

CS 130A Data Struc & Alg 1

1. A linear array holds the following keys starting from cell 1 as follows

37	7	29	25	5	12	45	4	21	48	2	33	18
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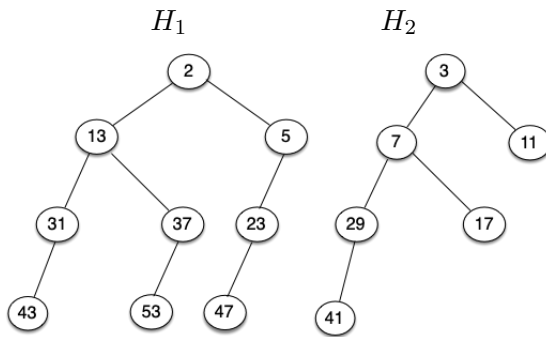
Show the steps of the Build-Min-Heap algorithm create a binary heap over this array. Illustrate the steps both the tree notation AND the linear array notation.

2. A max-heap data structure is given below.

45	38	34	27	32	23	26	11	19	12	8	15	10
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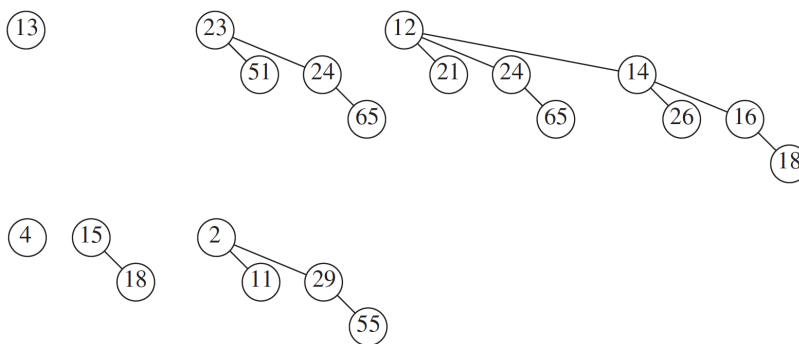
Illustrate the steps of Heapsort algorithm to create a sorted linear array. Illustrate the steps using both the tree notation AND the linear array notation.

3. Consider the heaps H_1 and H_2 given below:



Show that they are both leftist heaps by calculating and comparing the null path lengths of each node in each heap, and then merge H_1 and H_2 .

4. Merge these two binomial queues:



Deliver the assignment via Gradescope. Late submissions are not accepted.