

CS301 Assignment No. 3 Spring 2020

Solved by: STshine.blogspot.com

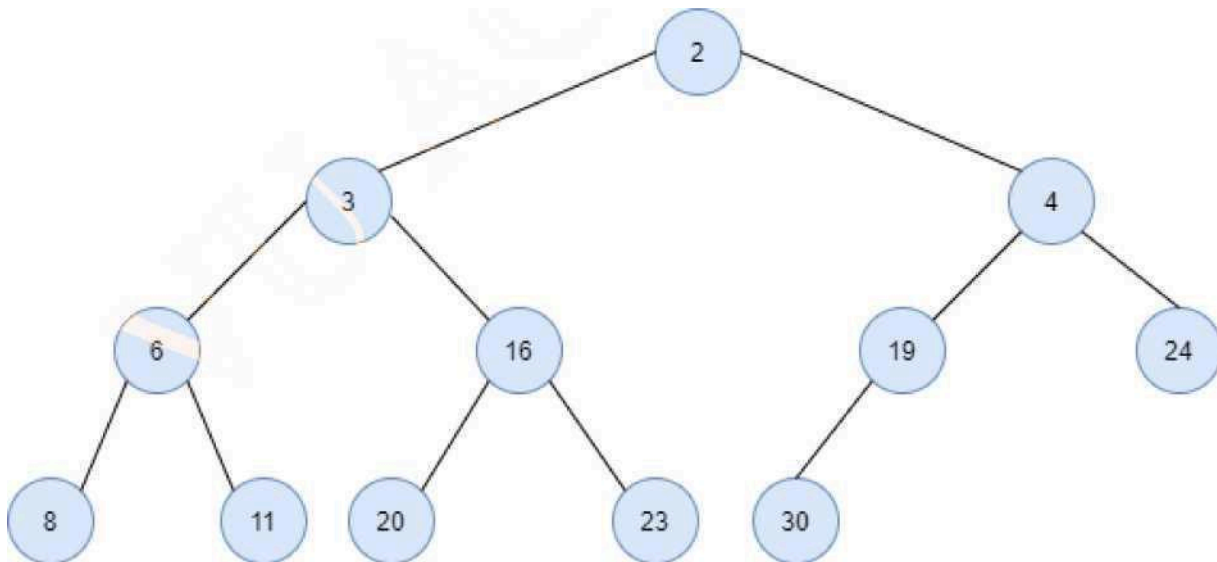
Problem Statement:

Heap is a complete binary tree that conforms to the heap order. The heap order is a property that states that in a (min) heap for every node X, the key in the parent is smaller than (or equal to) the key in X and in a (max) heap for every node X, the key in the parent is greater than (or equal to) the key in X.

Given below is an array representing complete Binary tree.

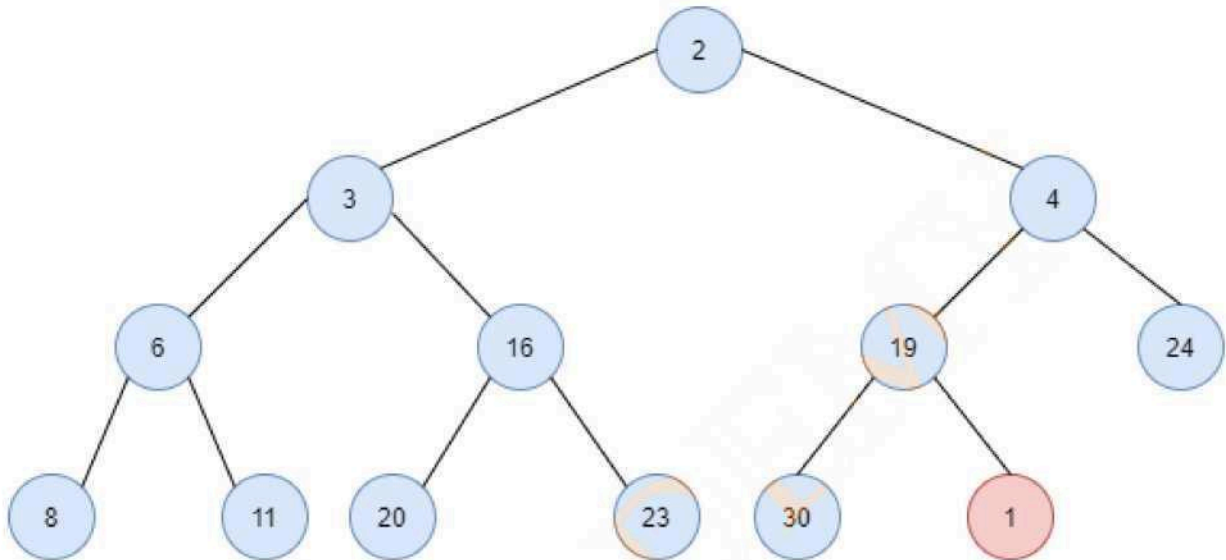
- a) You are required to draw a complete binary tree from the above given array. After drawing a tree, identify which type of heap data structure is it showing either min heap or max heap?

