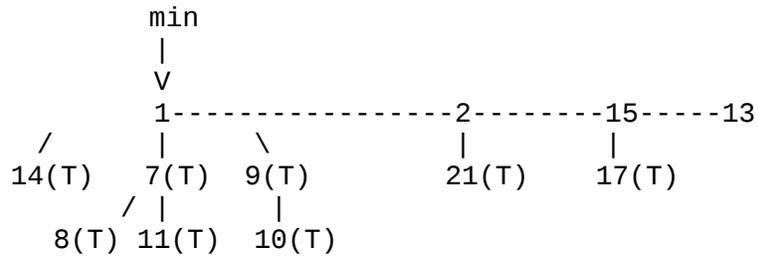
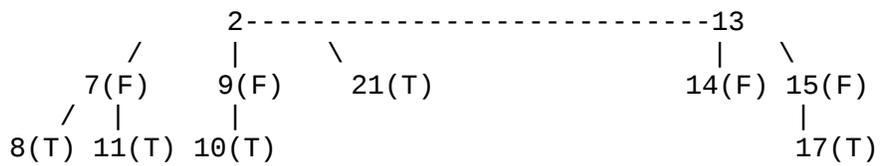


1a)  
DecreaseKey operation by changing 10 by 2

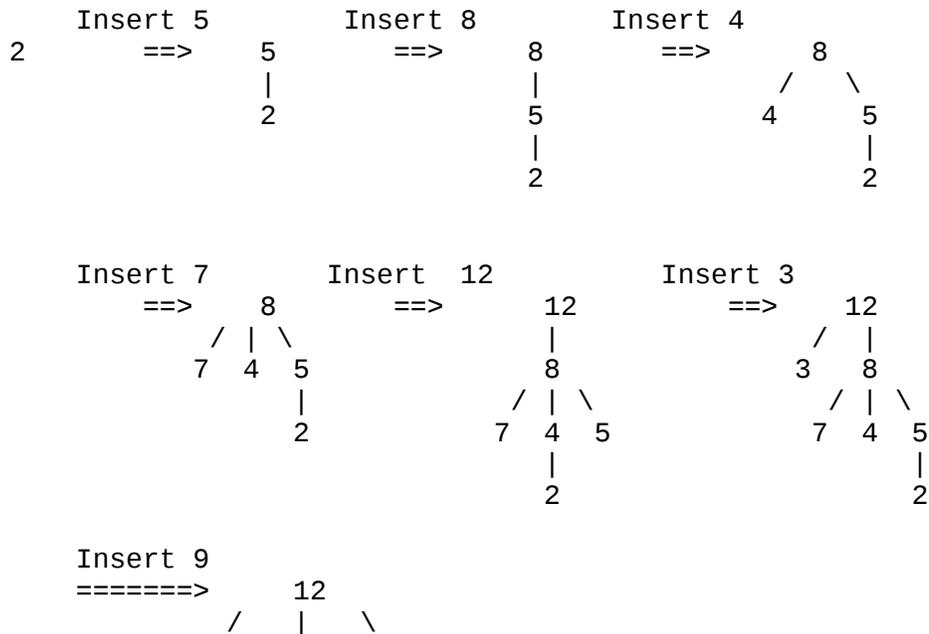


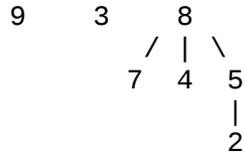
b) DeleteMin operation.



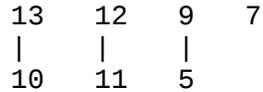
Grading policy: Due to different permutations of trees in (a), other solutions are possible in (b). The pairwise combine should follow the order of resulting trees obtained from (a), and then use a table to keep track of the trees by degrees. If you have not followed the order, 3-5 marks are deducted depend on your answer.

2) (a) tree with smaller root becomes leftmost subtree.

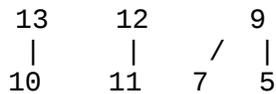




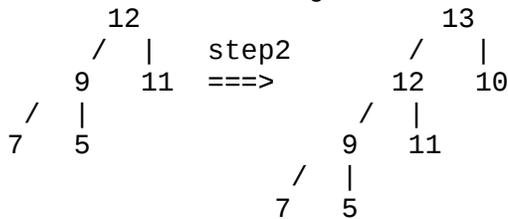
(b) two-pass meld after remove min  
 pass 1: start subtrees left to right.



the number of subtrees was odd, meld remaining original subtree with newly generated subtree.

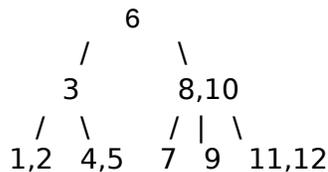


Pass 2: start with rightmost subtrees of pass 1



Grading policy: (b)According to the two-pass scheme, firstly meld pairs of subtrees from left to right, if the number of subtrees is odd, meld the remaining original subtree with last newly generated subtree. If you have not used this scheme, marks are deducted. Then start from the rightmost subtree, meld remaining subtrees from right to left. If you did it from left to right, marks are deducted.

3)a)



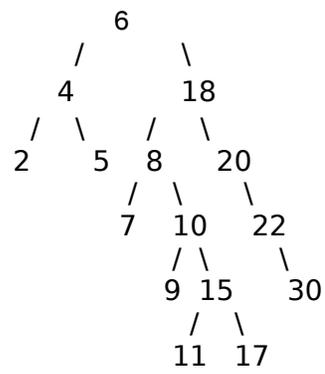
b)



Grading Policy: Marks are deducted for incorrect steps.

4)

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Grading policy: If you have not used the standard bottom up technique, 4 marks are deducted. Marks are also deducted if steps are not shown.