Class 08

Friday, January 29, 2021 9:44 PM

* N = size of set

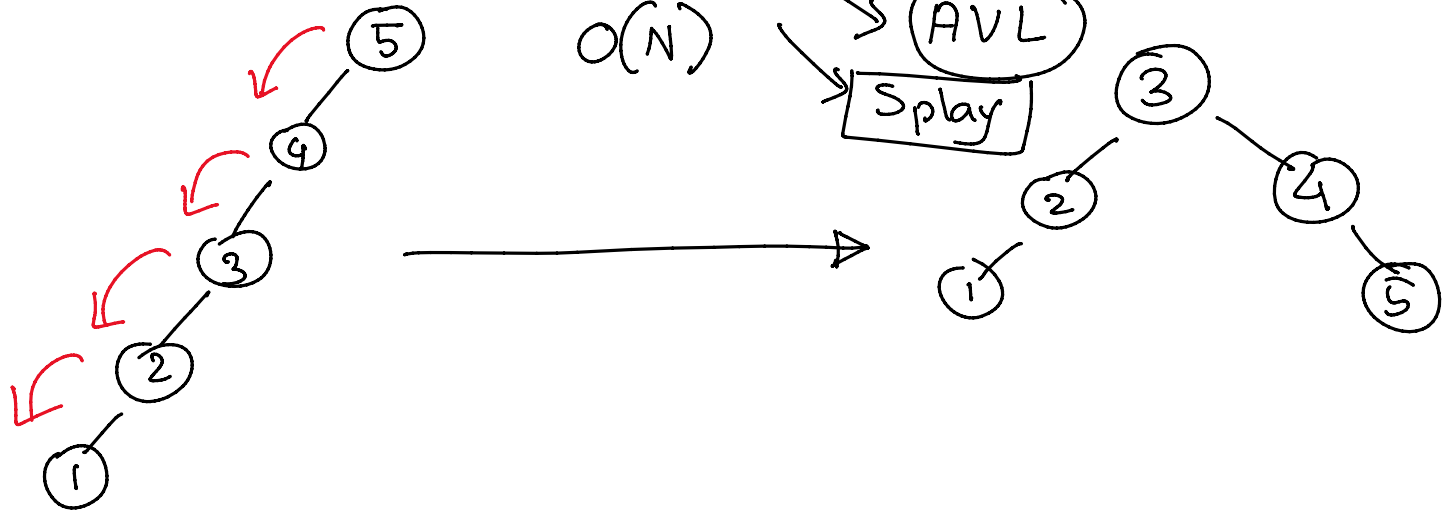
	set	unordered_set
insert	O(logN)	O(1) [avg], O(N) [worst case]
deletion	O(logN)	O(1) [avg], O(N) [worst case]
search	O(logN)	O(1) [avg], O(N) [worst case]

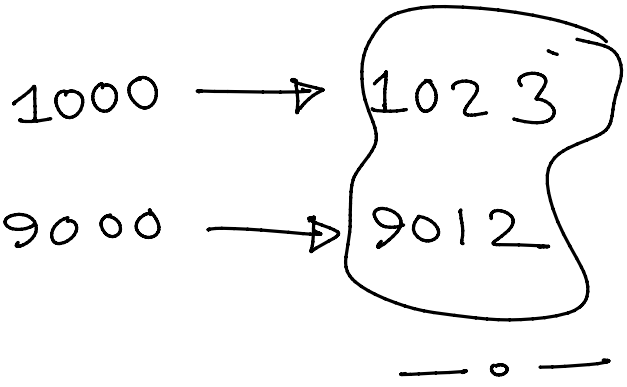
Self balancing BST → RBT (Red Black Tree)

→ Treap (BST + Heap)

O(N) → AVL

→ Splay





1) odd / even

n % 2 → 0 (even)

→ 1 (odd)

$n \% 2 \rightarrow 1$ (odd)

$195\,1 \% 10 = 1$

$238\,4 \% 10 = 4$

$n \% 10$

— o —

$n = 5 \longrightarrow 101 \% 0$

& $1 \longrightarrow \ldots 001$

$\ldots 00001$

000000

$n \,\&\, 1 \rightarrow 0$ (even)

$n \,\&\, 1 \rightarrow 1$ (odd)

2

$100 \rightarrow$ NO

$32 \rightarrow$ YES

$40 \rightarrow$ NO

$0 \rightarrow$ NO

$1 \rightarrow$ YES

$5 \rightarrow$ NO

$0 \leq N \leq 10^{18}$

$32 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n \,\&\, (n-1) \rightarrow 0$ (YES)

$n \,\&\, (n-1) \rightarrow$ otherwise (NO)

$100000 \rightarrow 32$

& 011111 → 31

000000

10000
01111

10000
07777

(n) & (n-1) → 0 (2^n)

↳ (NO)

— o —

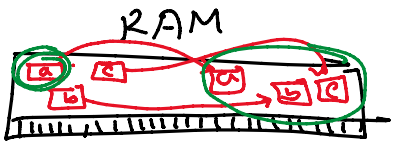
n → binary form - ↳ k^{th} bit 1/0?

k = 2

1001010

6 5 4 3 2 1 0

— o —



getSA(a, b, c)