

# Quora Rec

## Related **How can I learn algorithms and data structures from scratch?**

**Day  $-\infty$  to 0:** Stick to a programming language like C or C++. Make sure that you are comfortable with pointers/objects.

**Day 1:** Understand the concept of **Algorithmic complexity** [↗](#). Skip the theory for now, but for every piece of code you write, you should be able to derive both time and space complexity.

**Day 2 - 10:** Let's start with some simple data structures,

1. *Arrays*
2. *Linked Lists*
3. *Strings*
4. *Stacks*
5. *Queues*

Understand their basic operations (*insert, delete, search, traversal*) and their complexity - [Big-O Algorithm Complexity Cheat Sheet](#) [↗](#), and code them all.

**Day 11 - 25:** Let's now learn some simple algorithms,

1. *Sorting* - [Insertion sort](#) [↗](#), [Merge sort](#) [↗](#), [Quick sort](#) [↗](#), [Heap sort](#) [↗](#), [Bucket sort](#) [↗](#), [Counting sort](#) [↗](#), [Radix sort](#) [↗](#), [External sorting](#) [↗](#)
2. *Search* - [Linear search](#) [↗](#), [Binary Search](#) [↗](#) (along with its variants).
3. *Prime Numbers* - [Sieve of Eratosthenes](#) [↗](#), [Primality test](#) [↗](#)
4. *Strings* - [String searching](#) [↗](#), [LCS](#) [↗](#), [Palindrome detection](#) [↗](#)
5. *Miscellaneous* - [Euclidean algorithm](#) [↗](#), [Matrix multiplication](#) [↗](#), [Fibonacci Numbers](#) [↗](#), [Pascal's Triangle](#) [↗](#), [Max Subarray problem](#) [↗](#)

**Day 26 - 50:** Once you are comfortable with everything above, start doing problems from,

1. [Cracking the Coding Interview](#) [↗](#)
2. [Elements of Programming Interviews](#) [↗](#)
3. [Programming Interviews Exposed: Secrets to Landing Your Next Job](#) [↗](#)
4. [GeeksforGeeks](#) [↗](#)
5. [HackerRank](#) [↗](#)
6. [InterviewBit](#) [↗](#)

Stick to chapters of arrays, linked lists, strings, stacks, queues and complexity.

**Day 51 - 60:** Let's learn some non-linear data structures,

1. *Tree*
  - a. *Binary Tree, Binary Search Tree* - [Tree traversals](#) [↗](#), [Lowest common ancestor](#) [↗](#), [Depth, Height & Diameter](#) [↗](#), [Finding k-th smallest element](#) [↗](#)
  - b. *Heaps*

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