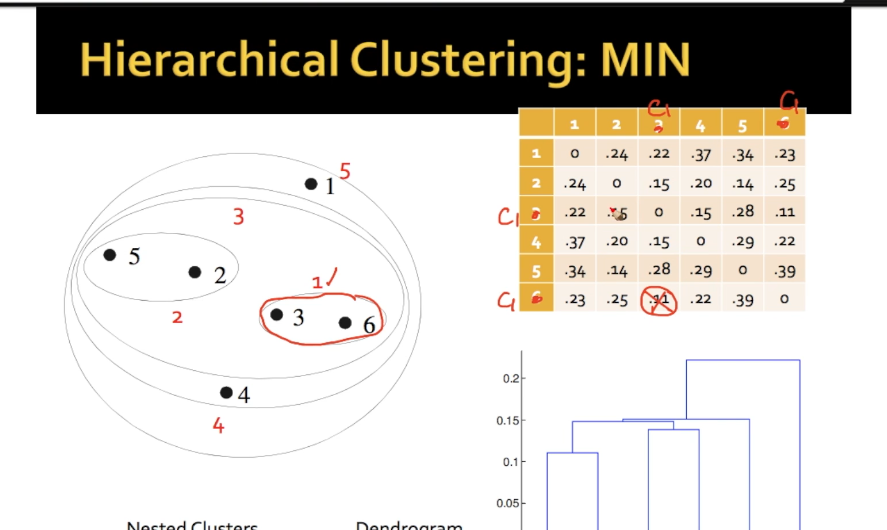


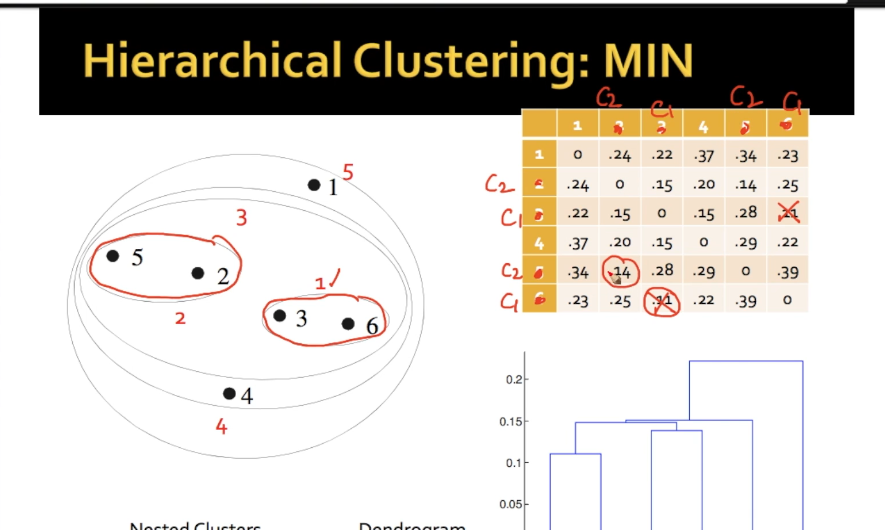
But in centroid method we can’t apply kernelization because the centroid may not be the actual point.

