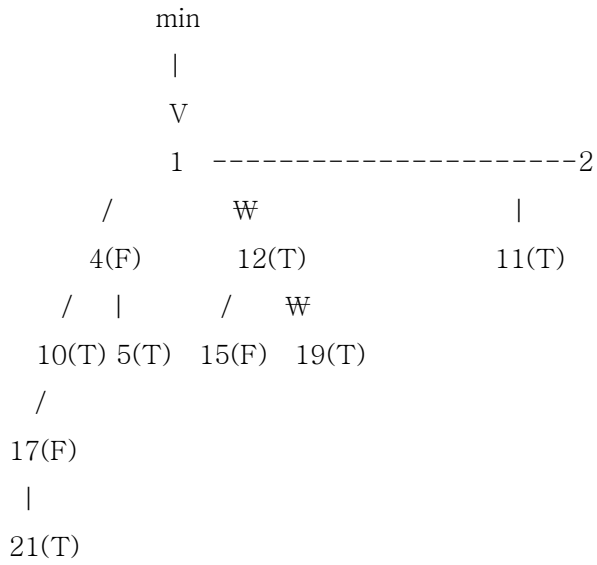
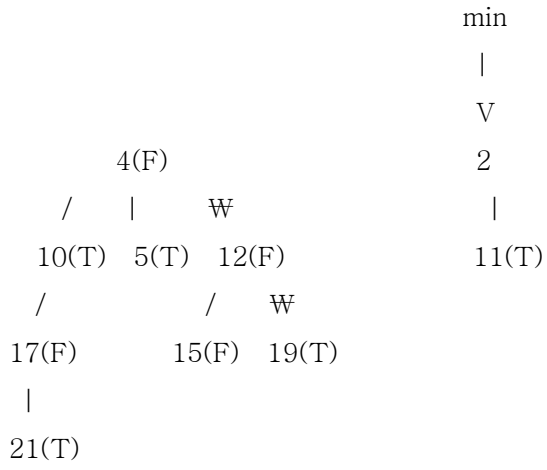
Exam02_solution
Summer , 2005

question 1.

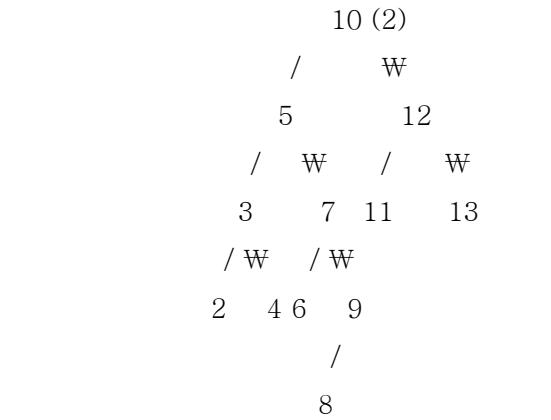
DecreaseKey operation by changing 9 by 2

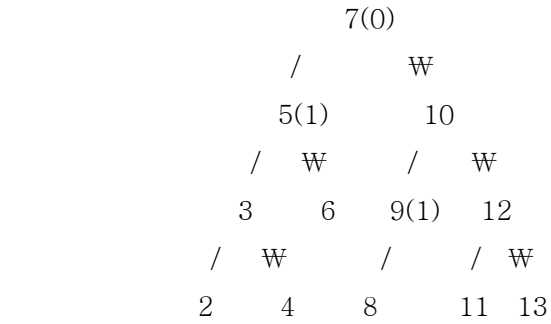


DeleteMin operation.

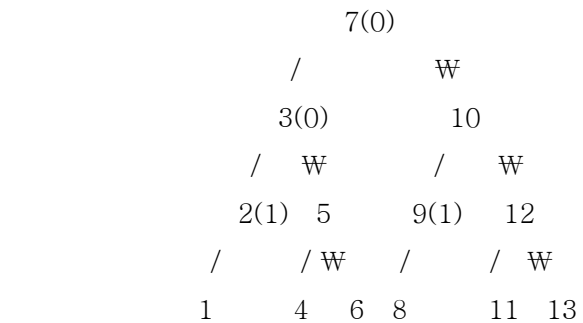


2) insert 8 (LR)



