Quiz 06 Review Session

COMP 210 / 2024 Summer Session I

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Quiz 06 Format

- 30 minutes at the start of class.
- *On paper* - bring a pencil!
- **Question Types:**
  - Multiple choice, T/F, select all that apply, fill in the blank, drawing trees

Exercise Check-In Question

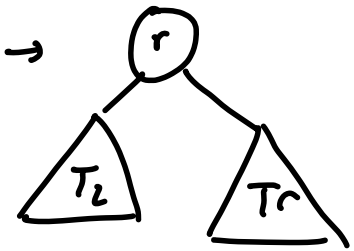
- Similar format to the exercise question on the last quiz.
- Review `Ex09`. + Ex10?
- *Questions?*

On Quiz 06

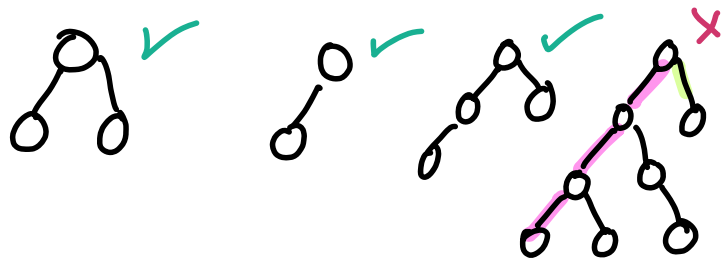
- AVL Trees (Self-Balancing BSTs)
  - → Invariants
  - → Runtime
  - → Inserting / Deleting (Rotations)

AVL Trees

- BST →



$\max(T_L) < r < \min(T_r)$



- $+ \left| \text{height}(T_L) - \text{height}(T_r) \right| \leq 1$

- + After insertion and deletion, the above rule still applies.

AVL Trees Time Complexity

Insert: O(logN)

Delete: O(logN)

contains: O(logN)

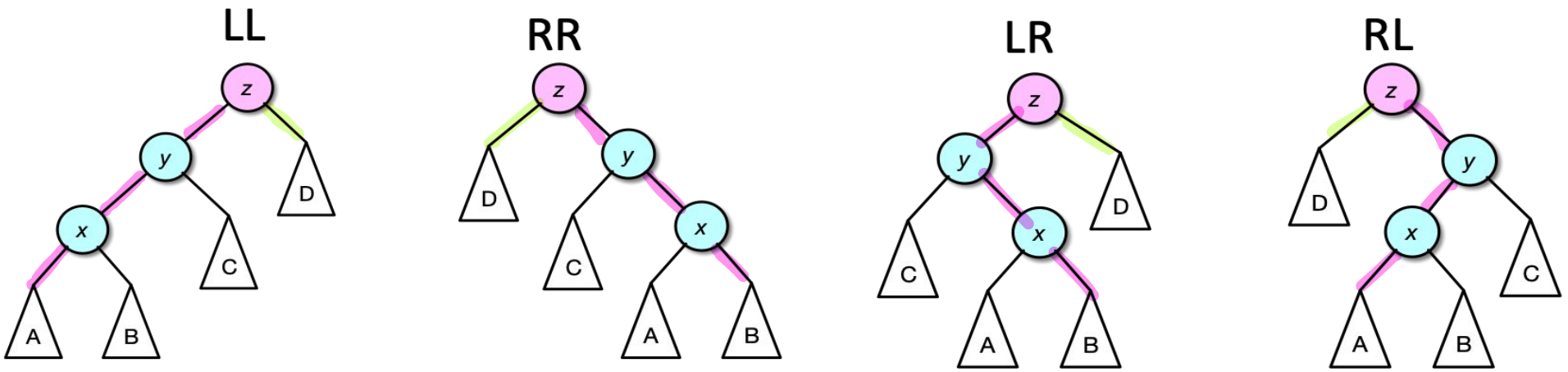
get root: O(1)

individual rotation: O(1) → But, inserting/deleting is O(logN) b/c of recursion

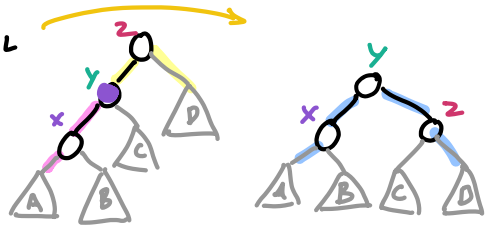
Very efficient!!