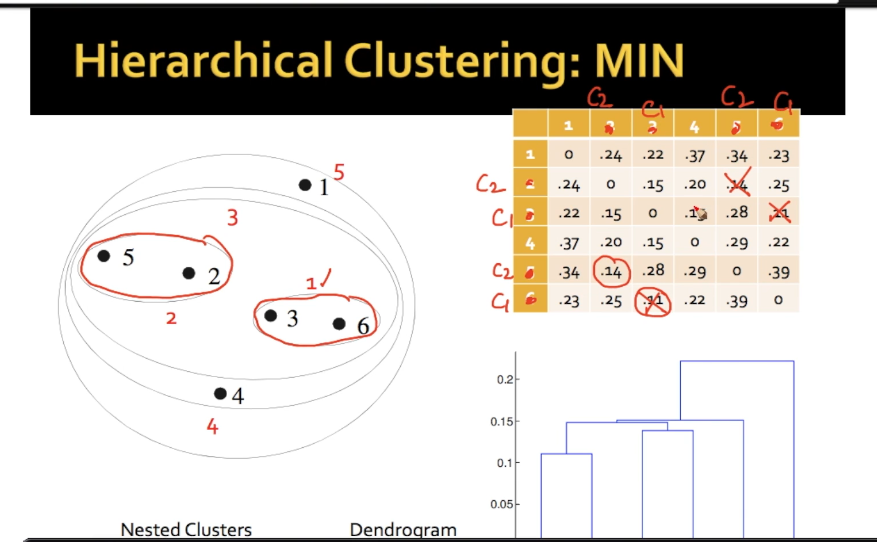
We can apply kernelization in above all 3 methods because we are taking similarity b/w points in consideration and wherever similarity is use we can also use kernelization trick

