

Sorted Array To Balanced BST

$[1, 2, 3, 4, 5, 6, 7, 8, 9]$
 $mid = \frac{0+8}{2} = 4$
 $Root = arr[mid]$

$s > e ?$
 \times
 return: $(arr, s, mid-1)$ (left) $(arr, mid+1, e)$ (right)
 Recursion Recursion

* Vectors \rightarrow Important Interview Questions

- 1) What is the difference between the push-back() & the emplace-back() function in C++ STL:: vectors?
- 2) Find the common elements in three given vectors a, b, c in STL using built-in functions
 $a = \{1, 2, 3, 4\}$
 $b = \{2, 4, 5, 6\}$
 $c = \{4, 5, 6, 7\}$
 \therefore common $\{4\}$

* Intersection of two sets.

set 1 = $\{1, 2, 3, 4, 5\}$
 set 2 = $\{3, 4, 5, 6, 7\}$

O/p set 3 = $\{3, 4, 5\}$

$S1 \cap S2 \Rightarrow$
 $S1 \cup S2$

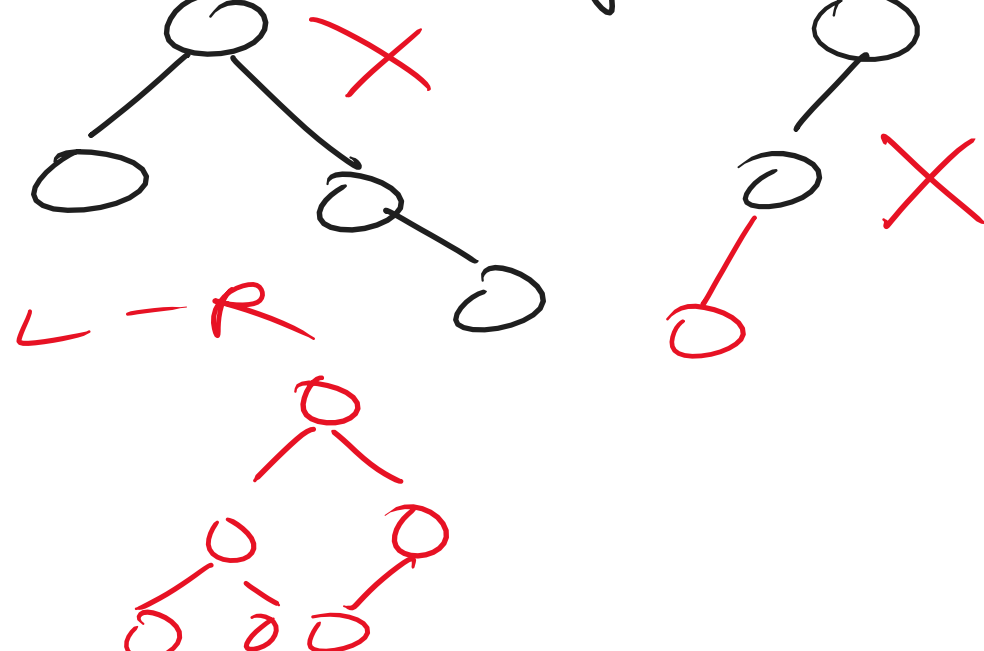
Search for data \rightarrow

Array \rightarrow Linear Search $O(n)$
 Binary Search $\log(n)$
 BST \rightarrow $\log(n)$

(Give me the smallest largest value in an array in constant time. $O(1)$)

