K-means

Input: $d(\cdot, \cdot)$, K-value $x_i \in \mathbb{R}^p$

↓   ↓

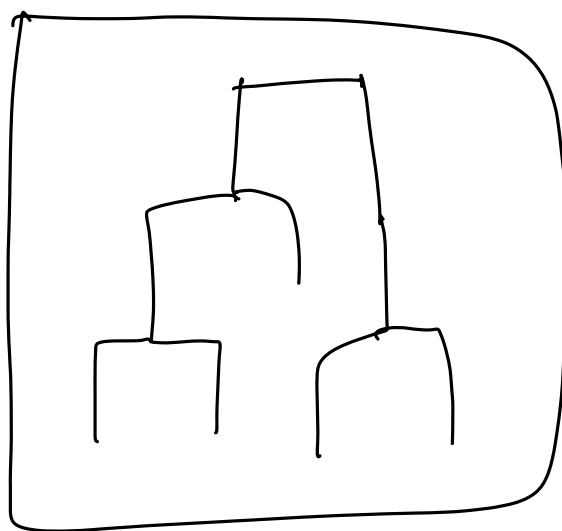distances   # clusters $d(x_i, x_j) = \|x_i - x_j\|^2$

Can use K-means with many different distance measures
finding closet center m is the same for all distance
measures, just minimize using dist measure
However what changes is how we then update
     centers

Hierarchical clustering: It is bottom-up

n-3

n-2

n-1

clusters = 4