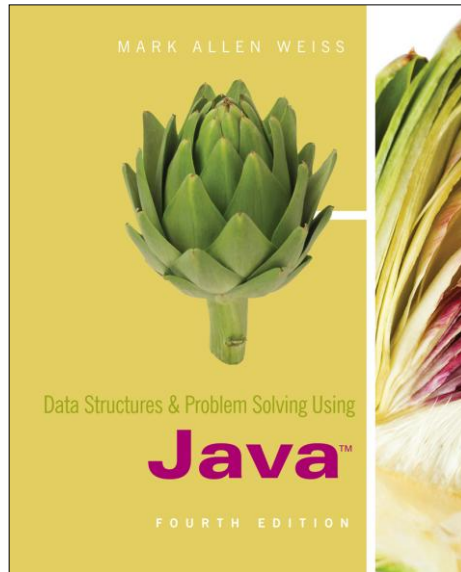


# Chapter 21

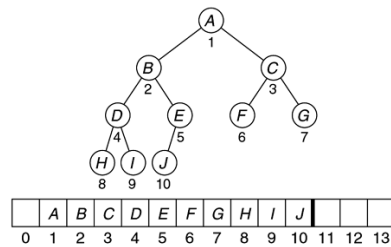
## A Priority Queue: The Binary Heap



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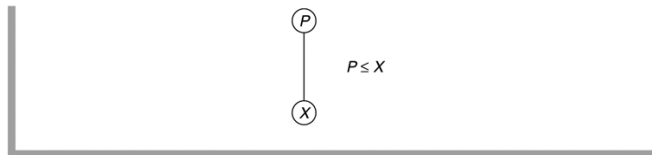


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**figure 21.1**  
A complete binary  
tree and its array  
representation

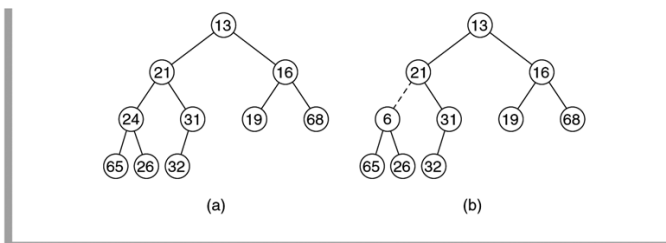
**figure 21.2**  
Heap-order property



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1-3

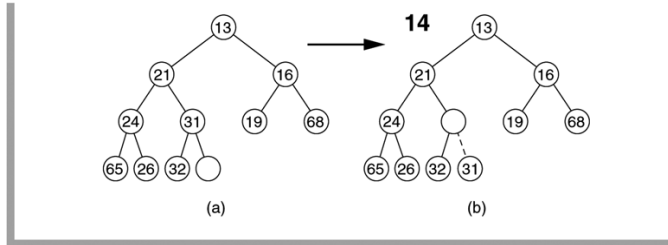
**figure 21.3**  
Two complete trees:  
(a) a heap; (b) not a heap



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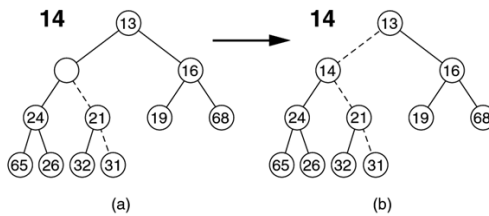
1-4

**figure 21.7**  
 Attempt to insert 14, creating the hole and bubbling the hole up



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1-5

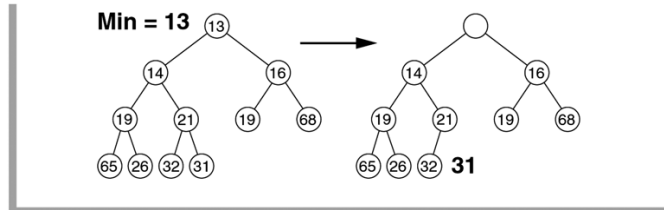


**figure 21.8**  
 The remaining two steps required to insert 14 in the original heap shown in Figure 21.7

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1-6

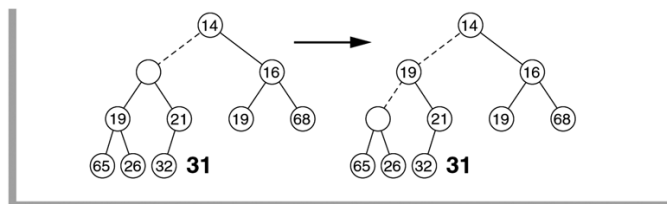
**figure 21.10**  
Creation of the hole at  
the root



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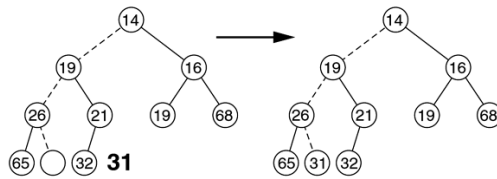
1-7

**figure 21.11**  
The next two steps in  
the deleteMin  
operation



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1-8



**figure 21.12**  
The last two steps in  
the deleteMin  
operation