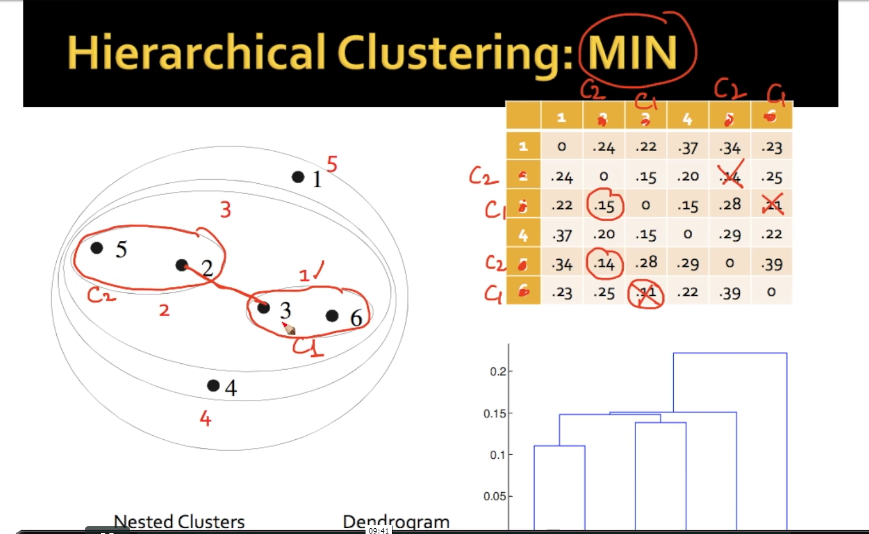




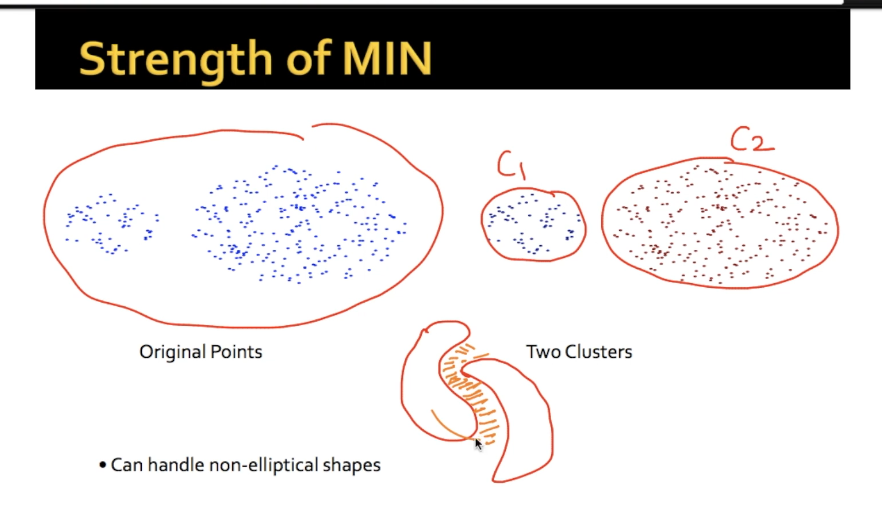




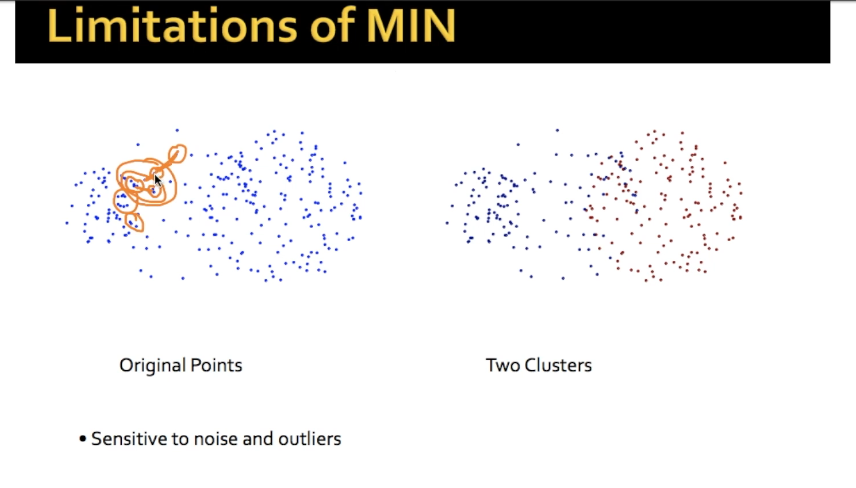


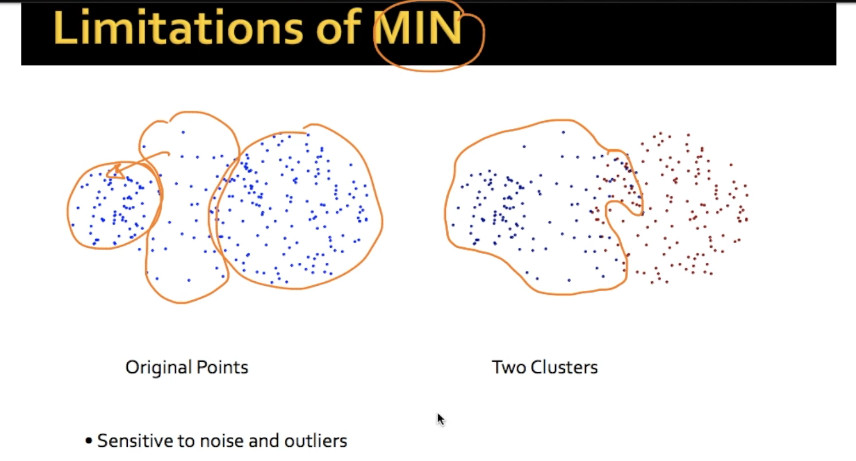


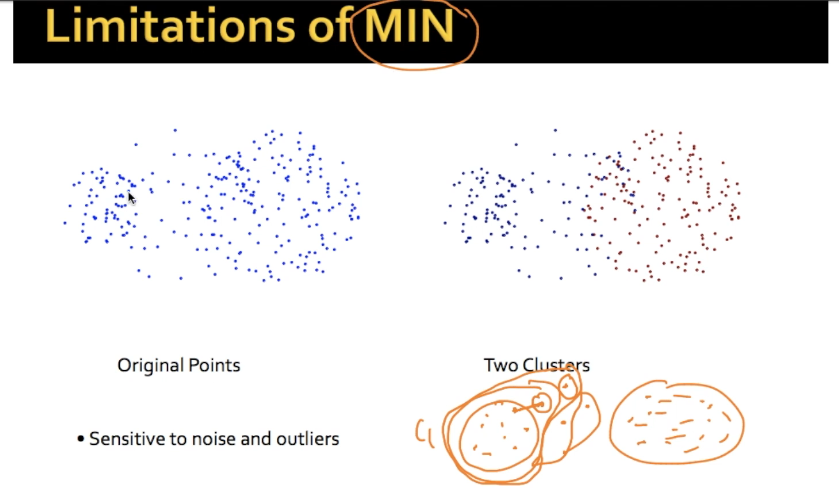
Strength of Min method : it can handle non-elliptical shape if there is considerable distance b/w them.

