Data Structure Operations:

	Time Complexity							
	Average				Worst			
	Access	Search	Insertion	Deletion	A	S	I	D
Array	0(1)	0(n)	0(n)	0(n)				
Stack	0(n)	0(n)	0(1)	0(1)				
Queue	0(n)	0(n)	0(1)	0(1)				
Singly-Linked List	0(n)	0(n)	0(1)	0(1)				
Doubly-Linked List	0(n)	0(n)	0(1)	0(1)				
Hash Table	N/A	0(1)	0(1)	0(1)	0(n)	0(n)	0(n)	0(n)
Binary Search Tree	0(log(n))	0(log(n))	0(log(n))	0(log(n))	0(n)	0(n)	0(n)	0(n)
Cartesian Tree	N/A	0(log(n))	0(log(n))	0(log(n))	N/A	0(n)	0(n)	0(n)

Array Sorting Algorithms

Algorithm	Time Complexity			Space Complexity
	Best	Average	Worst	Worst
QuickSort	0(n log(n))	0(n log(n))	0(n^2)	0(log(n))
MergeSort	0(n log(n))	0(n log(n))	0(n log(n))	0(n)
TimeSort	0(n)	0(n log(n))	0(n log(n))	0(n)
HeapSort	0(n log(n))	0(n log(n))	0(n log(n))	0(1)
BubbleSort	0(n)	0(n^2)	0(n^2)	0(1)
InsertionSort	0(n)	0(n^2)	0(n^2)	0(1)
SelectionSort	0(n^2)	0(n^2)	0(n^2)	0(1)
TreeSort	0(n log(n))	0(n log(n))	0(n^2)	0(n)
BucketSort	0(n+k)	0(n+k)	0(n^2)	0(n)
RadixSort	0(nk)	0(nk)	0(nk)	0(n+k)

Quicksort:

If the array contains only one element or zero elements then the array is sorted.

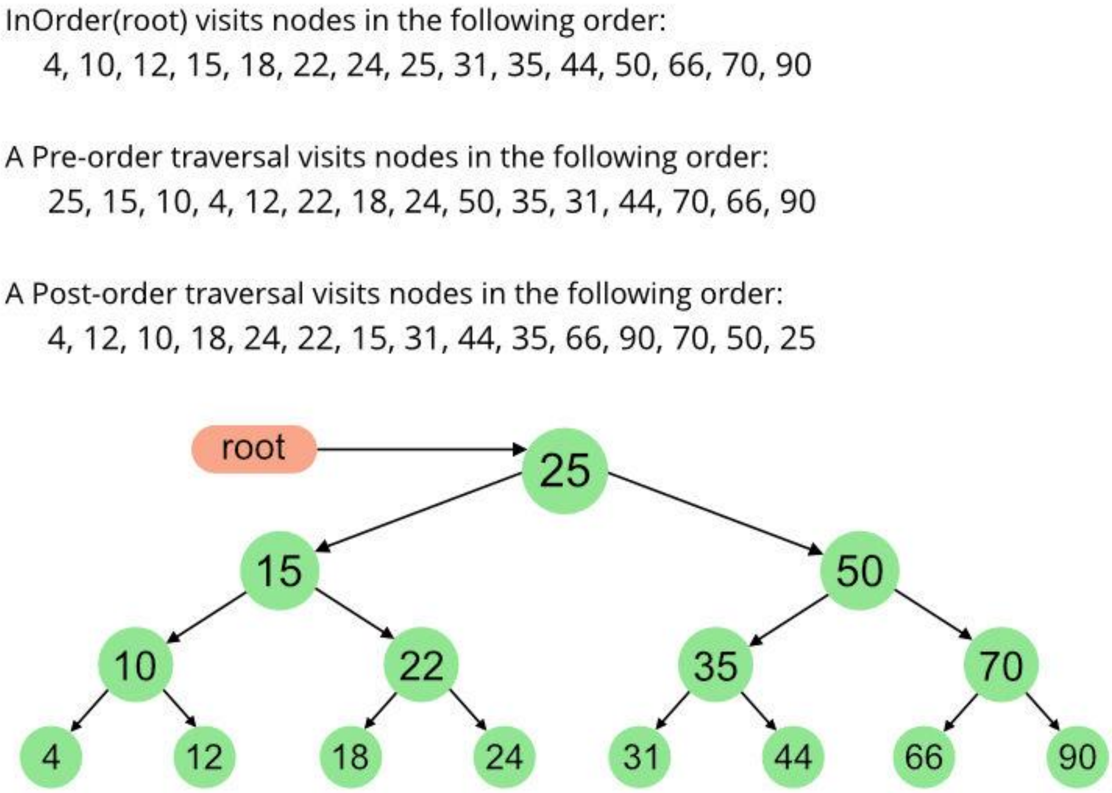
If the array contains more than one element then:

- Select an element from the array. This element is called the "pivot element". For example select the element in the middle of the array.

- All elements which are smaller than the pivot element are placed in one array and all elements which are larger are placed in another array.
- Sort both arrays by recursively applying Quicksort to them.
- Combine the arrays.

Quicksort can be implemented to sort "in-place". This means that the sorting takes place in the array and that no additional array needs to be created.

Postfix expression: if you see a number, push the number to a stack. If you see an operator, pop two numbers off the stack and push the result of the operation



InOrder(root) visits nodes in the following order:
4, 10, 12, 15, 18, 22, 24, 25, 31, 35, 44, 50, 66, 70, 90

A Pre-order traversal visits nodes in the following order:
25, 15, 10, 4, 12, 22, 18, 24, 50, 35, 31, 44, 70, 66, 90

A Post-order traversal visits nodes in the following order:
4, 12, 10, 18, 24, 22, 15, 31, 44, 35, 66, 90, 70, 50, 25

Full binary tree means that each node has either 2 children or no children

Complete tree every level is full except the last level. Every node has 2 children at every level.
last node can have 1 child but has to be placed at the leftmost of the last level.

Balanced binary tree a binary tree in which the height of the left and right subtree of any node differs by not more than 1

8-10 questions similar to 10 question review (20%)
then programming question like exams (methods) (80%)