

CSSE 230, Winter 2023/24, Comparative Evaluation of Key Data-structures

Category	BST	AVL	TDRB	AA
Worst-case insert/remove	N	log(N)	log(N)	log(N)
Best-case insert/remove	1	log(N)	log(N)	log(N)
Average-case insert/remove	TBA	log(N)	log(N)	log(N)
Lopsidedness ¹⁾	N:1	2:1	2:1	2:1
Height of 2 Mio	419	24	26	30
Potential ³⁾ of 2 Mio	29	20.38	20.45	20.83
# rotations: insert	N/A	1	(h+1)/4	h*2
# rotations: remove	N/A	h/2	h	h
Avg. # rotations on insert	N/A	468,588	395,276	1,717,177
Avg. # rotations on remove	N/A	270,038	2,951,428	1,056,313
Inserting 1 Mio Into 1 Mio	763	807	655	780
Removing 1 Mio in 2 Mio	912	911	930	1064
Finding 1 Mio in 2 Mio	733	605	538	540
Finding 2 Mio in 2 Mio w/ Hashtable	218	221	226	224
Iterator ⁴⁾	769	866	873	851

¹ Largest ratio of longest path length to a null node to shortest path length to a null node.

² Creating an iterator 1 Mio times in 2 Mio tree, returning first 5-100 elements, number of elements determined at random.

³ Average number of nodes visited from root to any of the nodes.

⁴ Creating an iterator 1 Mio times in a 2 Mio tree returning first 5-100 elements. Number of elements determined at random.

NOTICE: All data was generated with all apps closed, except for Eclipse.