TOP ALGORITHMS TO PREPARE FOR INTERVIEWS

1. Dynamic Programming Algorithms.

* [Longest Common Subsequence](https://www.techiedelight.com/longest-common-subsequence/)
* [Shortest Common Supersequence](https://www.techiedelight.com/shortest-common-supersequence-introduction-scs-length/)
* [Longest Increasing Subsequence problem](https://www.techiedelight.com/longest-increasing-subsequence-using-dynamic-programming/)
* [The Levenshtein distance (Edit distance) problem](https://www.techiedelight.com/levenshtein-distance-edit-distance-problem/)
* [Matrix Chain Multiplication](https://www.techiedelight.com/matrix-chain-multiplication/)
* [0–1 Knapsack problem](https://www.techiedelight.com/0-1-knapsack-problem/)
* [Partition problem](https://www.techiedelight.com/partition-problem/)
* [Rod Cutting](https://www.techiedelight.com/rot-cutting/)
* [Coin change problem](https://www.techiedelight.com/coin-change-making-problem-unlimited-supply-coins/)
* [Word Break Problem](https://www.techiedelight.com/word-break-problem/)
* N Digit number with given sum

2. Greedy Algorithms

* Activity Selection Problem
* Greedy coloring of graph
* Job Sequencing Problem with Deadlines.
* Shortest Superstring Problem.Find minimum number of platforms needed in the station so to avoid any delay in arrival of any train
* Huffman Coding.
* Single-Source Shortest Paths — Dijkstra's Algorithm

3. Searching and Sort

* [Binary Search](http://geeksquiz.com/binary-search/)
* [Search an element in a sorted and rotated array](https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/)
* [Bubble Sort](http://geeksquiz.com/bubble-sort/)
* [Insertion Sort](http://geeksquiz.com/insertion-sort/)
* [Merge Sort](http://geeksquiz.com/merge-sort/)
* [Heap Sort (Binary Heap)](http://geeksquiz.com/heap-sort/)
* [Quick Sort](http://geeksquiz.com/quick-sort/)
* [Interpolation Search](https://www.geeksforgeeks.org/interpolation-search/)
* [Find Kth Smallest/Largest Element In Unsorted Array](https://www.geeksforgeeks.org/kth-smallestlargest-element-unsorted-array-set-2-expected-linear-time/)
* [Given a sorted array and a number x, find the pair in array whose sum is closest to x](http://geeksquiz.com/given-sorted-array-number-x-find-pair-array-whose-sum-closest-x/)

4. Bit Manipulation

* [Maximum Subarray XOR](https://www.geeksforgeeks.org/find-the-maximum-subarray-xor-in-a-given-array/)
* [Magic Number](https://www.geeksforgeeks.org/find-nth-magic-number/)
* [Sum of bit differences among all pairs](https://www.geeksforgeeks.org/sum-of-bit-differences-among-all-pairs/)
* [Swap All Odds And Even Bits](https://www.geeksforgeeks.org/swap-all-odd-and-even-bits/)
* [Find the element that appears once](https://www.geeksforgeeks.org/find-the-element-that-appears-once/)
* [Binary representation of a given number](https://www.geeksforgeeks.org/binary-representation-of-a-given-number/)
* [Count total set bits in all numbers from 1 to n](https://www.geeksforgeeks.org/count-total-set-bits-in-all-numbers-from-1-to-n/)
* [Rotate bits of a number](https://www.geeksforgeeks.org/rotate-bits-of-an-integer/)
* [Count number of bits to be flipped to convert A to B](https://www.geeksforgeeks.org/count-number-of-bits-to-be-flipped-to-convert-a-to-b/)
* [Find Next Sparse Number](https://www.geeksforgeeks.org/given-a-number-find-next-sparse-number/)

