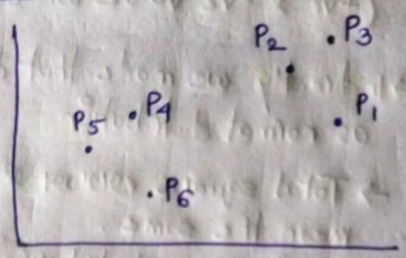
DENDOGRAM

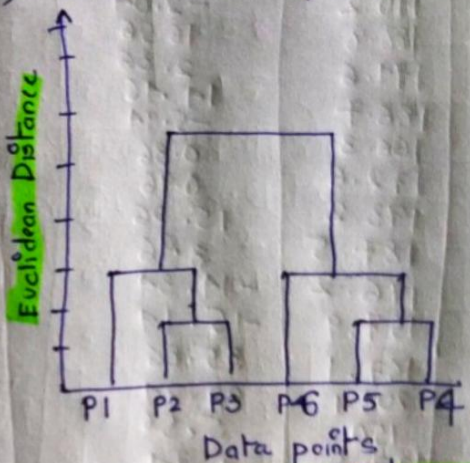
→ A dendogram is a diagram that show the hierarchical relationship between objects. It is most commonly created as the output from hierarchical clustering.

→ The main use of a dendogram is to work out the best way to allocate objects to clusters.

Dendograms - Two Clusters



Dendogram →



→ So first cluster is all the data points. So we have 6 clusters now.

→ Then smallest euclidean distance form the cluster. 2 clusters are parallely form (P5 and P4) and (P2 and P3)

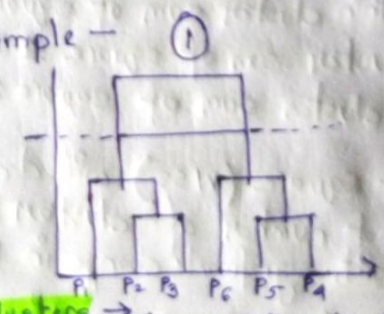
→ Then again two clusters are formed ① (P6 and (P5 and P4))
② (P1 and (P2 and P3))

→ Then a whole cluster i.e. one cluster is formed →
((P6 and (P5 and P4)) and (P1 and (P2 and P3)))

• So we put a threshold on Euclidean Distance, and check the number of clusters. No of cluster = vertical line crossing the threshold

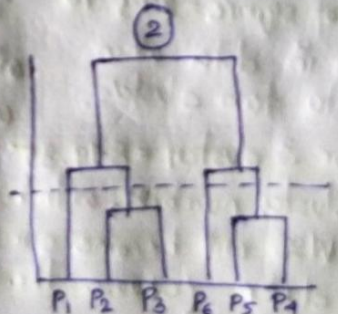
→ Optimal cluster → Highest vertical distance on the dendogram. And no horizontal line should cross the vertical line

Example -



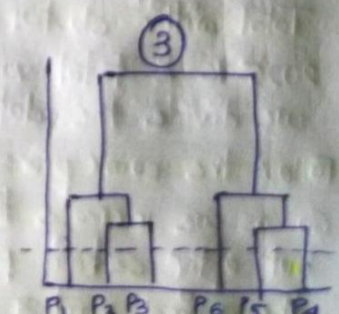
2 clusters → (P1, P2, P3) & (P5, P6, P4)

2 because two vertical line cut the dendogram



4 cluster - ① P1 ② (P2, P3)
③ P6 ④ (P5, P4)

4 because 4 vertical line cut dendogram



3 clusters - P1, P2, P3
P4, P5, P6

Most optimal is fig ① as highest vertical distance on dendogram out of 3 figure.
So optimal cluster in this 2.