
Summary

Similar to data structures, there are many coding interview questions about common algorithms. Many algorithms can be implemented based on both recursion and iteration. Usually, recursion looks more concise, but iteration is more efficient and robust with big data inputs.

When it is required to find or count a number in a sorted array, binary search might be the right choice. Merge sort and quicksort are the most important sort algorithms for interviews. The `Partition` method is useful not only in quicksort, but also to select the arbitrary k^{th} number out of an array.

The backtracking algorithm is used to search for a solution to a problem among all available options in depth-first order. A backtracking solution is implemented with recursion in most cases.

Two hot interview topics are dynamic programming and greedy algorithms, which are quite helpful tools to get an optimized solution (the minimum or maximum value) to a problem. If there is a greedy choice available at each step, the greedy algorithm works; otherwise, we may have a try dynamic programming.

Bit operations can be viewed as special algorithms on binary numbers. There are four bitwise operators, AND, OR, XOR, and NOT, as well as right-shift and left-shift to manipulate bits.