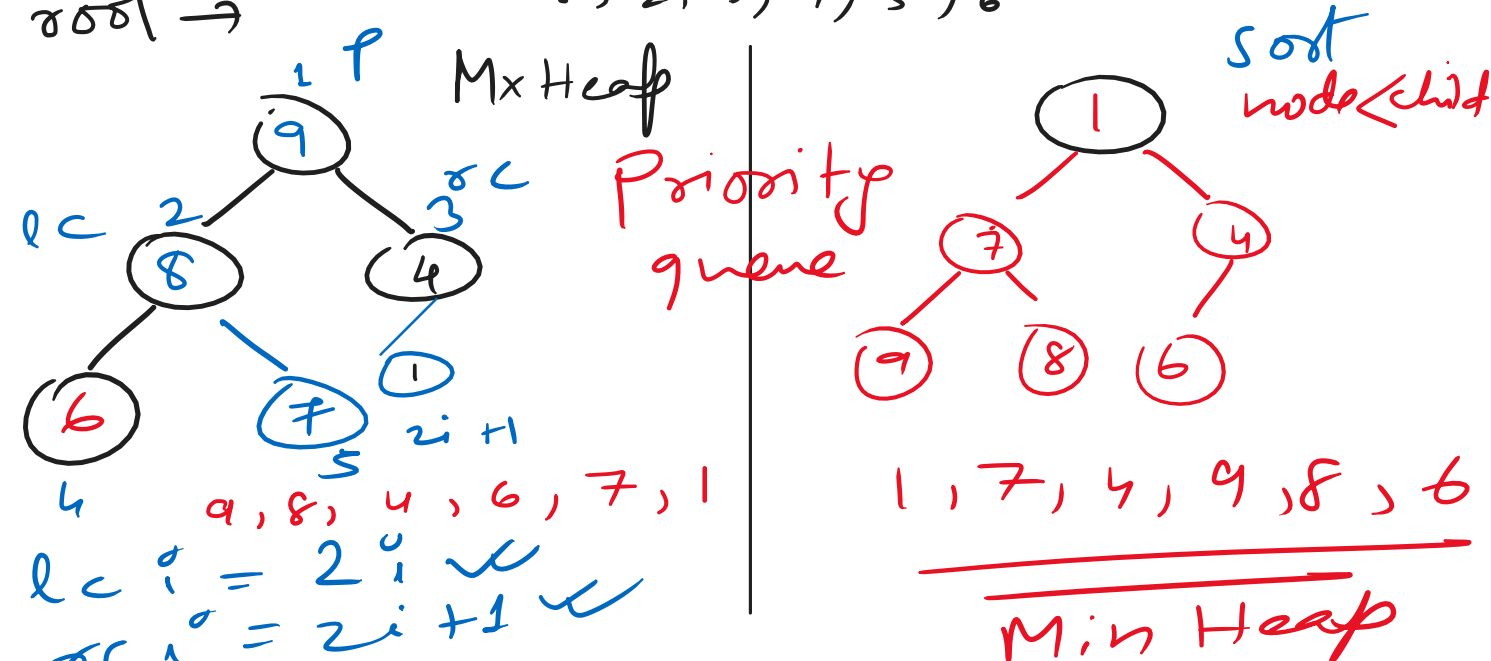
* Heap \rightarrow Max Heap
 Min Heap

Complete Binary Tree: ?



Max Heap $[0]$ CBT Min Heap

node > child are $[8, 6, 1, 9, 7, 4]$
 root \rightarrow 1, 2, 3, 4, 5, 6



* Create a STL minheap using priority-queue but without using the "greater<int> comparator" and using your own custom comparator.

* 50% Coding Questions \Rightarrow Binary Search

* 20% Coding Questions \Rightarrow Recursion

* 10% Coding Questions \Rightarrow Trees

* 10% Coding Questions \Rightarrow Graphs

* 10% Coding Questions \Rightarrow Arrays

{ Arrays, Strings, Dynamic Programming, Greedy Algos, Bit Masking }

Binary-Search Interview Questions:

- (i) Square Root of a number using BS
- (ii) First, Last, Total occurrence of number in Array
- (iii) Peak In A Mountain
- (iv) Book Allocation
- (v) Aggressive Cows
- (vi) Search Element In a 2D Matrix

Square Root using Binary Search

$n = 36$?
 $Sq(\sqrt{n})$
 $n = 36$
 $\sqrt{36} = 6$
 $11/2 = 5$
 $3 \times 3 = 9$
 $12/2 = 6$
 $ans = mid$
 $return mid$