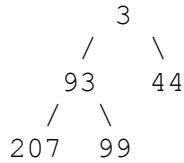


## 2) (5 pts) ALG (Advanced Data Structures: Binary Heaps)

(a) (2 pts) Is the following tree a valid minheap? If so, give an array representation of this minheap. If not, explain why it's not a minheap.



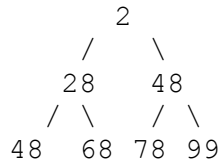
Yes, this is a valid minheap. Both of the following array representations are acceptable:

3	93	44	207	99
0	1	2	3	4

(?)	3	93	44	207	99
0	1	2	3	4	5

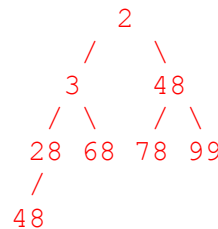
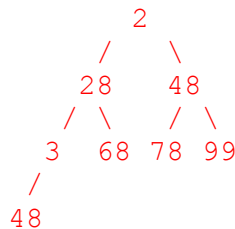
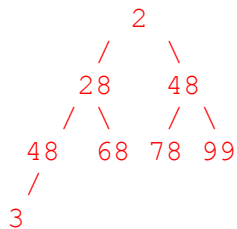
**Grading (2 pts): -1 for a very minor error. Otherwise, it's 2 pts if correct, 0 if not.**

(b) (3 pts) Insert the value 3 into the following minheap. Clearly show each step of the process.



Step 1: Insert 3 into the next available position (left child of 48)

Step 2: The 3 percolates up (twice).



**Grading (5 pts):**

**2 pts: The 3 is inserted into the correct position to begin with.**

**2 pts: The 3 ends up in the correct position after percolating up.**

**1 pt: Nothing else ended up in the wrong place after percolating.**