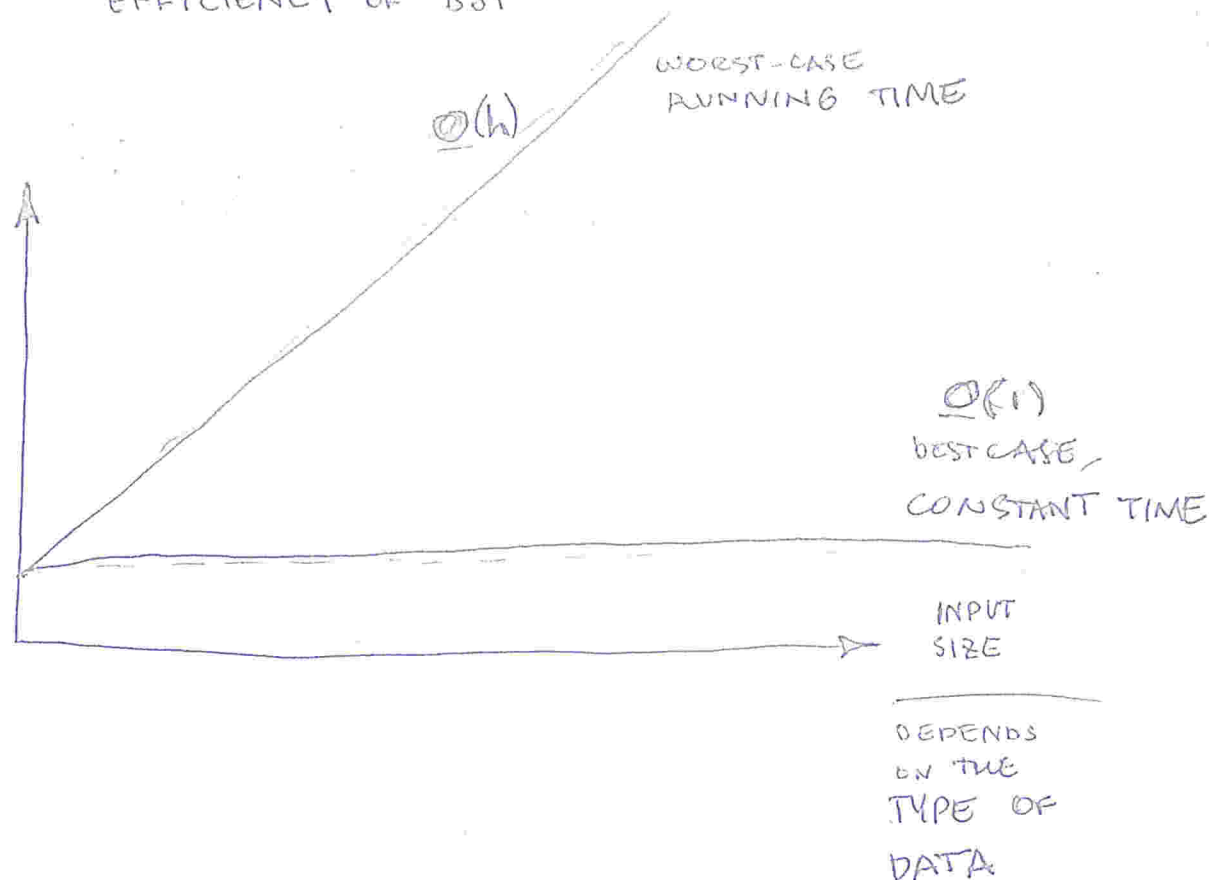


EFFICIENCY of BST

RUNTIME
(# STEPS)

COMPARE BST TO LISTS

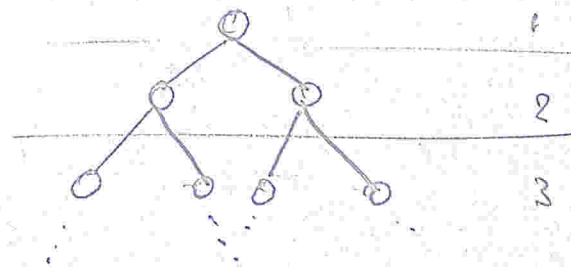
CONSIDER THE FOLLOWING METHODS:

| | SORTED LISTS | BSTs |
|----------|--------------|---------------------------|
| • INSERT | $O(n)$ | $O(h) \approx O(\log(n))$ |
| • DELETE | $O(n)$ | $O(h) \approx O(\log(n))$ |

IF BST
IS COMPLETE.NOTICE THAT n AND h ARE
DIFFERENT MEASURES OF INPUT SIZE.

HOW DO WE MAKE THE COMPARISON FAIR?

TALLEST BST OF 5 ELEMENTS

SHORTEST BST OF HEIGHT h NOTE: THERE EXISTS A
SMARTER ALGORITHM
FOR INSERTION/
DELETION

$$n = 2^h - 1$$

$$h = \lg(n+1)$$