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COT 5405 – Homework 2

10/05/2017

1.

|  |  |  |
| --- | --- | --- |
| **Iteration** | **Visited nodes** | **Node List** |
| 1 | 1, INF, INF, INF, INF |  |
| 2 | 1, 5, INF, INF, INF | (1,5) |
| 3 | 1, 5, 4, INF, INF | (1,5), (5,4) |
| 4 | 1, 5, 4, 2, INF | (1,5), (5,4), (4,2) |
| 5 | 1, 5, 4, 2, 3 | (1,5), (5,4), (4,2), (1,3) |

2. a=01, e=10, o=11, u=000, y=001

3.

|  |  |
| --- | --- |
| **Iteration** | **edges** |
| 1 | (1,2) |
| 2 | (1,2), (2,3) |
| 3 | (1,2), (2,3), (4,5) |
| 4 | (1,2), (2,3), (4,5), (6,7) |
| ~~5~~ | ~~(1,2), (2,3), (4,5), (6,7), (4,7)~~ |
| ~~6~~ | ~~(1,2), (2,3), (4,5), (6,7), (4,7), (1,4)~~ |

Iteration 4 is the 3-cluster of maximum spacing with the maximum spacing being 4. I used k-1 after all edges were found

4. Heapified:

Sorting:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Heapified** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| X | 50 | 22 | 25 | 21 | 14 | 19 | 9 | 17 | 18 | 3 | 11 | 15 |
|  | 15 | 22 | 25 | 21 | 14 | 19 | 9 | 17 | 18 | 3 | 11 | 50 |
|  | 22 | 15 | 25 | 21 | 14 | 19 | 9 | 17 | 18 | 3 | 11 |  |
|  | 22 | 25 | 15 | 21 | 14 | 19 | 9 | 17 | 18 | 3 | 11 |  |
|  | 22 | 25 | 19 | 21 | 14 | 15 | 9 | 17 | 18 | 3 | 11 |  |
| X | 25 | 22 | 19 | 21 | 14 | 15 | 9 | 17 | 18 | 3 | 11 |  |
|  | 11 | 22 | 19 | 21 | 14 | 15 | 9 | 17 | 18 | 3 | 25 |  |
|  | 22 | 11 | 19 | 21 | 14 | 15 | 9 | 17 | 18 | 3 |  |  |
|  | 22 | 21 | 19 | 11 | 14 | 15 | 9 | 17 | 18 | 3 |  |  |
|  | 22 | 21 | 19 | 17 | 14 | 15 | 9 | 11 | 18 | 3 |  |  |
| X | 22 | 21 | 19 | 18 | 14 | 15 | 9 | 11 | 17 | 3 |  |  |
|  | 3 | 21 | 19 | 18 | 14 | 15 | 9 | 11 | 17 | 22 |  |  |
|  | 21 | 3 | 19 | 18 | 14 | 15 | 9 | 11 | 17 |  |  |  |
|  | 21 | 19 | 3 | 18 | 14 | 15 | 9 | 11 | 17 |  |  |  |
| X | 21 | 19 | 15 | 18 | 14 | 3 | 9 | 11 | 17 |  |  |  |
|  | 17 | 19 | 15 | 18 | 14 | 3 | 9 | 11 | 21 |  |  |  |
|  | 19 | 17 | 15 | 18 | 14 | 3 | 9 | 11 |  |  |  |  |
| X | 19 | 18 | 15 | 17 | 14 | 3 | 9 | 11 |  |  |  |  |
|  | 11 | 18 | 15 | 17 | 14 | 3 | 9 | 19 |  |  |  |  |
|  | 18 | 11 | 15 | 17 | 14 | 3 | 9 |  |  |  |  |  |
| X | 18 | 17 | 15 | 11 | 14 | 3 | 9 |  |  |  |  |  |
|  | 9 | 17 | 15 | 11 | 14 | 3 | 18 |  |  |  |  |  |
|  | 17 | 9 | 15 | 11 | 14 | 3 |  |  |  |  |  |  |
|  | 17 | 11 | 15 | 9 | 14 | 3 |  |  |  |  |  |  |
| X | 17 | 14 | 15 | 9 | 11 | 3 |  |  |  |  |  |  |
|  | 3 | 14 | 15 | 9 | 11 | 17 |  |  |  |  |  |  |
|  | 14 | 3 | 15 | 9 | 11 |  |  |  |  |  |  |  |
|  | 14 | 9 | 15 | 3 | 11 |  |  |  |  |  |  |  |
|  | 15 | 9 | 14 | 3 | 11 |  |  |  |  |  |  |  |
| X | 15 | 11 | 14 | 3 | 9 |  |  |  |  |  |  |  |
|  | 9 | 11 | 14 | 3 | 15 |  |  |  |  |  |  |  |
|  | 11 | 9 | 14 | 3 |  |  |  |  |  |  |  |  |
| X | 14 | 9 | 11 | 3 |  |  |  |  |  |  |  |  |
|  | 3 | 9 | 11 | 14 |  |  |  |  |  |  |  |  |
|  | 9 | 3 | 11 |  |  |  |  |  |  |  |  |  |
| X | 11 | 3 | 9 |  |  |  |  |  |  |  |  |  |
| X | 9 | 3 | 11 |  |  |  |  |  |  |  |  |  |
| X | 3 | 9 |  |  |  |  |  |  |  |  |  |  |
| X | 3 |  |  |  |  |  |  |  |  |  |  |  |

Sorted Array:

3, 9, 11, 15, 17, 18, 19, 21, 22, 25, 50