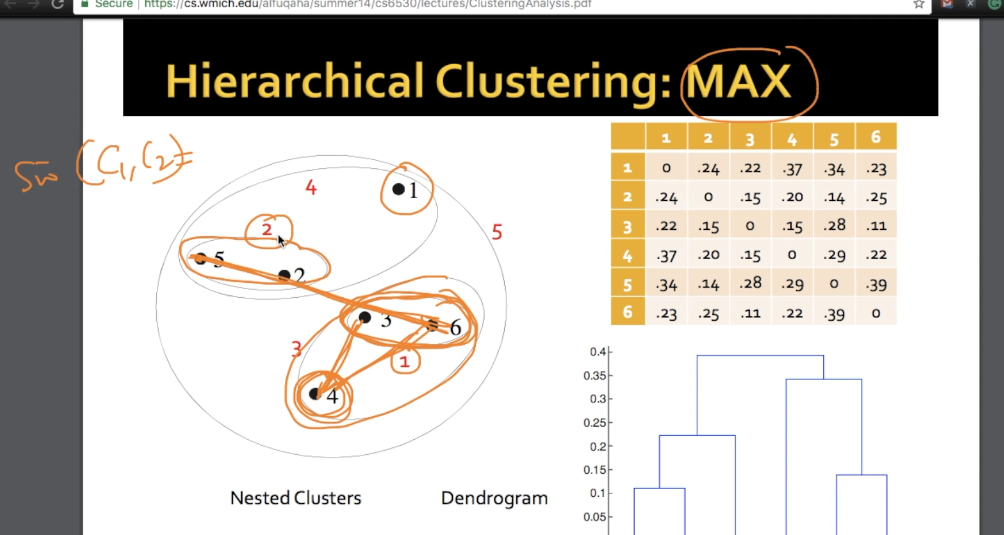


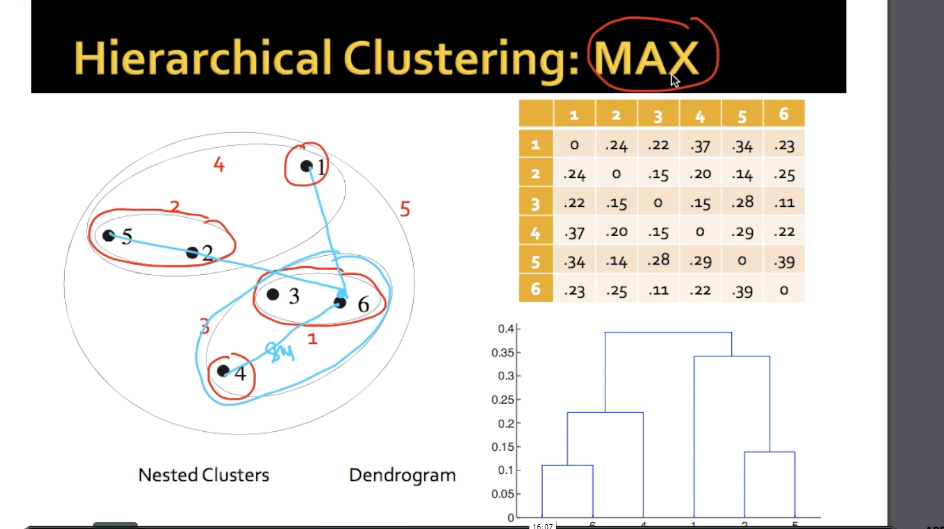
**Limitation of min:** It is sensitive to noise because while taking minimum distance it can cluster noise as well