5. Linked List

* [Insertion of a node in Linked List (On the basis of some constraints)](https://www.geeksforgeeks.org/given-a-linked-list-which-is-sorted-how-will-you-insert-in-sorted-way/)
* [Delete a given node in Linked List (under given constraints)](https://www.geeksforgeeks.org/delete-a-given-node-in-linked-list-under-given-constraints/)
* [Compare two strings represented as linked lists](https://www.geeksforgeeks.org/compare-two-strings-represented-as-linked-lists/)
* [Add Two Numbers Represented By Linked Lists](https://www.geeksforgeeks.org/sum-of-two-linked-lists/)
* [Merge A Linked List Into Another Linked List At Alternate Positions](https://www.geeksforgeeks.org/merge-a-linked-list-into-another-linked-list-at-alternate-positions/)
* [Reverse A List In Groups Of Given Size](https://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/)
* [Union And Intersection Of 2 Linked Lists](https://www.geeksforgeeks.org/union-and-intersection-of-two-linked-lists/)
* [Detect And Remove Loop In A Linked List](https://www.geeksforgeeks.org/detect-and-remove-loop-in-a-linked-list/)
* [Merge Sort For Linked Lists](https://www.geeksforgeeks.org/merge-sort-for-linked-list/)
* [Select A Random Node from A Singly Linked List](https://www.geeksforgeeks.org/select-a-random-node-from-a-singly-linked-list/)

6. String / Array

* [Reverse an array without affecting special characters](https://www.geeksforgeeks.org/reverse-an-array-without-affecting-special-characters/)
* [All Possible Palindromic Partitions](https://www.geeksforgeeks.org/given-a-string-print-all-possible-palindromic-partition/)
* . [Count triplets with sum smaller than a given value](https://www.geeksforgeeks.org/count-triplets-with-sum-smaller-that-a-given-value/)
* [Convert array into Zig-Zag fashion](https://www.geeksforgeeks.org/convert-array-into-zig-zag-fashion/)
* [Generate all possible sorted arrays from alternate elements of two given sorted arrays](https://www.geeksforgeeks.org/generate-all-possible-sorted-arrays-from-alternate-elements-of-two-given-arrays/)
* [Pythagorean Triplet in an array](https://www.geeksforgeeks.org/find-pythagorean-triplet-in-an-unsorted-array/)
* [Length of the largest subarray with contiguous elements](https://www.geeksforgeeks.org/length-largest-subarray-contiguous-elements-set-1/)
* [Find the smallest positive integer value that cannot be represented as sum of any subset of a given array](https://www.geeksforgeeks.org/find-smallest-value-represented-sum-subset-given-array/)
* [Smallest subarray with sum greater than a given value](https://www.geeksforgeeks.org/minimum-length-subarray-sum-greater-given-value/)
* . [Stock Buy Sell to Maximize Profit](https://www.geeksforgeeks.org/stock-buy-sell/)

7. Trees

* [Find Minimum Depth of a Binary Tree](https://www.geeksforgeeks.org/find-minimum-depth-of-a-binary-tree/)
* [Maximum Path Sum in a Binary Tree](https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/)
* [Check if a given array can represent Preorder Traversal of Binary Search Tree](https://www.geeksforgeeks.org/check-if-a-given-array-can-represent-preorder-traversal-of-binary-search-tree/)
* [Check whether a binary tree is a full binary tree or not](https://www.geeksforgeeks.org/check-whether-binary-tree-full-binary-tree-not/)
* [Bottom View Binary Tree](https://www.geeksforgeeks.org/bottom-view-binary-tree/)
* [Print Nodes in Top View of Binary Tree](https://www.geeksforgeeks.org/print-nodes-top-view-binary-tree/)
* [Remove nodes on root to leaf paths of length < K](https://www.geeksforgeeks.org/remove-nodes-root-leaf-paths-length-k/)
* [Lowest Common Ancestor in a Binary Search Tree](https://www.geeksforgeeks.org/lowest-common-ancestor-in-a-binary-search-tree/)
* [Check if a binary tree is subtree of another binary tree](https://www.geeksforgeeks.org/check-binary-tree-subtree-another-binary-tree-set-2/)
* [Reverse alternate levels of a perfect binary tree](https://www.geeksforgeeks.org/reverse-alternate-levels-binary-tree/)

