**EXERCISE FOR K-MEANS ALGORITHM**

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| Suppose we want to group the tourist of a museum by their age as follows: |
| (one-dimensional space)  ***number of data points (n)* = 19** |
| 15,15,16,19,19,20,20,21,22,28,35,40,41,42,43,44,60,61,65   |  |  |  | | --- | --- | --- | | **Initial clusters:** |  |  | | ***Number of clusters (k)* = 2** |  |  | | *c1* = 16 *c2* = 22 |  |  | |

Please apply K-Means algorithm for given data points and fill in the table below to illustrate each step for each iteration. Please repeat the iteration until it converge.

**Iteration 1**

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| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | *xi* | *c1* | *c2* | Distance to c1 | Distance to c2 | Nearest Cluster | New Centroid | | 15 |  |  |  |  |  |  | | 15 |  |  |  |  |  |  | | 16 |  |  |  |  |  |  | | 19 |  |  |  |  |  |  | | 19 |  |  |  |  |  |  | | 20 |  |  |  |  |  |  | | 20 |  |  |  |  |  |  | | 21 |  |  |  |  |  |  | | 22 |  |  |  |  |  |  | | 28 |  |  |  |  |  |  | | 35 |  |  |  |  |  |  | | 40 |  |  |  |  |  |  | | 41 |  |  |  |  |  |  | | 42 |  |  |  |  |  |  | | 43 |  |  |  |  |  |  | | 44 |  |  |  |  |  |  | | 60 |  |  |  |  |  |  | | 61 |  |  |  |  |  |  | | 65 |  |  |  |  |  |  | |  |  |

New centroid

*c1* =   
*c2*  =