# Agglomerative Clustering

## Definition and purpose

The agglomerative clustering is to ensure that nearby points end up in the same cluster, **is a “bottom-up” hierarchical clustering** approach (Divisive is a “top-down” approach).

## Algorithm

1. Start with a collection of singleton clusters, each cluster contains one data point:
2. Repeat until only one cluster is left
   1. Find a pair of clusters that closest:
   2. Merge the cluster into a new cluster
   3. Remove from the collection C, add
3. For measuring the distance among clusters, we could use the following linkages

Table

Description automatically generated

1. **Produces a dendrogram**: hierarchical tree of clusters (Leaf – individuals, Root-clusters)

Diagram

Description automatically generated

## Properties

1. Slow:
2. Complete linkage is sensitive to outliers.