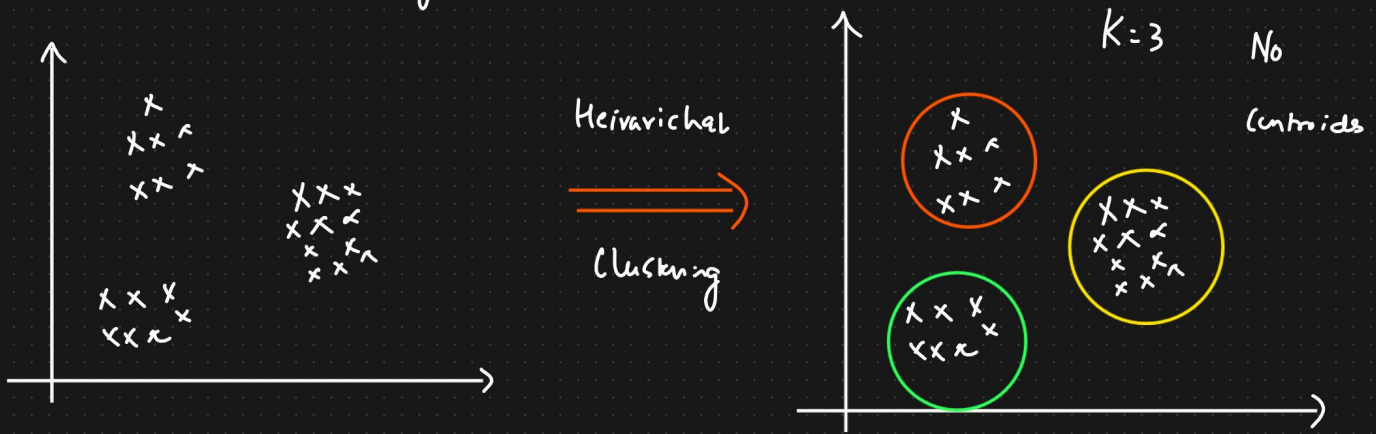
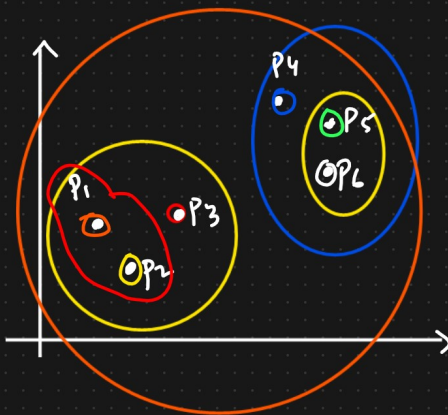


# Hierarchical Clustering



## HC

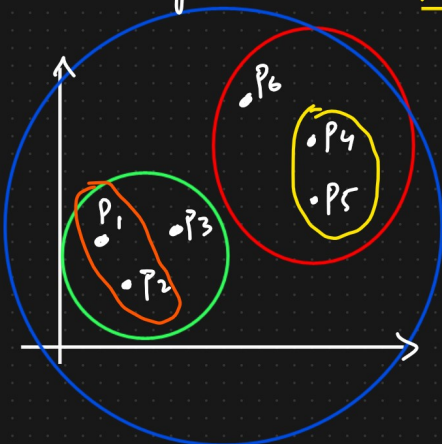
- ① Agglomerative
  - ② Divisive
- }  $\Rightarrow$  Geometric Intuition



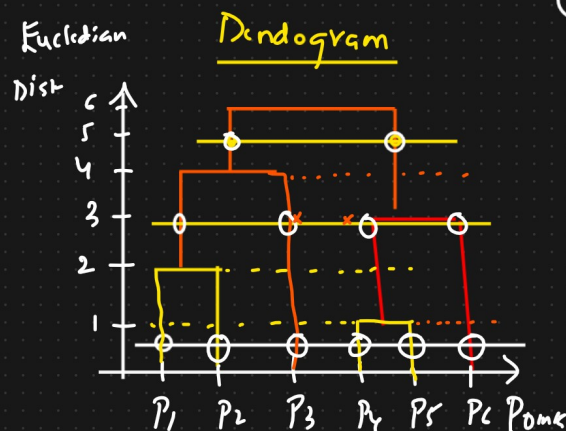
## Steps

- ① For each point initially we will consider it as a separate cluster
- ② Find the nearest point and create a new cluster
- ③ Keep on doing the same process [step 2] until we get a single cluster.

How many clusters?  $K=2$



## Threshold



- ⊗ Select the longest vertical line such that no horizontal line passes through it.

# K Means Vs Hierarchical Clustering

## Scalability And Flexibility

① Dataset size

- Huge  $\Rightarrow$  K Means
- Small  $\Rightarrow$  Hierarchical Clustering

② Types of Data

- Numerical data  $\rightarrow$  K Means or Hierarchical
- Variety of data  $\rightarrow$  Hierarchical

