Data Structures

Balanced Search Trees: Supported Operations

Sorted Arrays: Supported Operations

| 3 | 6 | 10 | 11 | 17 | 23 | 30 | 36 |

BUT WHAT ABOUT INSERTIONS + DELETIONS ? (would take $\theta(n)$ time)
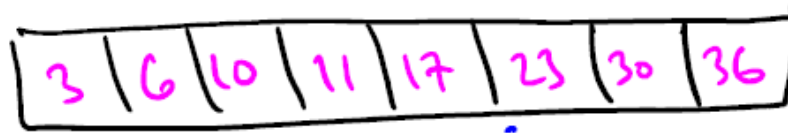
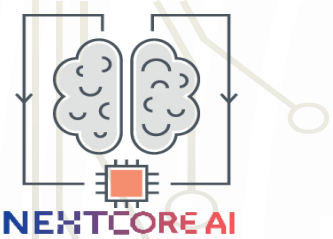| OPERATIONS	RUNNING TIME
SEARCH	$\theta(\log(n))$
SELECT (given order statistic I)	$O(1)$
MIN/MAX	$O(1)$
PRED/SUCC (given pointer to a key)	$O(1)$
RANK (i.e., # of keys less than or equal to a given value)	$O(\log(n))$
OUTPUT IN SORTED ORDER	$O(n)$

Balanced Search Trees: Supported Operations

Raison d'etre : like sorted array + fast (logarithmic) inserts + deletes !

OPERATIONS	RUNNING TIME
SEARCH	$\theta(\log(n))$
SELECT	$O(\log(n))$
MIN/MAX	$O(\log(n))$
PRED/SUCC	$O(\log(n))$
RANK	$O(\log(n))$
OUTPUT IN SORTED ORDER	$O(n)$
INSERT	$O(\log(n))$
DELETE	$O(\log(n))$

Also supported by hash tables

Also supported by heaps

Up from O(1)

new