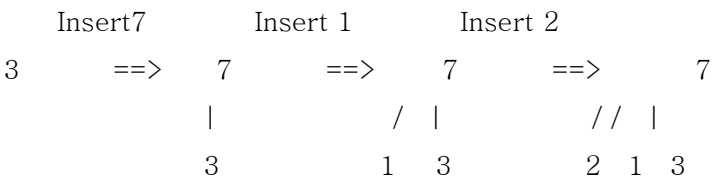


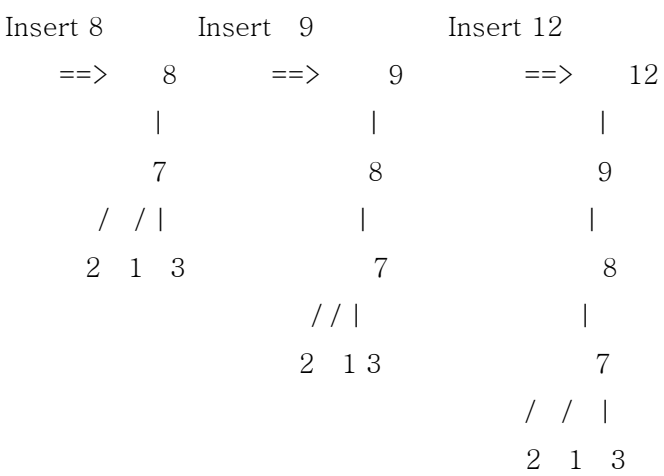
insert 1 (LL)

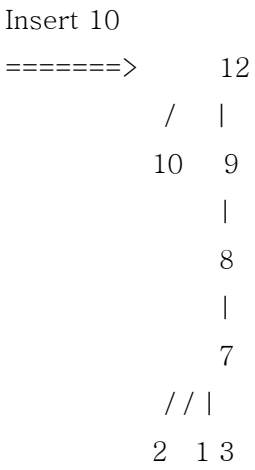


3)

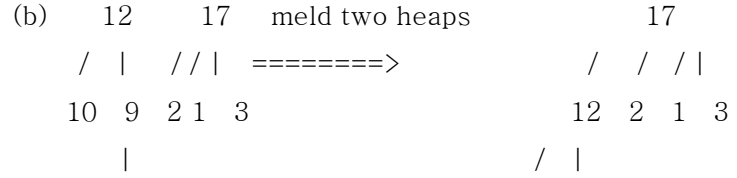
(a) tree with smaller root becomes leftmost subtree.







(b)



8 10 9

|

8

(c) two-pass meld after remove min

pass 1: start subtrees left to right.

18 15 9 17

| | |

11 10 7

the number of subtrees was odd,

meld remaining original subtree with newly generated subtree.

18 15 17

| | |

11 10 9

|

7

Pass 2: start with rightmost subtrees of pass 1

17 18

/ | step2 / |

15 9 ===> 17 11

| | / |

10 7 15 9

| |

10 7

(4)

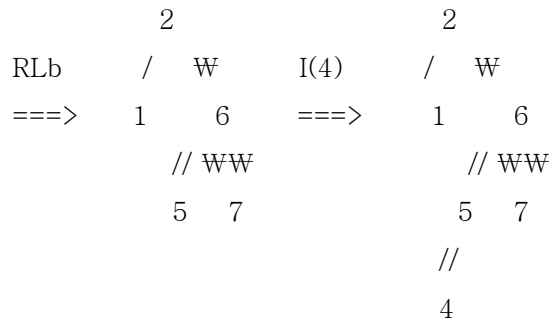
(a)

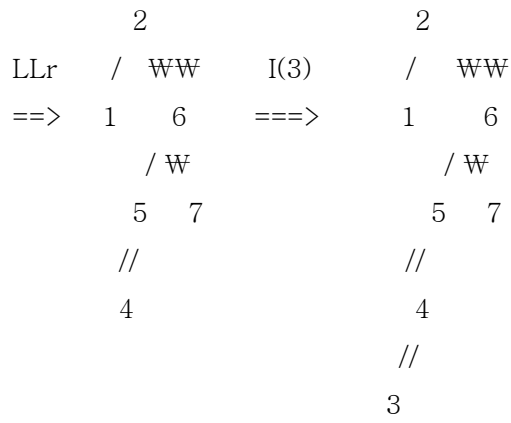
I(7) 2 RRr 2 I(6) 2

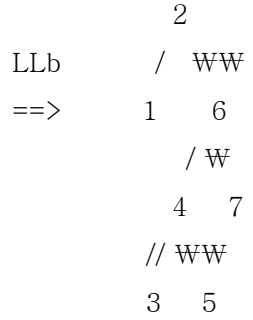
===> // WW ===> / W ===> / W

1 5 1 5 1 5

WW WW WW







(b) if red node is deleted, then no rebalancing needed

delete 14