↳ most efficient tree * ↙ Covered in this class

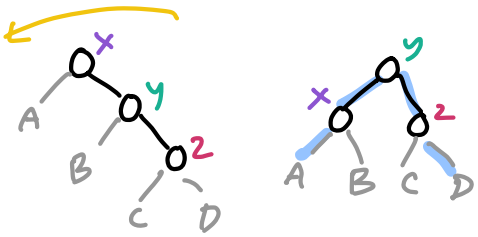
Rotations



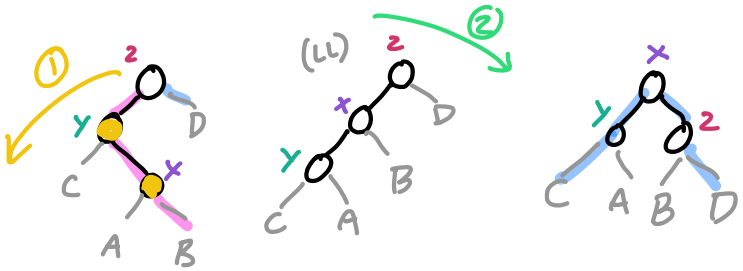
LL


z
y
x
A
B
C
D
y
x
z
A
B
C
D

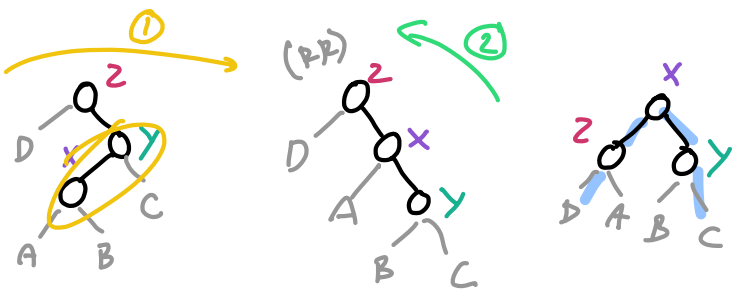