8. Number Theory

* [Modular Exponentiation](https://www.geeksforgeeks.org/modular-exponentiation-power-in-modular-arithmetic/)
* [Modular multiplicative inverse](https://www.geeksforgeeks.org/multiplicative-inverse-under-modulo-m/)
* [Primality Test | Set 2 (Fermat Method)](https://www.geeksforgeeks.org/primality-test-set-2-fermet-method/)
* [Euler’s Totient Function](https://www.geeksforgeeks.org/eulers-totient-function/)
* [Sieve of Eratosthenes](https://www.geeksforgeeks.org/sieve-of-eratosthenes/)
* [Convex Hull](https://www.geeksforgeeks.org/convex-hull-set-1-jarviss-algorithm-or-wrapping/)
* [Basic and Extended Euclidean algorithms](https://www.geeksforgeeks.org/basic-and-extended-euclidean-algorithms/)
* [Segmented Sieve](https://www.geeksforgeeks.org/segmented-sieve/)
* [Chinese remainder theorem](https://www.geeksforgeeks.org/chinese-remainder-theorem-set-1-introduction/)
* [Lucas Theorem](https://www.geeksforgeeks.org/compute-ncr-p-set-2-lucas-theorem/)

9. Graphs

* [Breadth First Search (BFS)](https://www.geeksforgeeks.org/breadth-first-traversal-for-a-graph/)
* [Depth First Search (DFS)](https://www.geeksforgeeks.org/depth-first-traversal-for-a-graph/)
* [Shortest Path from source to all vertices \*\*Dijkstra\*\*](https://www.geeksforgeeks.org/greedy-algorithms-set-6-dijkstras-shortest-path-algorithm/)
* [Shortest Path from every vertex to every other vertex \*\*Floyd Warshall\*\*](https://www.geeksforgeeks.org/dynamic-programming-set-16-floyd-warshall-algorithm/)
* [To detect cycle in a Graph \*\*Union Find\*\*](https://www.geeksforgeeks.org/union-find/)
* [Minimum Spanning tree \*\*Prim\*\*](https://www.geeksforgeeks.org/greedy-algorithms-set-5-prims-minimum-spanning-tree-mst-2/)
* [Minimum Spanning tree \*\*Kruskal\*\*](https://www.geeksforgeeks.org/greedy-algorithms-set-2-kruskals-minimum-spanning-tree-mst/)
* [Topological Sort](https://www.geeksforgeeks.org/topological-sorting/)
* [Boggle (Find all possible words in a board of characters)](https://www.geeksforgeeks.org/boggle-find-possible-words-board-characters/)
* [Bridges in a Graph](https://www.geeksforgeeks.org/bridge-in-a-graph/)

10. Back Tracking

* [N Queens Problem](https://www.geeksforgeeks.org/printing-solutions-n-queen-problem/)
* [Warnsdorff’s Algorithm](https://www.geeksforgeeks.org/warnsdorffs-algorithm-knights-tour-problem/)
* [Word Break Problem](https://www.geeksforgeeks.org/word-break-problem-using-backtracking/)
* [Remove Invalid Parenthesis](https://www.geeksforgeeks.org/remove-invalid-parentheses/)
* [Match a pattern and string using regular expression](https://www.geeksforgeeks.org/match-a-pattern-and-string-without-using-regular-expressions/)
* [Find Path from corner cell to middle cell in a maze](https://www.geeksforgeeks.org/find-paths-from-corner-cell-to-middle-cell-in-maze/)
* [Hamiltonian cycle](https://www.geeksforgeeks.org/backtracking-set-7-hamiltonian-cycle/)
* [Sudoku](https://www.geeksforgeeks.org/backtracking-set-7-suduku/)
* [M Coloring Problem](https://www.geeksforgeeks.org/backttracking-set-5-m-coloring-problem/)
* [Rat in a Maze](https://www.geeksforgeeks.org/backttracking-set-2-rat-in-a-maze/)
* [Print all permutations of a given string](https://www.geeksforgeeks.org/write-a-c-program-to-print-all-permutations-of-a-given-string/)
* [Cryptarithmetic puzzle](https://www.geeksforgeeks.org/backtracking-set-8-solving-cryptarithmetic-puzzles/)
* [Find if there is a path of more than k length from a source](https://www.geeksforgeeks.org/find-if-there-is-a-path-of-more-than-k-length-from-a-source/)
* [Shortest safe route in a path with landmines](https://www.geeksforgeeks.org/find-shortest-safe-route-in-a-path-with-landmines/)
* [Partition of a set into k subsets with equal sum](https://www.geeksforgeeks.org/partition-set-k-subsets-equal-sum/)
* [longest possible route in a matrix with hurdles](https://www.geeksforgeeks.org/longest-possible-route-in-a-matrix-with-hurdles/)
* [Print palindromic partitions string](https://www.geeksforgeeks.org/print-palindromic-partitions-string/)
* [Print all possible paths from top left to bottom right of a mXn matrix](https://www.geeksforgeeks.org/print-all-possible-paths-from-top-left-to-bottom-right-of-a-mxn-matrix/)
* [Subset sum](https://www.geeksforgeeks.org/backttracking-set-4-subset-sum/)
* [Tug of war](https://www.geeksforgeeks.org/tug-of-war/)

