# Today - Lecture 18 - CS163

1) Review for the final exam

**Rules**

- closed book, closed notes
- 1 hr 50 mins
- bring picture ID

**When?**

- Inclass (section 001) - Tuesday March 20th
  10:15-12:05
- Online (section 002) - Thursday March 22nd
  5:30pm - 7:20 ASRC 001

  or

  Friday March 23rd
  12:00 Noon - 1:50 in ASRC 001

# Topics to Cover

1) comprehensive

2) This means: Stacks, queues, ordered lists

can you: dequeue or pop from a LLL or CLL ?

3) Primary Focus: "Value" oriented abstractions

TABLE ADTs

4) Hash Tables – using chaining for collision resolution

5) BST - code, efficiency, terminology

6) Balanced Trees: 2-3, 2-3-4, Red-Black, AVL

7) B-Trees

8) Heaps

Recursion

9) Graphs – using adjacency lists

10) General: Sorting algorithms (recursive vs iterative)

11) Efficiency (using Big O notation)

# Coding Focus

1) Add/Remove at the end of a LLL or DLL
2) Dequeue from a LLL or CLL
3) Pop from a LLL
4) Deallocate a hash table – can you do this using pointer arithmetic
5) Hash Tables – creation, traversal, insertion, deletion
6) BST – homework #3
   - make a copy (duplicate) of a BST
   - Display only nodes with 1 child
   - Count the number of nodes in a BST
   - FIND the inorder successor
   - Remove the largest item
   - Display the <u>two</u> largest items
7) Recursion ** critical!

# Practice

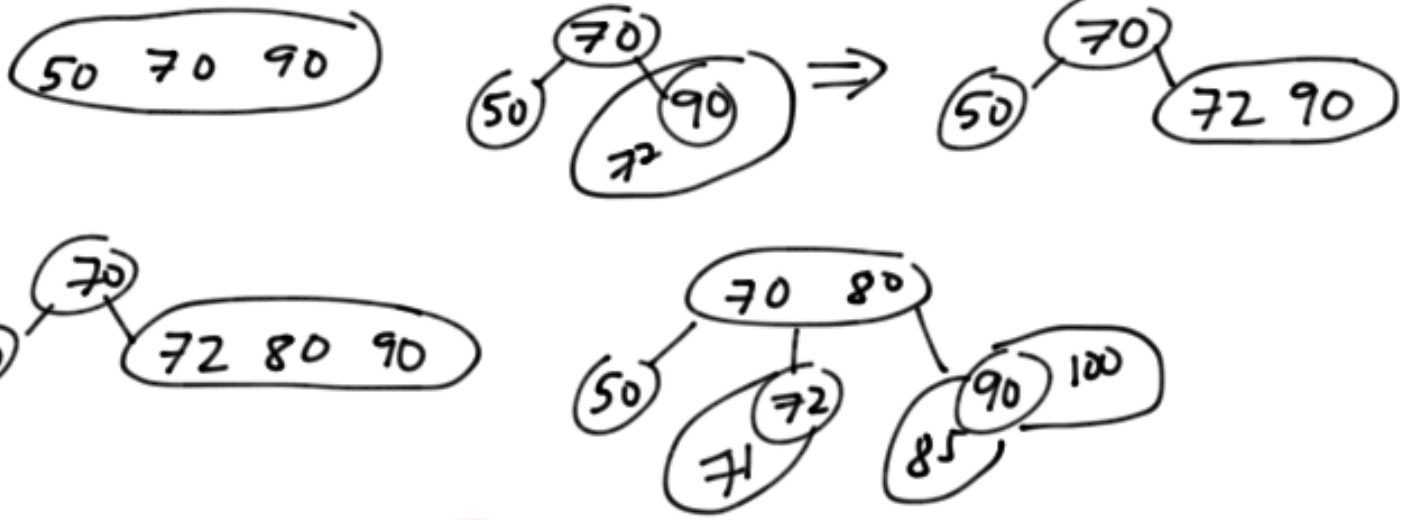
1) Recursion
2) Removal at the end
3) Trees: AVL, red-black, 2-3, 2-3-4

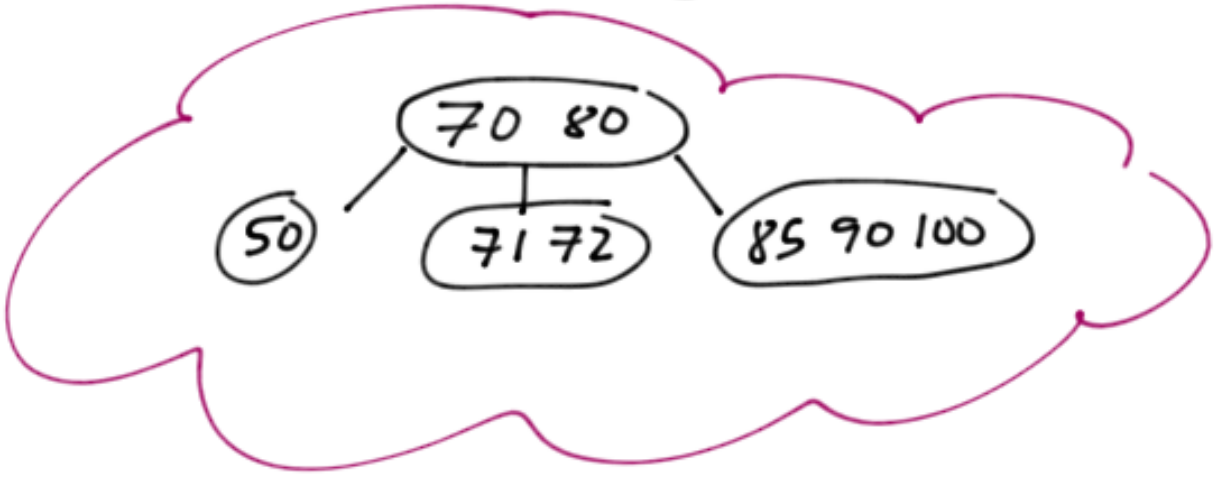
50 70 90 72 80 100 71 85

## AVL

50 70 90 72 80 100 71 85

2-3-4



50 70 90 72 80 100 71 85

# Red-Black Tree