RR


x
A
y
B
z
C
D
y
x
z
A
B
C
D

LR

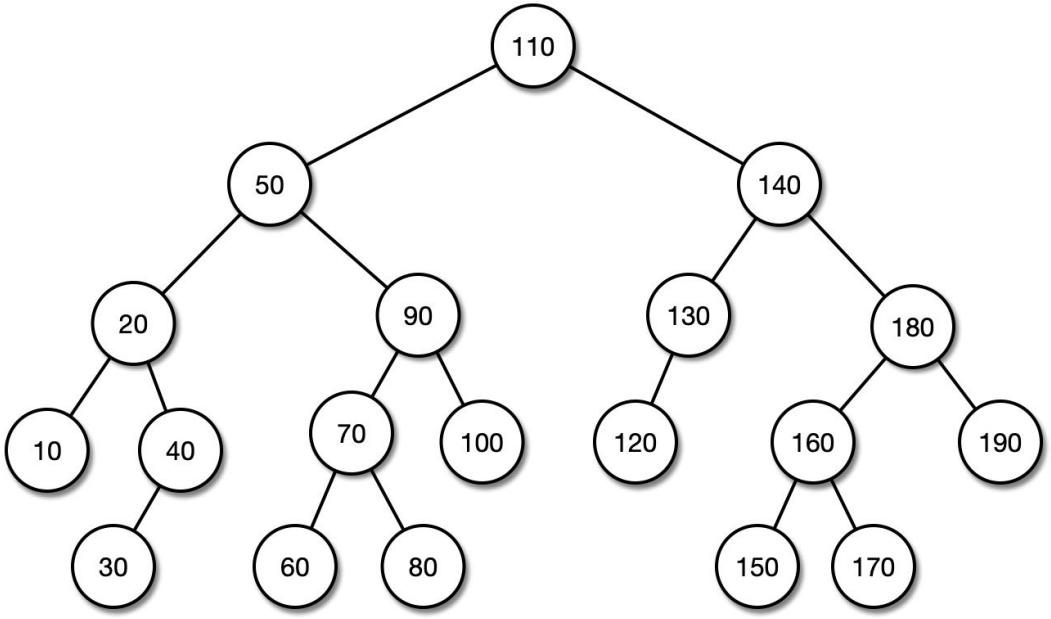

①
z
y
D
C
x
A
B
(LL)
z
x
D
y
B
C
A
②
x
y
z
C
A
B
D

RL

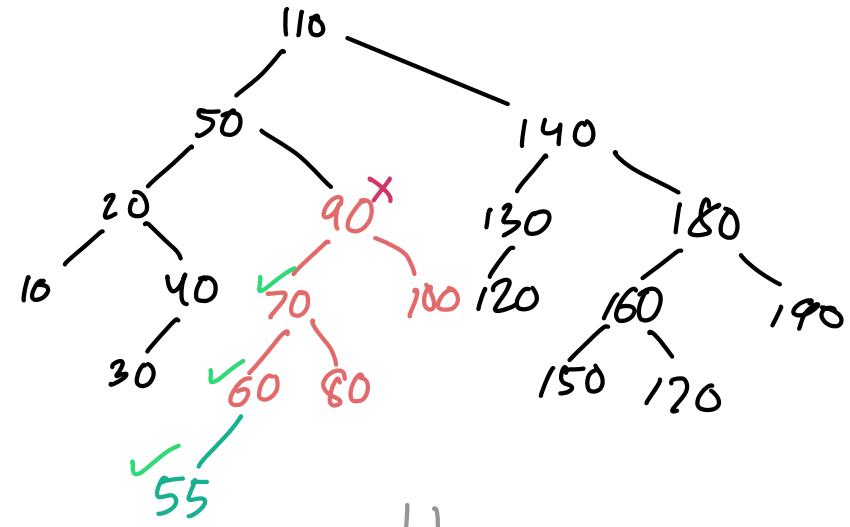

①
z
D
x
y
C
A
B
(RR)