11. Window Sliding Techniques for loop optimisation.

Table of completion.

|  |  |
| --- | --- |
| 1. Dynamic Programming Algorithms.   * [Longest Common Subsequence](https://www.techiedelight.com/longest-common-subsequence/) * [Shortest Common Supersequence](https://www.techiedelight.com/shortest-common-supersequence-introduction-scs-length/) * [Longest Increasing Subsequence problem](https://www.techiedelight.com/longest-increasing-subsequence-using-dynamic-programming/) * [The Levenshtein distance (Edit distance) problem](https://www.techiedelight.com/levenshtein-distance-edit-distance-problem/) * [Matrix Chain Multiplication](https://www.techiedelight.com/matrix-chain-multiplication/) * [0–1 Knapsack problem](https://www.techiedelight.com/0-1-knapsack-problem/) * [Partition problem](https://www.techiedelight.com/partition-problem/) * [Rod Cutting](https://www.techiedelight.com/rot-cutting/) * [Coin change problem](https://www.techiedelight.com/coin-change-making-problem-unlimited-supply-coins/) * [Word Break Problem](https://www.techiedelight.com/word-break-problem/) * N Digit number with given sum . |  |
| 2. Greedy Algorithms   * Activity Selection Problem * Greedy coloring of graph * Job Sequencing Problem with Deadlines. * Shortest Superstring Problem.Find minimum number of platforms needed in the station so to avoid any delay in arrival of any train * Huffman Coding. * Single-Source Shortest Paths — Dijkstra's Algorithm |  |
| 3. Searching and Sort   * [Binary Search](http://geeksquiz.com/binary-search/) * [Search an element in a sorted and rotated array](https://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/) * [Bubble Sort](http://geeksquiz.com/bubble-sort/) * [Insertion Sort](http://geeksquiz.com/insertion-sort/) * [Merge Sort](http://geeksquiz.com/merge-sort/) * [Heap Sort (Binary Heap)](http://geeksquiz.com/heap-sort/) * [Quick Sort](http://geeksquiz.com/quick-sort/) * [Interpolation Search](https://www.geeksforgeeks.org/interpolation-search/) * [Find Kth Smallest/Largest Element In Unsorted Array](https://www.geeksforgeeks.org/kth-smallestlargest-element-unsorted-array-set-2-expected-linear-time/) * [Given a sorted array and a number x, find the pair in array whose sum is closest to x](http://geeksquiz.com/given-sorted-array-number-x-find-pair-array-whose-sum-closest-x/) |  |
| 4. Bit Manipulation   * [Maximum Subarray XOR](https://www.geeksforgeeks.org/find-the-maximum-subarray-xor-in-a-given-array/) * [Magic Number](https://www.geeksforgeeks.org/find-nth-magic-number/) * [Sum of bit differences among all pairs](https://www.geeksforgeeks.org/sum-of-bit-differences-among-all-pairs/) * [Swap All Odds And Even Bits](https://www.geeksforgeeks.org/swap-all-odd-and-even-bits/) * [Find the element that appears once](https://www.geeksforgeeks.org/find-the-element-that-appears-once/) * [Binary representation of a given number](https://www.geeksforgeeks.org/binary-representation-of-a-given-number/) * [Count total set bits in all numbers from 1 to n](https://www.geeksforgeeks.org/count-total-set-bits-in-all-numbers-from-1-to-n/) * [Rotate bits of a number](https://www.geeksforgeeks.org/rotate-bits-of-an-integer/) * [Count number of bits to be flipped to convert A to B](https://www.geeksforgeeks.org/count-number-of-bits-to-be-flipped-to-convert-a-to-b/) * [Find Next Sparse Number](https://www.geeksforgeeks.org/given-a-number-find-next-sparse-number/) |  |
