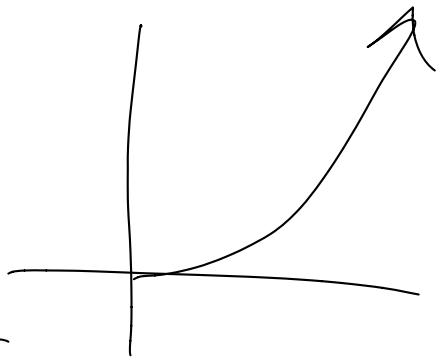
Mergesort

Sorting Algs

- Bubble sort
- Insertion sort
- Selection sort

} $O(n^2)$ (avg/worst case)



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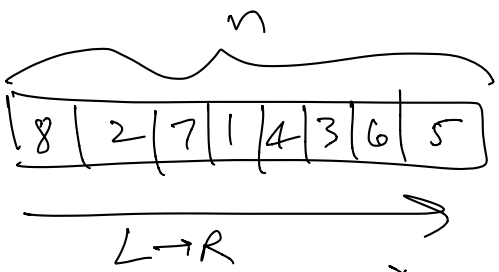
a different idea (Treesort)

inorder traversal of a BST → ~~or~~ sorted list of items



inserted each item into a BST

Avg case

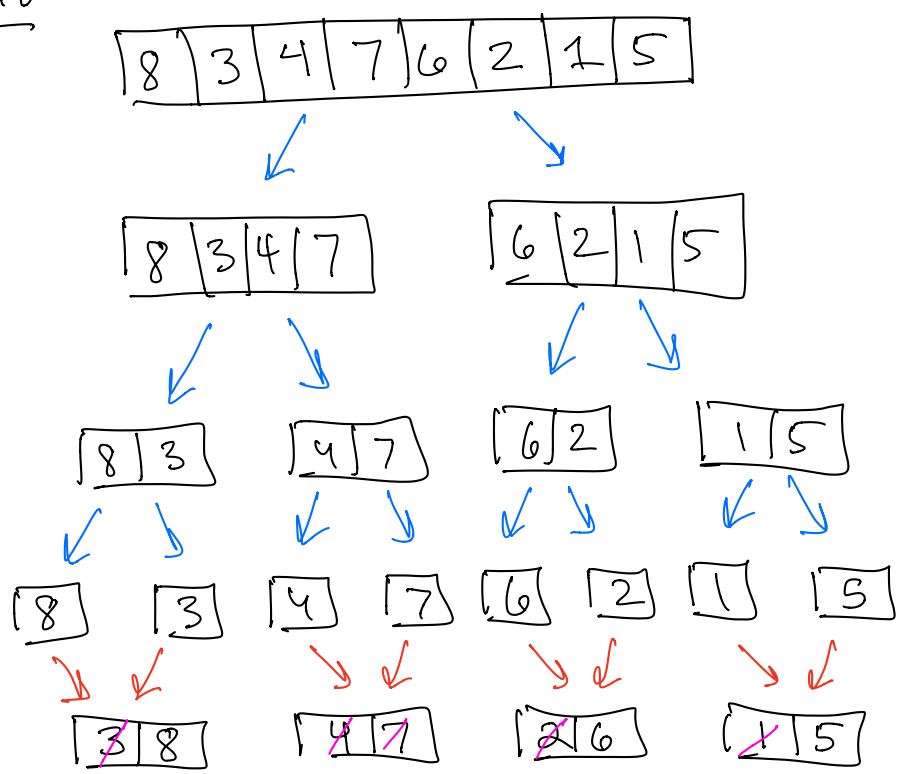
worst case

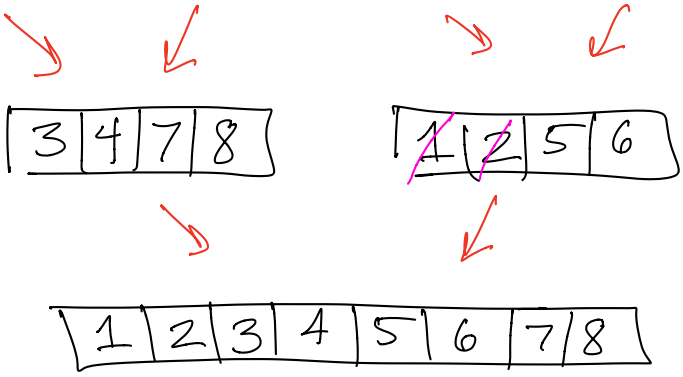
→ Big-oh inserting 1 item → $O(\log n)$ — $O(n)$

" " n items → $O(n \log n)$ — $O(n^2)$

Mergesort

1. Split the array in half
2. Recursively call mergesort on each half.
3. merge the sorted halves back together.





The height of this "splitting" tree is logarithmic in the size of the original array.

The merge operation takes $O(n)$ time.

$\rightarrow$ $O(n \log n)$ algorithm