

6.2-2.

Starting with the procedure MAX-HEAPIFY, write pseudocode for the procedure MIN-HEAPIFY(A, i), which performs the corresponding manipulation on a min-heap. How does the running time of MIN-HEAPIFY compare to that of MAX-HEAPIFY?

Answer.

```
MIN-HEAPIFY( $A, i$ )
1   $l = \text{LEFT}(i)$ 
2   $r = \text{RIGHT}(i)$ 
3  if  $l \leq A.\text{heap-size}$  and  $A[l] < A[i]$ 
4       $\text{smallest} = l$ 
5  else  $\text{smallest} = i$ 
6  if  $r \leq A.\text{heap-size}$  and  $A[r] < A[\text{smallest}]$ 
7       $\text{smallest} = r$ 
8  if  $\text{smallest} \neq i$ 
9      exchange  $A[i]$  with  $A[\text{smallest}]$ 
10     MIN-HEAPIFY( $A, \text{smallest}$ )
```

Equivalent to that of MAX-HEAPIFY, the running time of MIN-HEAPIFY on a node of height h is also $O(h)$.

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