| 5. Linked List   * [Insertion of a node in Linked List (On the basis of some constraints)](https://www.geeksforgeeks.org/given-a-linked-list-which-is-sorted-how-will-you-insert-in-sorted-way/) * [Delete a given node in Linked List (under given constraints)](https://www.geeksforgeeks.org/delete-a-given-node-in-linked-list-under-given-constraints/) * [Compare two strings represented as linked lists](https://www.geeksforgeeks.org/compare-two-strings-represented-as-linked-lists/) * [Add Two Numbers Represented By Linked Lists](https://www.geeksforgeeks.org/sum-of-two-linked-lists/) * [Merge A Linked List Into Another Linked List At Alternate Positions](https://www.geeksforgeeks.org/merge-a-linked-list-into-another-linked-list-at-alternate-positions/) * [Reverse A List In Groups Of Given Size](https://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/) * [Union And Intersection Of 2 Linked Lists](https://www.geeksforgeeks.org/union-and-intersection-of-two-linked-lists/) * [Detect And Remove Loop In A Linked List](https://www.geeksforgeeks.org/detect-and-remove-loop-in-a-linked-list/) * [Merge Sort For Linked Lists](https://www.geeksforgeeks.org/merge-sort-for-linked-list/) * [Select A Random Node from A Singly Linked List](https://www.geeksforgeeks.org/select-a-random-node-from-a-singly-linked-list/) |  |
| 6. String / Array   * [Reverse an array without affecting special characters](https://www.geeksforgeeks.org/reverse-an-array-without-affecting-special-characters/) * [All Possible Palindromic Partitions](https://www.geeksforgeeks.org/given-a-string-print-all-possible-palindromic-partition/) * . [Count triplets with sum smaller than a given value](https://www.geeksforgeeks.org/count-triplets-with-sum-smaller-that-a-given-value/) * [Convert array into Zig-Zag fashion](https://www.geeksforgeeks.org/convert-array-into-zig-zag-fashion/) * [Generate all possible sorted arrays from alternate elements of two given sorted arrays](https://www.geeksforgeeks.org/generate-all-possible-sorted-arrays-from-alternate-elements-of-two-given-arrays/) * [Pythagorean Triplet in an array](https://www.geeksforgeeks.org/find-pythagorean-triplet-in-an-unsorted-array/) * [Length of the largest subarray with contiguous elements](https://www.geeksforgeeks.org/length-largest-subarray-contiguous-elements-set-1/) * [Find the smallest positive integer value that cannot be represented as sum of any subset of a given array](https://www.geeksforgeeks.org/find-smallest-value-represented-sum-subset-given-array/) * [Smallest subarray with sum greater than a given value](https://www.geeksforgeeks.org/minimum-length-subarray-sum-greater-given-value/) * . [Stock Buy Sell to Maximize Profit](https://www.geeksforgeeks.org/stock-buy-sell/) |  |
