Cesar Arroyo

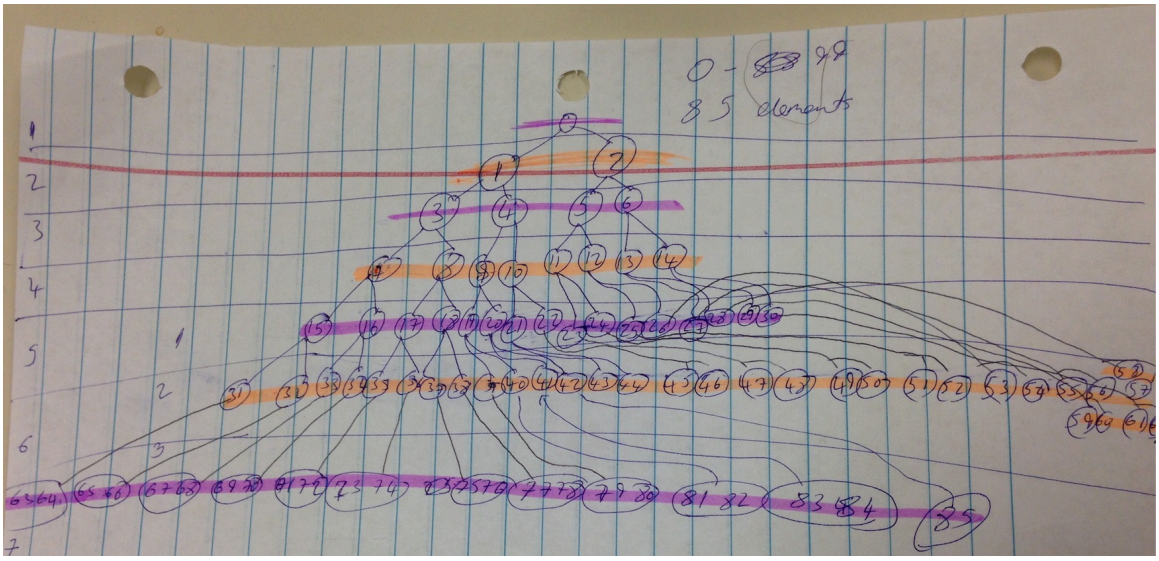
1. 11)a. false
   b. false
   c. false
   d. true

   16)a. true
   b. true
   c. false
   d. false

2. Heap Sort would be the better choice because unlike the merge sort, the heap sort doesn't require another O(n) space. It's as efficient in terms of space; only one array is used to store the data.

3. a. N comparisons
   b. N comparisons
   c. N comparisons

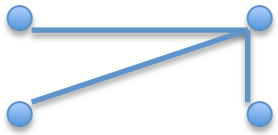
4.



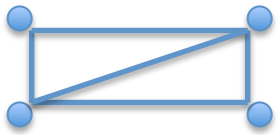
according to this BNT…

a. false; treeNode[42] is not a leaf node because it has one child if the tree goes to 85 elements
   b. false; treeNode[41] has two children
   c. false; the right child of treeNode[12] is 26
   d. false; subtree rooted at treeNode[7] is a full binary tree with three levels
   e. false; the tree has SIX full levels and one additional level that contains some elements

5. a. true; 4 vertices and 3 edges

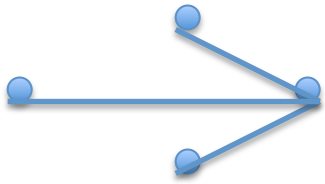


b. true; 4 vertices and 5 edges

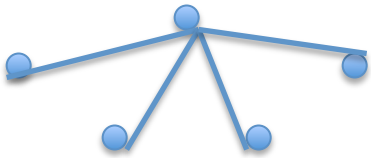


c. false; with only one vertex it's not a graph anymore
d. true;
e. true; one vertex has to be disconnected

f. true; N vertices = 4 and N – 1 edges = 3



g. true



h. false; it can connect to itself

i. false; tree requires leaf nodes vs graph

tree:

j. true; left is tree and right is graph

k. false; can be directed but not necessarily weighted