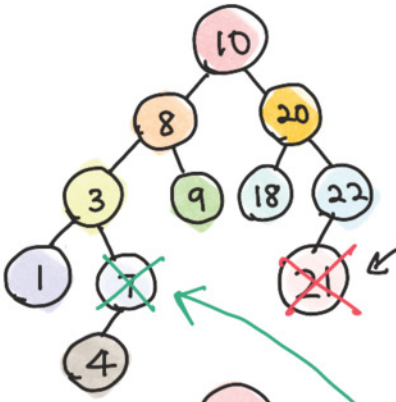
@girlie_mac

# Data Structures BST

Binary Search Tree!

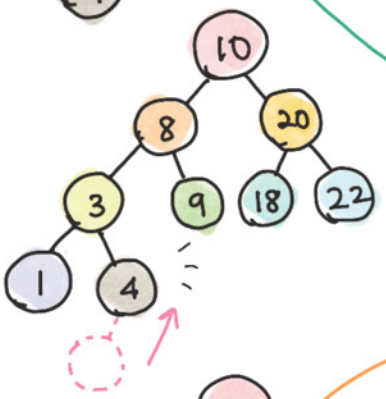
## Deletion

Case 1: the to-be-deleted node has no child
Case 2: the node has 1 child
Case 3: the node has 2 children



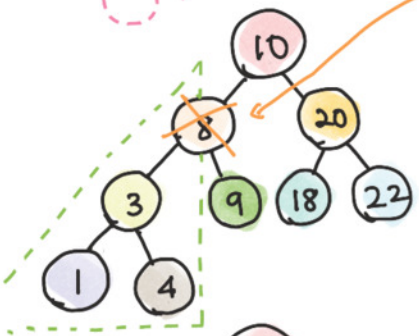

Let's remove (21) ← Case 1.
It has no child. So just remove it from the node. Done! Easy

peachy!




Now, let's delete (7) ← Case 2

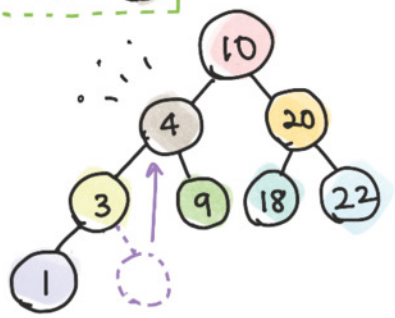
1. just remove it
2. then move the child, (4) to the spot!




Now, let's delete (8) ← Case 3!

1. Remove it from the spot
2. Then look for the largest node from the left subtree
3. The largest is (4)!
   move the node to the removed spot!
   (Alternatively, look for the smallest from the right subtree.)

Done!




(4) originally had no child. but if it has children?
→ Repeat the process!
↳ Find the largest from left subtree. Move it
↳ Find the largest from left subtree...

Recursive

Complexity:
Ave. O(log n)
Worst. O(n)