| 7. Trees   * [Find Minimum Depth of a Binary Tree](https://www.geeksforgeeks.org/find-minimum-depth-of-a-binary-tree/) * [Maximum Path Sum in a Binary Tree](https://www.geeksforgeeks.org/find-maximum-path-sum-in-a-binary-tree/) * [Check if a given array can represent Preorder Traversal of Binary Search Tree](https://www.geeksforgeeks.org/check-if-a-given-array-can-represent-preorder-traversal-of-binary-search-tree/) * [Check whether a binary tree is a full binary tree or not](https://www.geeksforgeeks.org/check-whether-binary-tree-full-binary-tree-not/) * [Bottom View Binary Tree](https://www.geeksforgeeks.org/bottom-view-binary-tree/) * [Print Nodes in Top View of Binary Tree](https://www.geeksforgeeks.org/print-nodes-top-view-binary-tree/) * [Remove nodes on root to leaf paths of length < K](https://www.geeksforgeeks.org/remove-nodes-root-leaf-paths-length-k/) * [Lowest Common Ancestor in a Binary Search Tree](https://www.geeksforgeeks.org/lowest-common-ancestor-in-a-binary-search-tree/) * [Check if a binary tree is subtree of another binary tree](https://www.geeksforgeeks.org/check-binary-tree-subtree-another-binary-tree-set-2/) * [Reverse alternate levels of a perfect binary tree](https://www.geeksforgeeks.org/reverse-alternate-levels-binary-tree/) |  |
| 8. Number Theory   * [Modular Exponentiation](https://www.geeksforgeeks.org/modular-exponentiation-power-in-modular-arithmetic/) * [Modular multiplicative inverse](https://www.geeksforgeeks.org/multiplicative-inverse-under-modulo-m/) * [Primality Test | Set 2 (Fermat Method)](https://www.geeksforgeeks.org/primality-test-set-2-fermet-method/) * [Euler’s Totient Function](https://www.geeksforgeeks.org/eulers-totient-function/) * [Sieve of Eratosthenes](https://www.geeksforgeeks.org/sieve-of-eratosthenes/) * [Convex Hull](https://www.geeksforgeeks.org/convex-hull-set-1-jarviss-algorithm-or-wrapping/) * [Basic and Extended Euclidean algorithms](https://www.geeksforgeeks.org/basic-and-extended-euclidean-algorithms/) * [Segmented Sieve](https://www.geeksforgeeks.org/segmented-sieve/) * [Chinese remainder theorem](https://www.geeksforgeeks.org/chinese-remainder-theorem-set-1-introduction/) * [Lucas Theorem](https://www.geeksforgeeks.org/compute-ncr-p-set-2-lucas-theorem/) |  |
| 9. Graphs   * [Breadth First Search (BFS)](https://www.geeksforgeeks.org/breadth-first-traversal-for-a-graph/) * [Depth First Search (DFS)](https://www.geeksforgeeks.org/depth-first-traversal-for-a-graph/) * [Shortest Path from source to all vertices \*\*Dijkstra\*\*](https://www.geeksforgeeks.org/greedy-algorithms-set-6-dijkstras-shortest-path-algorithm/) * [Shortest Path from every vertex to every other vertex \*\*Floyd Warshall\*\*](https://www.geeksforgeeks.org/dynamic-programming-set-16-floyd-warshall-algorithm/) * [To detect cycle in a Graph \*\*Union Find\*\*](https://www.geeksforgeeks.org/union-find/) * [Minimum Spanning tree \*\*Prim\*\*](https://www.geeksforgeeks.org/greedy-algorithms-set-5-prims-minimum-spanning-tree-mst-2/) * [Minimum Spanning tree \*\*Kruskal\*\*](https://www.geeksforgeeks.org/greedy-algorithms-set-2-kruskals-minimum-spanning-tree-mst/) * [Topological Sort](https://www.geeksforgeeks.org/topological-sorting/) * [Boggle (Find all possible words in a board of characters)](https://www.geeksforgeeks.org/boggle-find-possible-words-board-characters/) * [Bridges in a Graph](https://www.geeksforgeeks.org/bridge-in-a-graph/) |  |

Link for Problems.

1. Link: <https://www.geeksforgeeks.org/top-10-algorithms-in-interview-questions/>
2. Link:<https://www.geeksforgeeks.org/top-10-algorithms-in-interview-questions-set-2/>
3. Link:<https://www.techiedelight.com/list-of-problems/>

.