**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 |  |  |

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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*  =