This is Min Heap. Because the key in the parent is smaller than (or equal to) the key in the child Nodes.



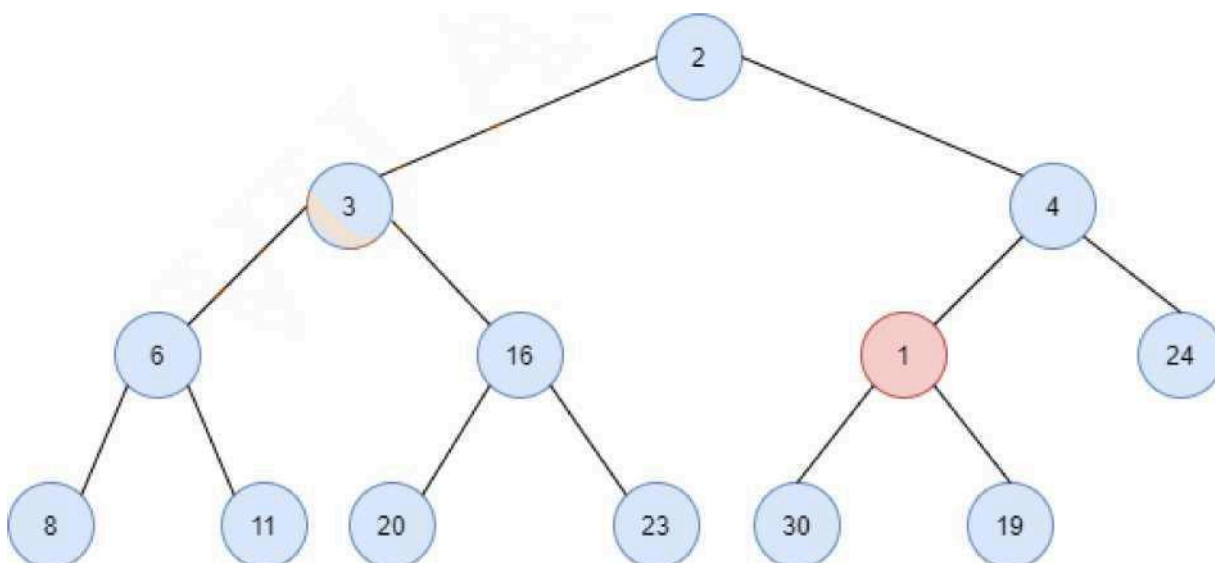
b) Let's suppose, we insert a new value at an array index 13 then draw a heap tree after inserting a new node. Also show the changes done in array.

Data		2	3	4	6	16	19	24	8	11	20	23	30	1
Array index	0	1	2	3	4	5	6	7	8	9	10	11	12	13