z
D
x
A
y
B
C
②
x
z
y
D
A
B
C

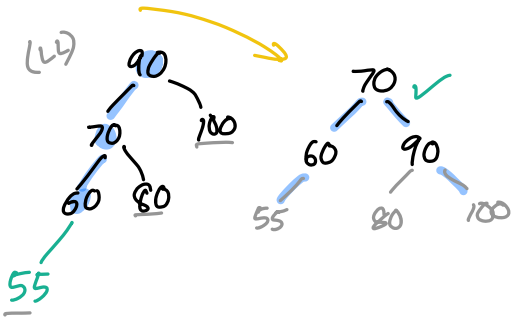
Examples

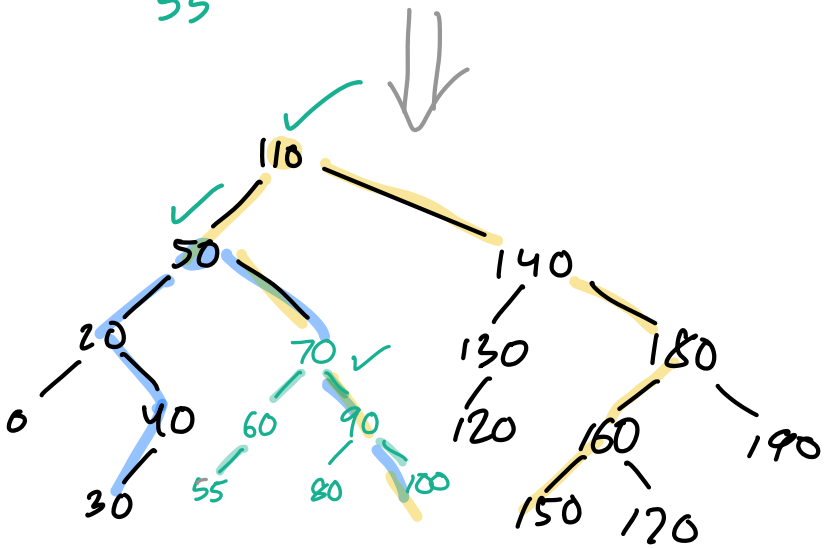
Add 55



Insert 55



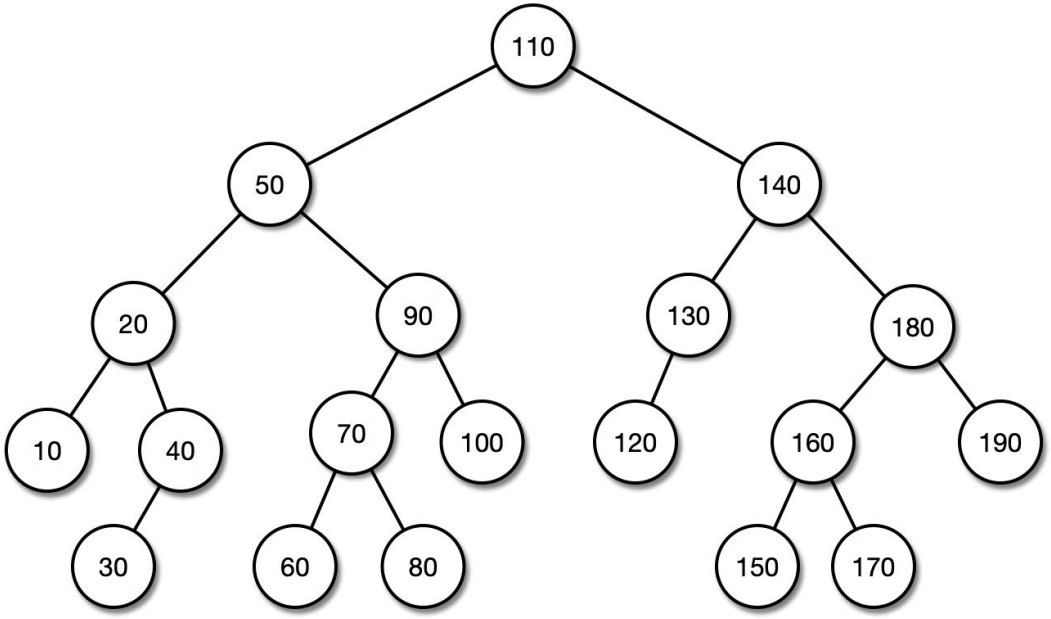




