

(i) In step 1, Complexity  $O(N k n)$

Loop over all points, then loop over all clusters, then  
loop over all attributes to find distance

(ii) Complexity to reassign cluster representatives

$$= O(n(N+k))$$

First loop over all points and update  
current sum and number of points in cluster  $c_k$   
(of attributes) Loop over all attributes to get sum of  
each attribute.

Then to find centroid of each cluster loop over all clusters  
and update current centre for each attribute.

c) For 10 iterations number of computations

$$= 10 N n k + 10 n(N+k)$$