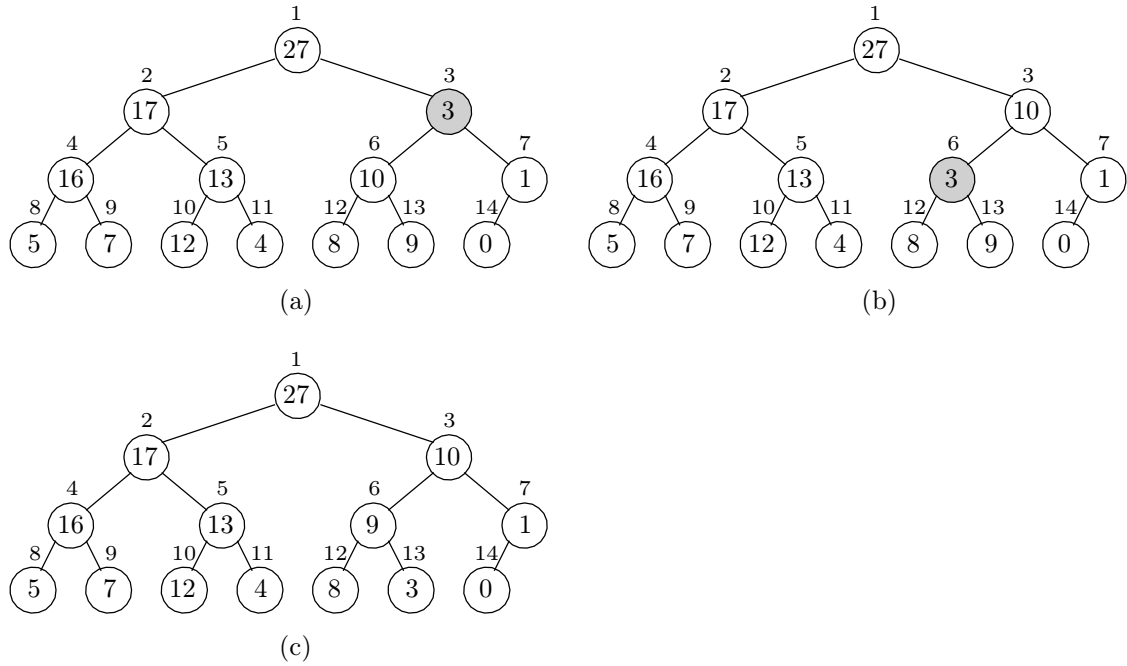


### 6.2-1.

Using Figure 6.2 as a model, illustrate the operation of  $\text{MAX-HEAPIFY}(A, 3)$  on the array  $A = \langle 27, 17, 3, 16, 13, 10, 1, 5, 7, 12, 4, 8, 9, 0 \rangle$ .

**Answer.**

Figure 1 illustrates the operation of  $\text{MAX-HEAPIFY}(A, 3)$  on the array  $A = \langle 27, 17, 3, 16, 13, 10, 1, 5, 7, 12, 4, 8, 9, 0 \rangle$ .



**Figure 1.** The action of  $\text{MAX-HEAPIFY}(A, 3)$ , where  $A.\text{heap-size}=10$ . **(a)** The initial configuration, with  $A[3]$  at node  $i = 3$  violating the max-heap property since it is small than its left child. The max-heap property is restored for node 3 in **(b)** by exchanging  $A[3]$  with  $A[6]$ , which destroys the max-heap property for node 6. Ther recursive call  $\text{MAX-HEAPIFY}(A, 6)$  now has  $i = 6$ . After swapping  $A[6]$  with  $A[13]$ , as shown in **(c)**, node 6 is fixed up, and the recursive call  $\text{MAX-HEAPIFY}(A, 9)$  yields no further change to the data structure.

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