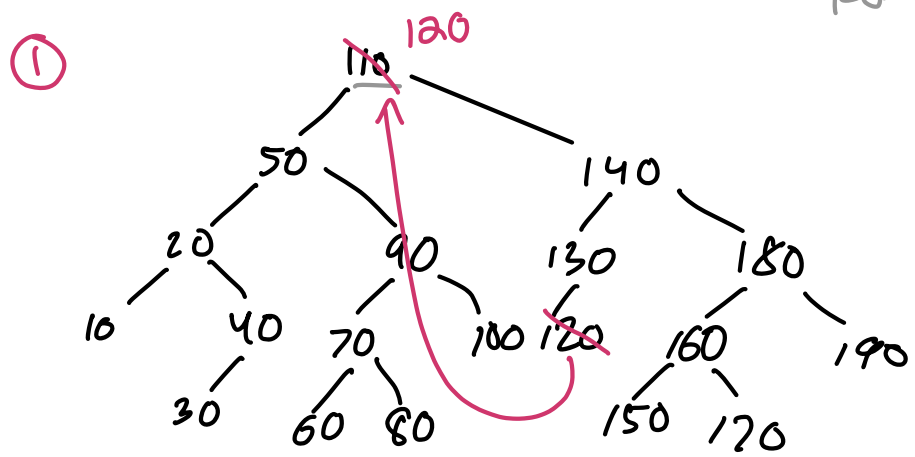
Correct

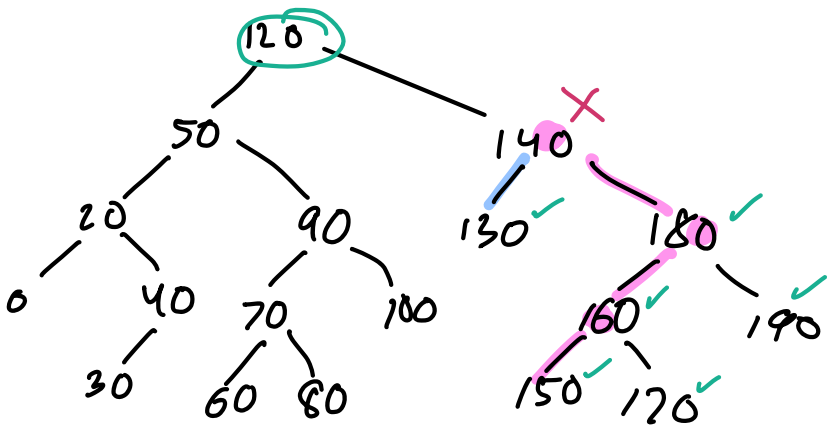
Examples

Remove 110

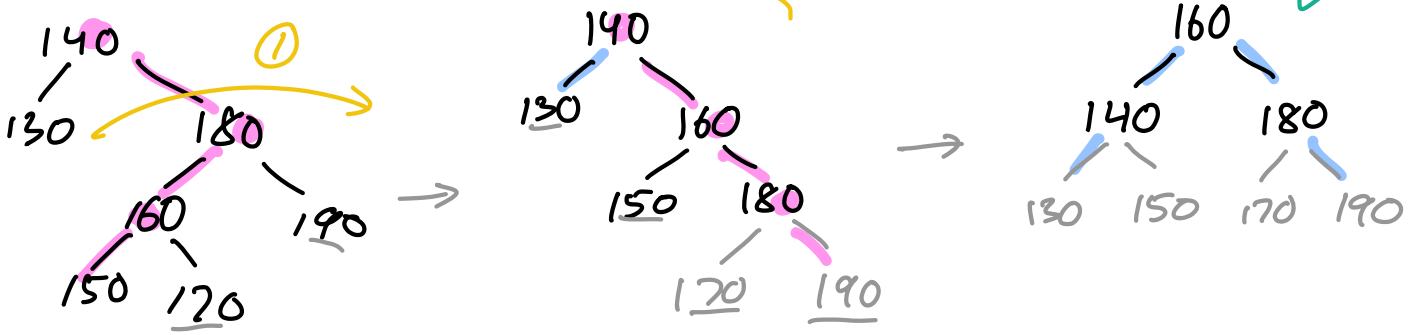


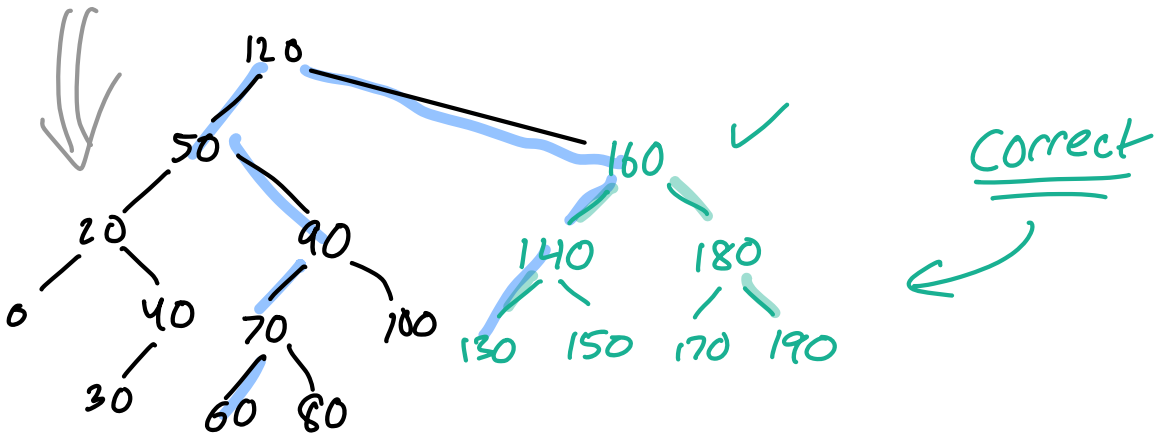
Remove 110





(RL) (RR)