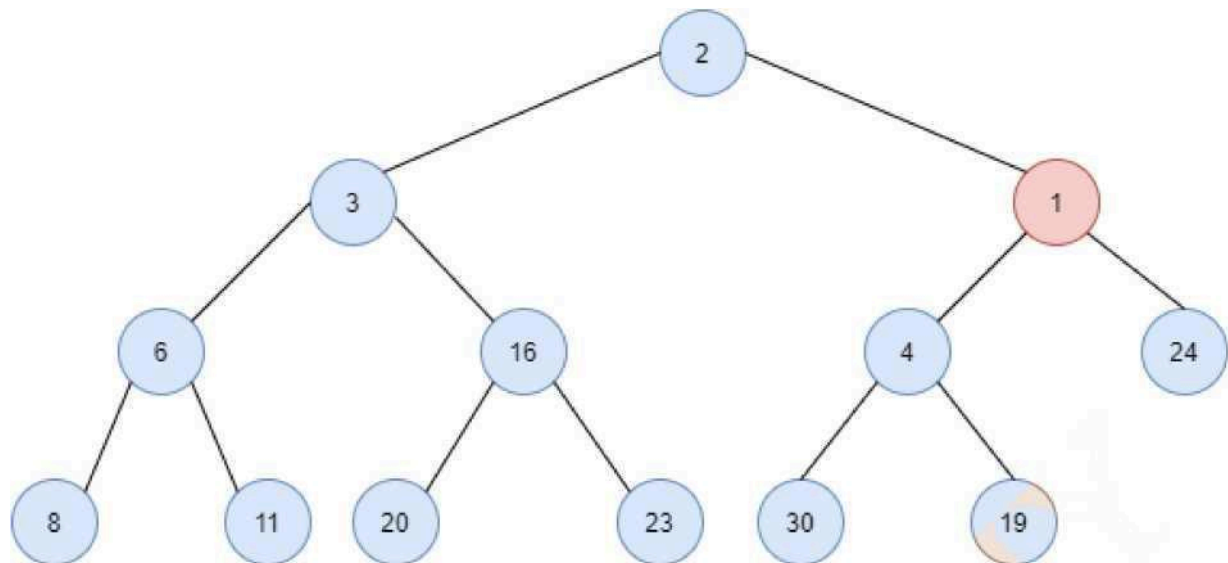


Data		2	3	4	6	16	19	24	8	11	20	23	30	
Array Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13

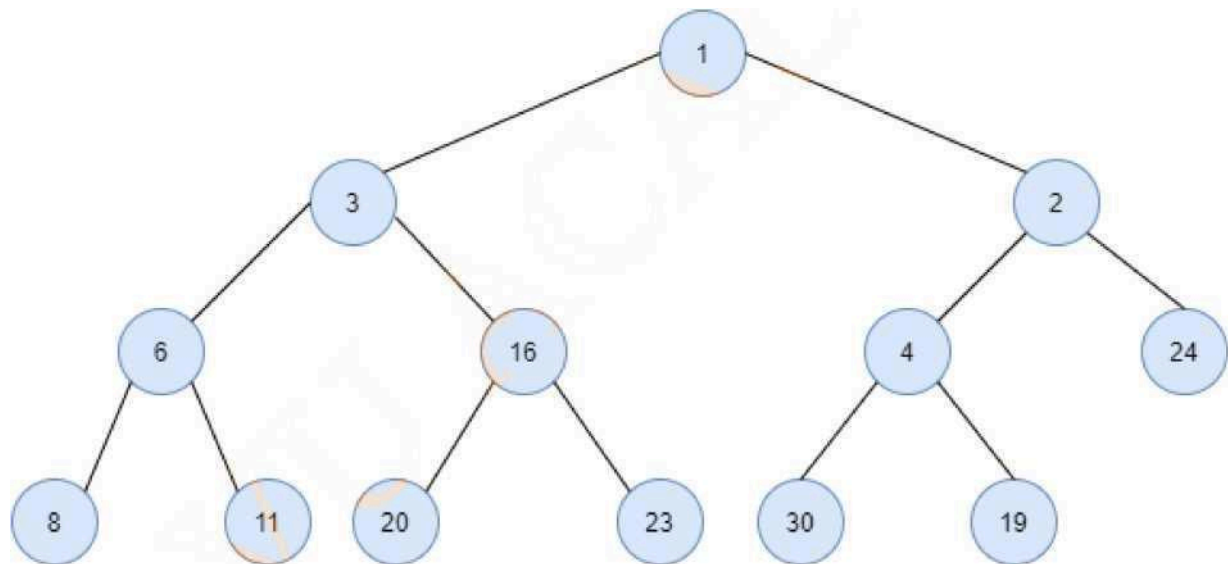
Data		2	3	4	6	16	1	24	8	11	20	23	30	19
Array index	0	1	2	3	4	5	6	7	8	9	10	11	12	13



Data		2	3	4	6	16	1	24	8	11	20	23	30	19
Array index	0	1	2	3	4	5	6	7	8	9	10	11	12	13



Data		2	3	1	6	16	4	24	8	11	20	23	30	19
Array index	0	1	2	3	4	5	6	7	8	9	10	11	12	13



Data		1	3	2	6	16	4	24	8	11	20	23	30	19
Array index	0	1	2	3	4	5	6	7	8	9	10	11	12	13