

Homework 6

Sunday, October 31, 2021

5:29 PM

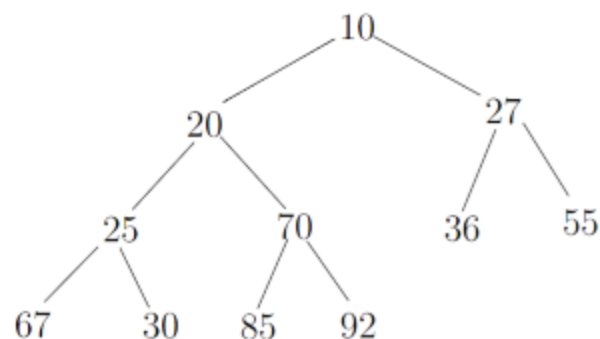
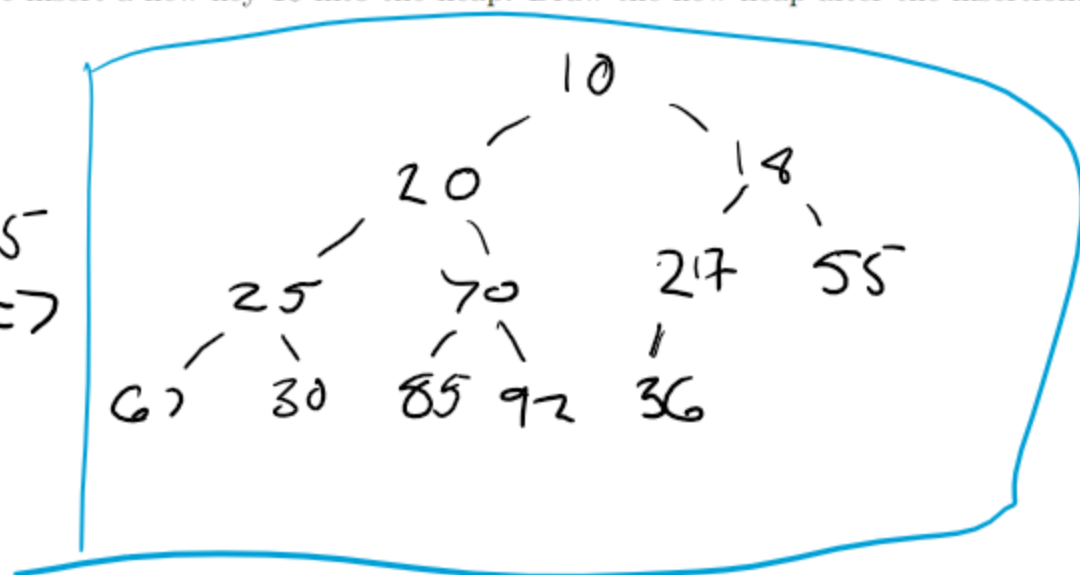
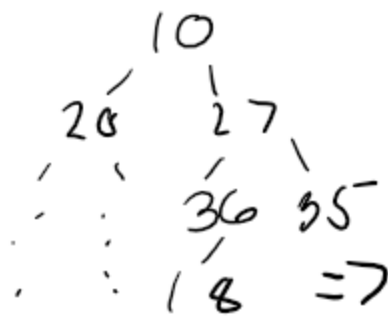


Figure 1: The heap for Question 2

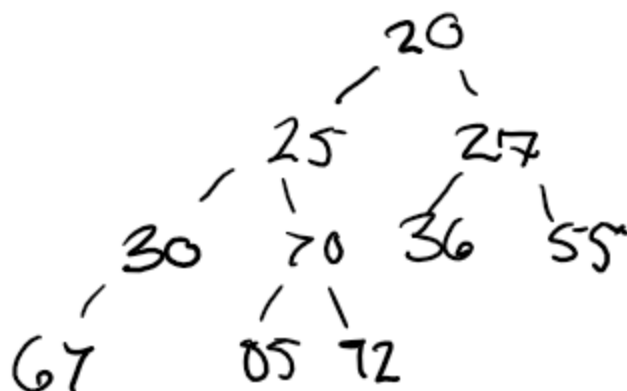
2. Consider the heap in Fig. 1. Answer the following two questions.

(15 points)

(a) Suppose we insert a new key 18 into the heap. Draw the new heap after the insertion.

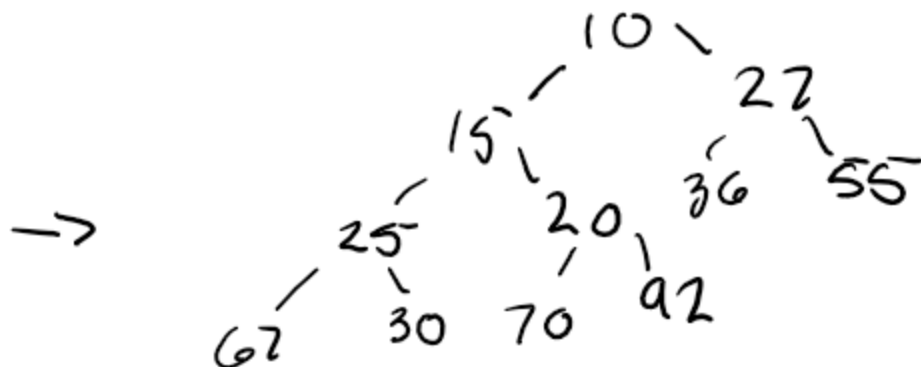


- (b) Suppose we do a deleteMin operation on the **original heap** (without the insertion in (a)). Draw the new heap after the operation.



- (c) Suppose we do a decreaseKey operation by decreasing the key 85 to 15, on the **original heap** (without the operations in (a) or (b)). Draw the new heap after the operation.

if $85 \rightarrow 15$, then 15 & 70 swap, then 20 & 15



3. Suppose we use the linear-time algorithm discussed in class to build a heap from the following array of numbers: 40 25 14 75 10 34 8 33 60 28 17 3 19 6 42 15. Figure 2 shows a complete binary tree formed by these numbers. Draw the heap constructed by the linear-time heap construction algorithm. (10 points)

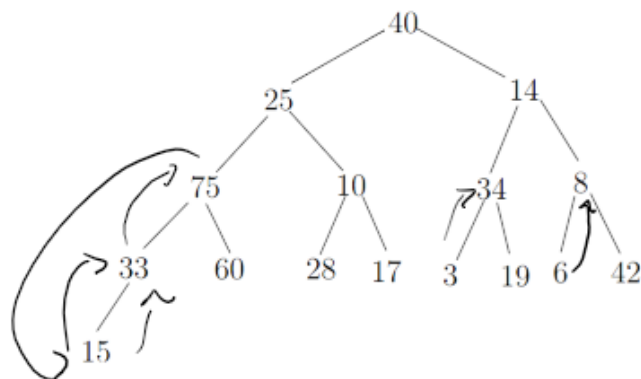


Figure 2: For Question 3