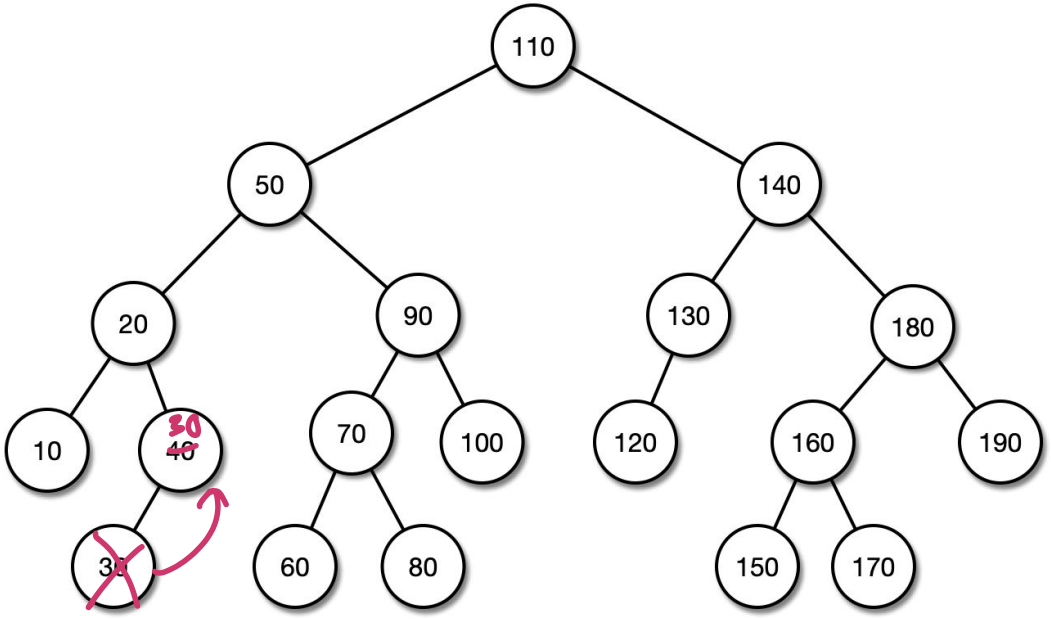


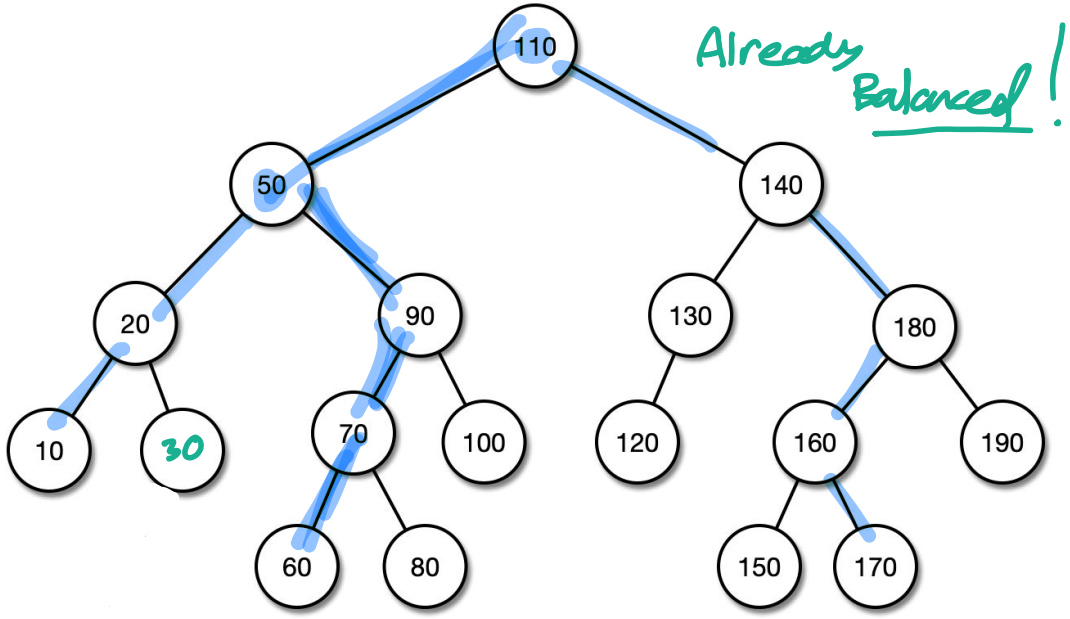


Correct

Examples

Remove 40



Examples

Remove 40