→ **Hierarchical clusterings:-**

→ It is a method to (group similar things together by binding a tree of clusters (called a dendrogram), you don't need to decide the number of groups beforehand.

exe- suppose you have

apple, orange, Banana, Mango

1. start by treating each fruit as its own group.

2. find the two most similar fruits (eg Apple and Mango - both are sweet and Round)

3. combine them into a group.

4. Now combine orange with Apple - Mango (all are fruits)
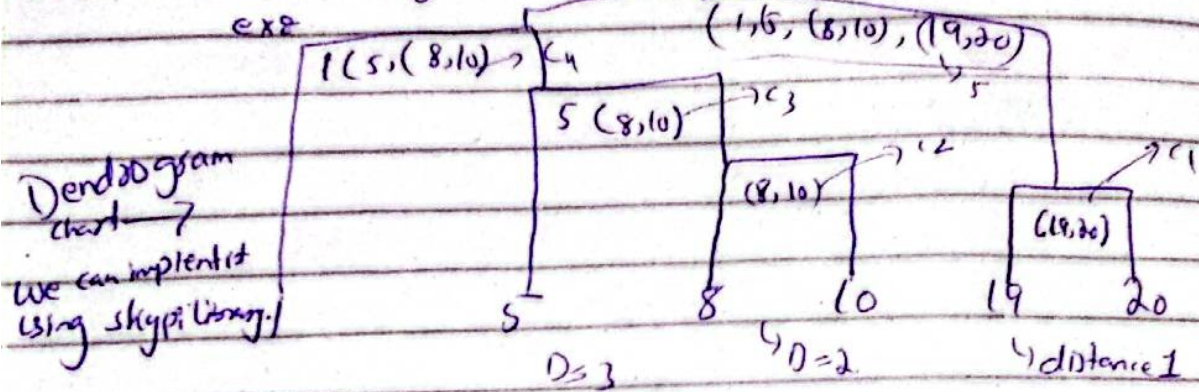
5. finally add banana.

→ what is centroid? it is like a heart of a group. It is the average point of all data points in a cluster.

ex:- 5, 6, 7 cm.

Then centroid = $(5+6+7)/3 = 6$

→ we can create it by two methods.
↳ Agglomerative & Divisive
  ↳ it merge clusters from bottom to top.

ex:

Dendogram
chart →
we can implent it
using skypi library.

for Divisive

ex:

1,   5, 8 10, 19, 20.