


6.3-2.

Why do we want the loop index i in line 2 of BUILD-MAX-HEAP to decrease from $\lfloor A.length/2 \rfloor$ to 1 rather than increase from 1 to $\lfloor A.length/2 \rfloor$?

Answer.

If the index i in BUILD-MAX-HEAP was iterated from 1 to $\lfloor A.length/2 \rfloor$, the heap will probably remain to be not max-heap after the procedure terminates. Because MAX-HEAPIFY, which constitutes the body of the loop, requires that binary trees rooted at $LEFT(i)$ and $RIGHT(i)$ must be max-heaps, while subtrees rooted at 2 and 3 are probably not max-heaps before the first iteration.

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