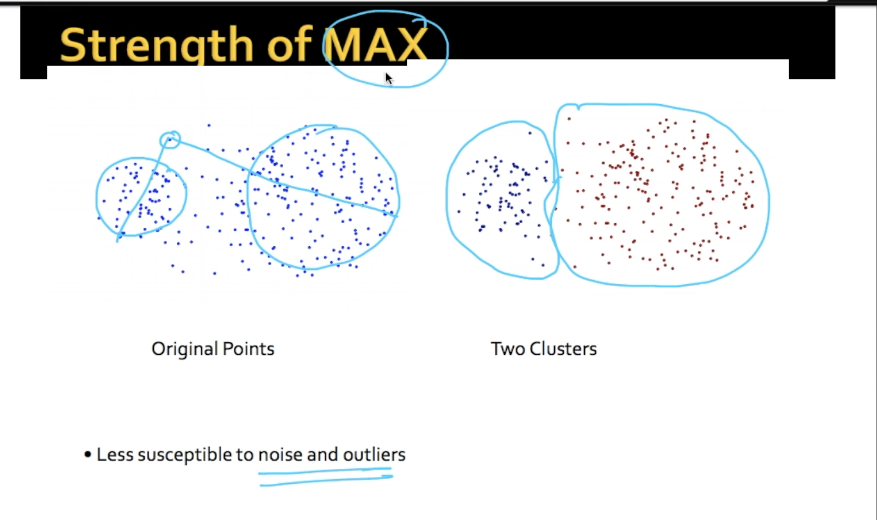




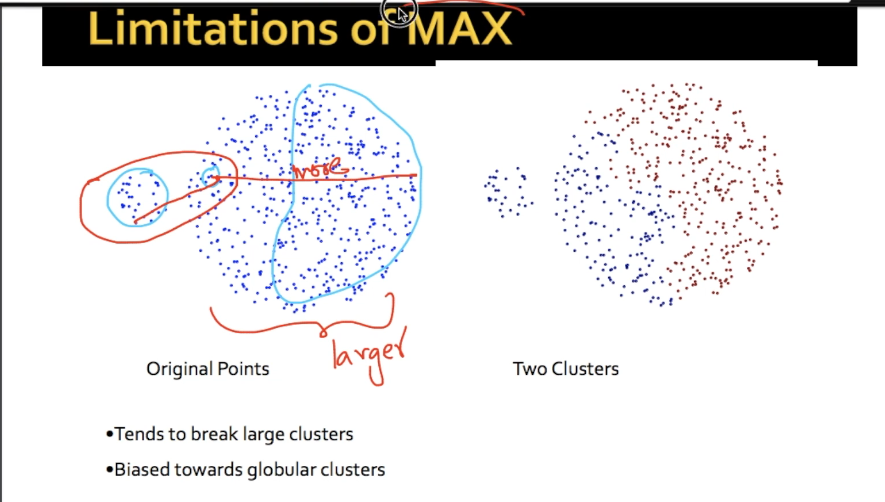


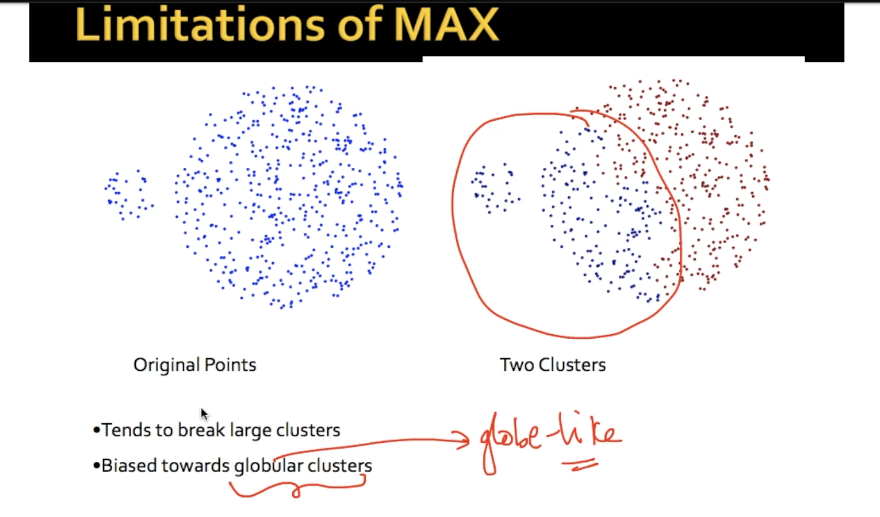


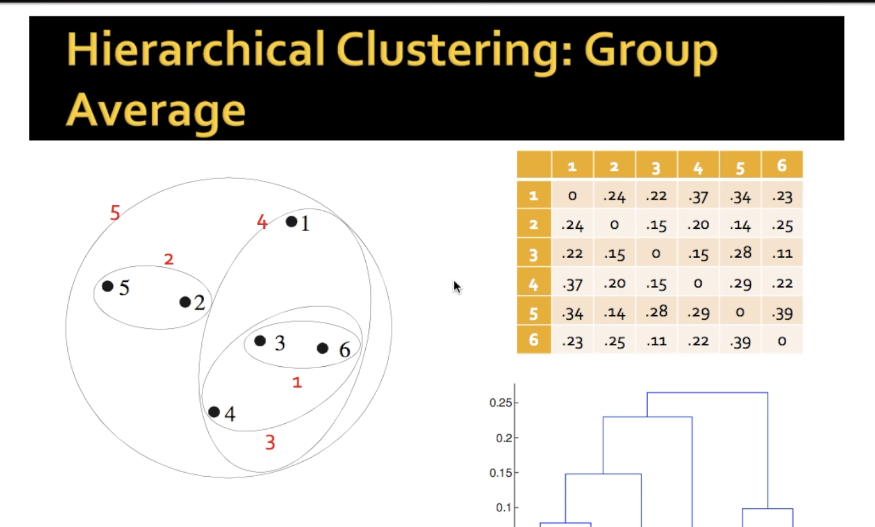


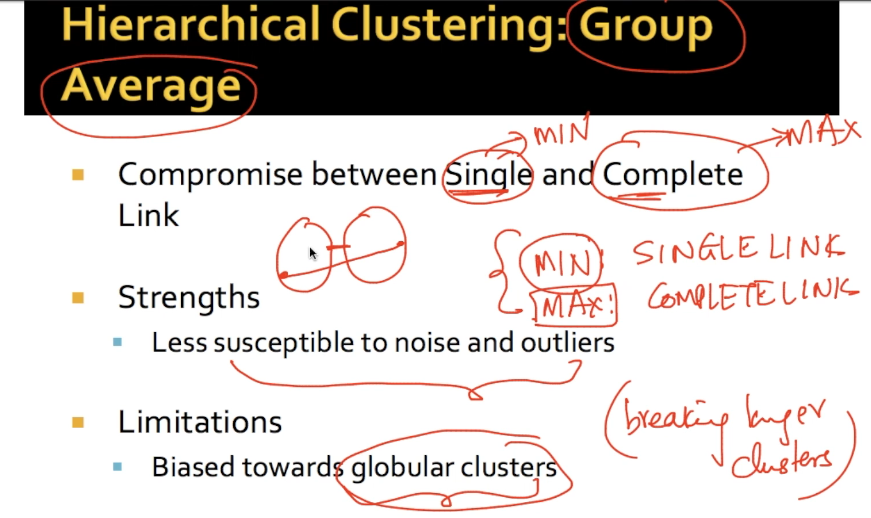


**Limitation of max :**  It breaks large cluster because while taking max distance if point is closer to small cluster as compare to large cluster then it consider this point in small cluster









Ward and group by are same methods only diff. is instead of taking distance it takes square of distance

