k-means Clustering Algorithm

For $i = 1$ to $k$
   $c_i = \text{random } x \in D$

Repeat
   For $i = 1$ to $k$
      $S_i = \{ x \in D \mid \arg\min_{x} \text{distance}(c_i, x) \}$ /* subset of $D$ closest to $c_i$ */
   
   For $i = 1$ to $k$
      $c_i = \frac{\sum_{x \in S_i} x}{|S_i|}$ /* compute new “centroid” */

Until <stopping condition> /* example: until $c_i$’s don’t change */