COP3503 1/30/2024

Volunteer Opportunity - OMC 2/3/24
P2 solution, date posted
Office Hrs - will Δ (will post via WC)

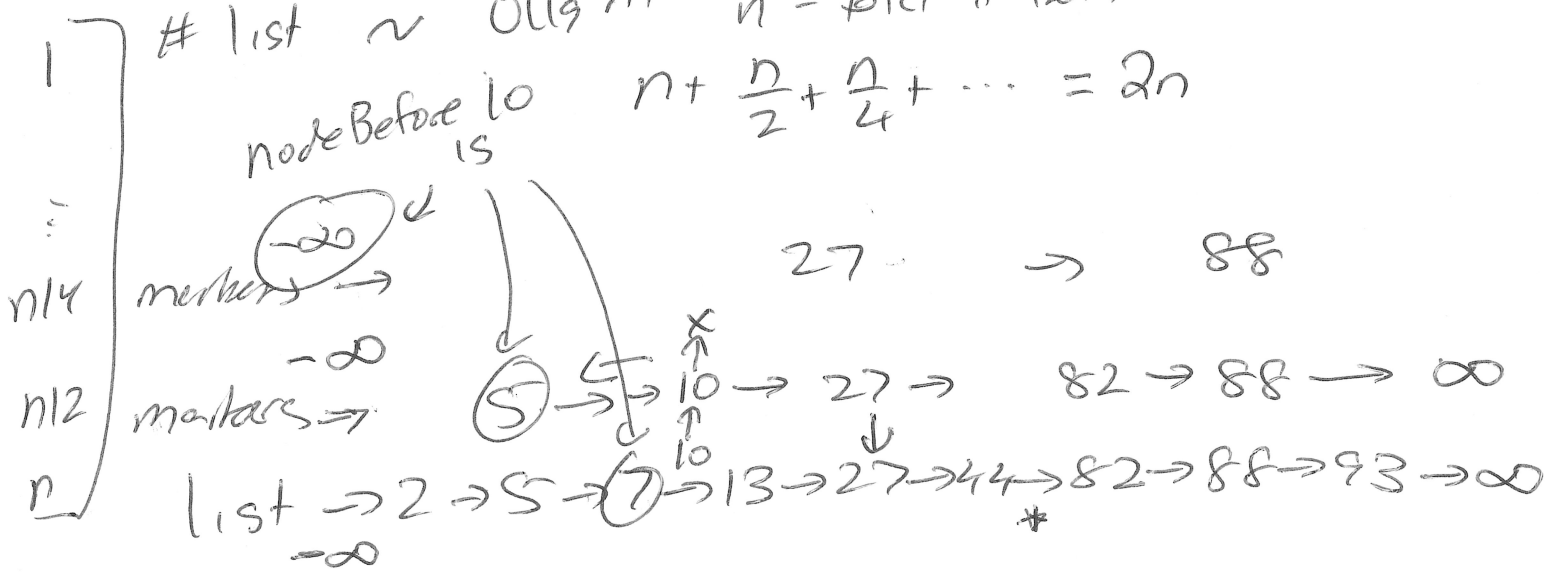
Skip List

list → 2 → 5 → 7 → 13 → 27 → 44 → 82 → 88 → 93

Inserting 55 → linear walk O(n) n = # item in list

list ~ O(lg n) n = total # item

$n + \frac{n}{2} + \frac{n}{4} + \cdots = 2n$

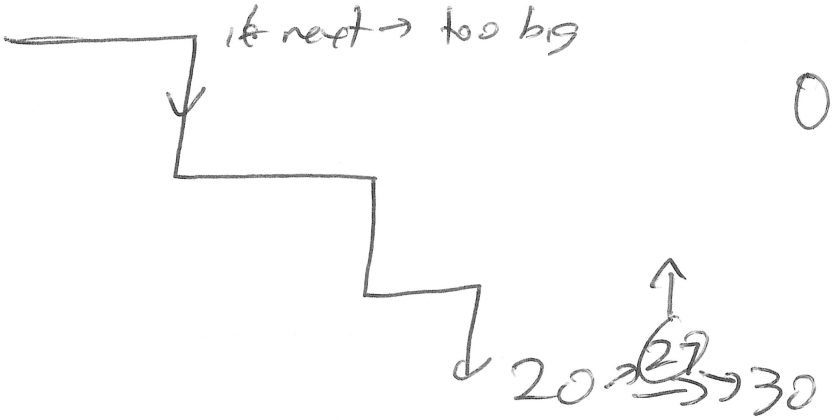


multiple "levels" of lists each list above previous list will have about 1/2 many items as the list below

probability + randomness

How to maintain

To insert
crawl down the lists



O(lg n) time climbing

loop { w/prob 1/2 gen pseudorandom real, x, if x ? .5 duplicate the term above

if you ever pop up to a level by yourself, stop

delete crawl down same way

HAVE TO delete every copy of a value

lg n level
expect amortized avg of about 2 moves per level

Rest of the class I explained the code + then modified it to do the following

(a) Print # items on each level

(b) Change the probability of moving an item up. Tried $\frac{1}{4}$ and $\frac{4}{11}$...