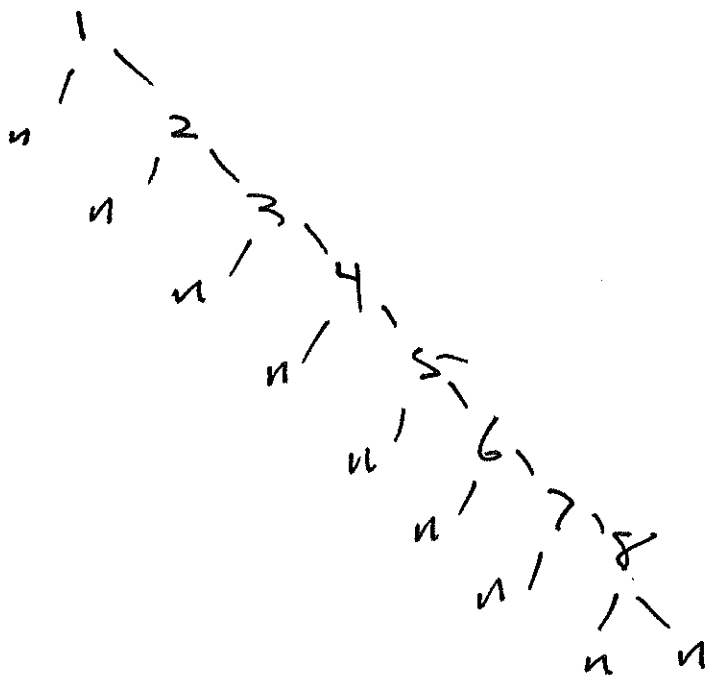


CSE 101-02 5-19-22

• Pat: ext. 1 day (Tue.)

Recall: insertion in a BST

Ex. Keys: 1 2 3 4 5 6 7 8



L2

Solution to 'linked list' problem

Red Black trees (RBT)

Goal: balance BST with certainty

convention: leaves in a RBT
are the nil children of key-
bearing nodes.

Chap 13

Defn

A RBT is a BST that also satisfies

BST Properties

1. each node is Red or Black
2. root is Black
3. each leaf (nil child) is Black
4. Every Red node has 2 Black children, i.e. never have 2 Reds in a row along a descending path.

5. for any node x , every descending path from x to a leaf (nil) has the same number of Black nodes

Defn

The Black height of x , denoted $bh(x)$, is the # of Black nodes in any descending path from x to a leaf (not counting x).

Ex.

