

1. Convert the infix expression to Postfix expression using Stack. Explain in details (3marks). $11 + 2 - 1 * 3 / 3 + 2^2 / 3$

infix	Stack	Post
11		11
+	+	11
2		11 2
-	-	11 2 +
1		11 2 + 1
*	- *	11 2 + 1 3
3		11 2 + 1 3 *
/	- /	11 2 + 1 3 * 3
3		11 2 + 1 3 * 3 / -
+	+	11 2 + 1 3 * 3 / - 2
2		11 2 + 1 3 * 3 / - 2 2
^	+ ^	11 2 + 1 3 * 3 / - 2 2 ^ 3
2		11 2 + 1 3 * 3 / - 2 2 ^ 3 / +
/	+ /	
3		

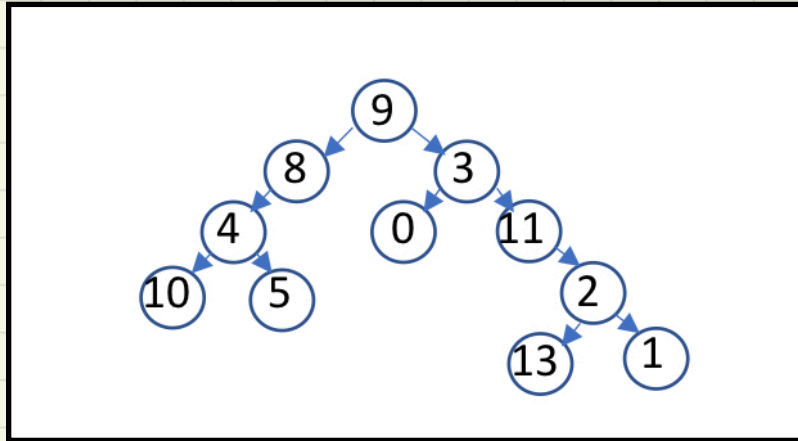
✓ 11 2 + 1 3 * 3 / - 2 2 ^ 3 / +

2. Find the big notation of the following function? (1 marks)

$$f(n) = 4n^7 - 2n^3 + n^2 - 3.$$

$$O(n^7)$$

3. Using an in-order traversal, what are the orders of the nodes in the following Tree (2marks).



in-order traversal: 10 4 5 8 9 0 3 11 13 2 1

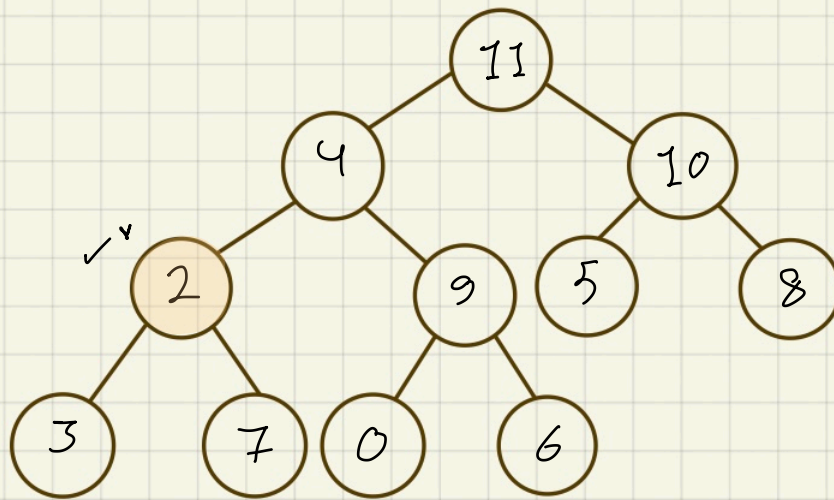
4. What are the differences between linear search and binary search? (1 mark)

linear search the array can be any order and search in first index.

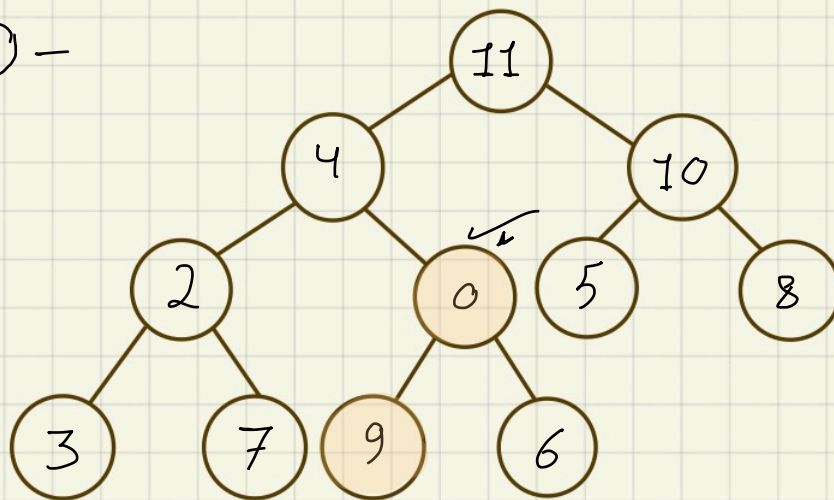
Binary search must be the array is order and the search start in middle.

5. Build a heap from the following array- draw each step (3 marks)

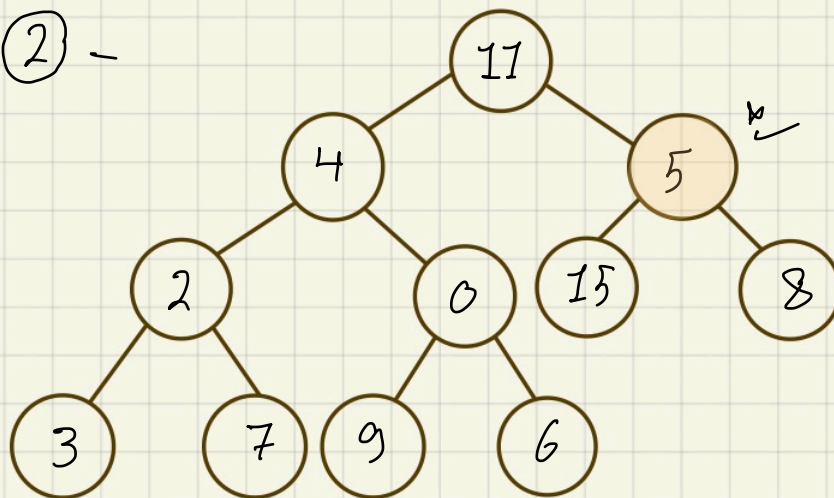
11	4	10	2	9	5	8	3	7	0	6
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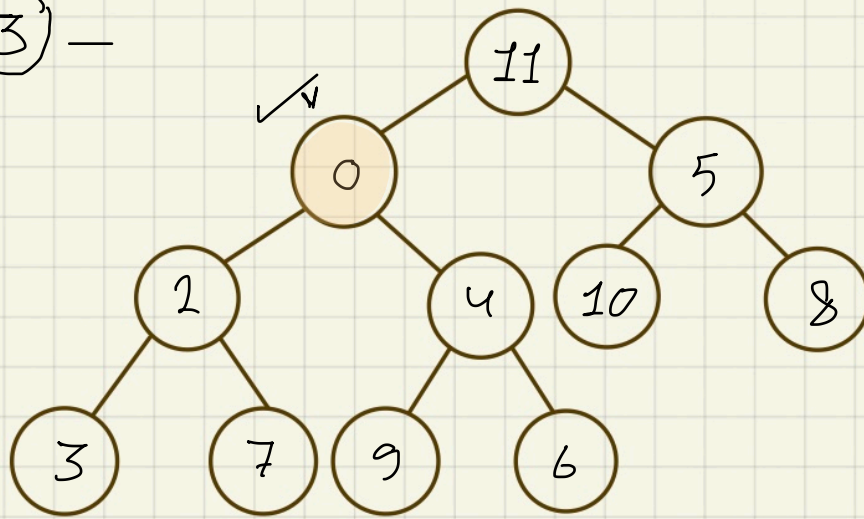
① -



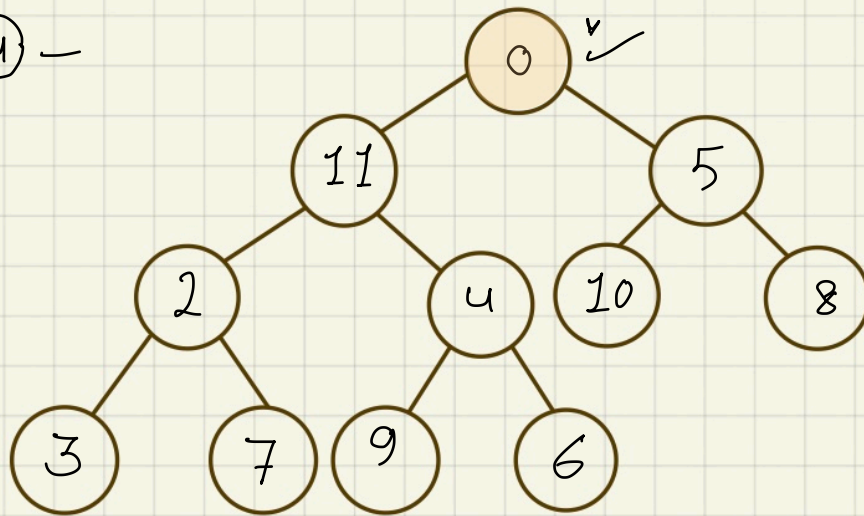
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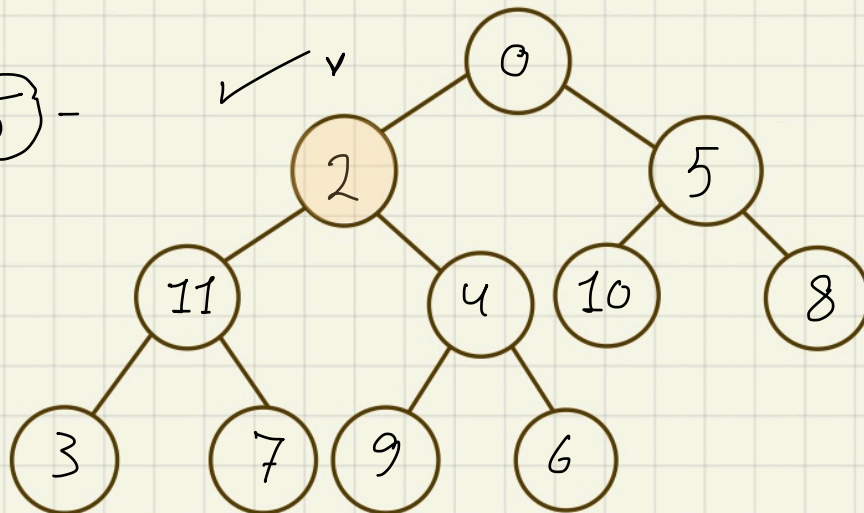
③ -



④ -



⑤ -



⑥ -

✓
it's a heap ←

