Data Structures and Algorithms for Online Programming Contest

1. Sorting

i. [Merge Sort](algorithms/Merge_Sort.cpp)

ii. [Quick Sort](algorithms/Quick_Sort.cpp)

iii. [Heap Sort](algorithms/heap_sort.cpp)

iv. [Bubble Sort](algorithms/Bubble_Sort.cpp)

v. [Insertion Sort](algorithms/Insertion_Sort.cpp)

vi [Selection Sort](algorithms/Selection_Sort.cpp)

vii. [Bucket Sort](algorithms/Bucket_Sort.cpp)

viii. [Count Sort](algorithms/Count_Sort.cpp)

ix. [Radix Sort](algorithms/Radix_Sort.cpp)

x. [Pancake Sort](algorithms/Pancake_Sort.cpp)

2. Data Structure

i. [Singly Linked List](algorithms/singly_linked_list.cpp)

ii. [Doubly Linked List](algorithms/doubly_linked_list.cpp)

iii. [Vector](algorithms/vector.cpp)

iv. [Stack](algorithms/stack.cpp)

v. [Queue](algorithms/queue.cpp)

vi. [List](algorithms/list.cpp)

vii. [Hashtable](algorithms/hashtable.cpp)

viii. [HashMap](algorithms/hashmap.cpp)

ix. [HashSet](algorithms/hashset.cpp)

x. [Union Find(Disjoint Set)](algorithms/union_find.cpp)

xi. [Binary Search Tree](algorithms/BST.cpp)

3. Graph Theory

4. Game Theory

5. Dynamic Programming

ix. [Maximum Sum Subarray using Kadane(O(n^3))](algorithms/kadane.cpp)

x. [Optimal Binary Search Tree](algorithms/optimal_search_tree.cpp)

xi. [Subset Sum](algorithms/subset_sum.cpp)

xii. [Catalan Number](algorithms/CatalanNumber.cpp)

xiii. [DAG Minimum Path](algorithms/DAG_min_path.cpp)

xiv. [Minimum Cost Path](algorithms/min_cost_path.cpp)

xv. [Digit Dp I](algorithms/Digit_dp_I.cpp)

xvi. [Digit Dp II](algorithms/Digit_dp_II.cpp)

xvii. [Digit Dp III](algorithms/Digit_dp_III.cpp)

xviii. [Digit Dp IV](algorithms/Digit_dp_IV.cpp)

6. Backtracking

i. [Permutation Generator](algorithms/permutation_generator.cpp)

ii. [N-Queen](algorithms/nqueen.cpp)

iii. [Prime Ring](algorithms/prime_ring.cpp)

7. Greedy Algorithm

i. [Huffman Coding](algorithms/Huffman_coding.cpp)

8. Binary Search

i. [Binary Search](algorithms/binary_search.cpp)

ii. [Lower Bound](algorithms/binary_search.cpp)

iii. [Upper Bound](algorithms/binary_search.cpp)

iv. [Equal Range](algorithms/binary_search.cpp)

9. Hashing

i. [Double Hashing](algorithms/double_hashing.cpp)

ii. [String Hashing by Map](algorithms/map_hashing.cpp)

iii. [Berenstain String Hashing](algorithms/berenstain_hashing.cpp)

iv. [Rolling Hash](algorithms/rabin_karp.cpp)

10. Combinotorics

i. [Factorial](algorithms/factorial.cpp)

ii. [nCr](algorithms/ncr.cpp)

iii. [De-arrangement](algorithms/dearrangement.cpp)

11. String Algorithm

i. [Aho-Corasick Algorithm](algorithms/Aho_Corasick.cpp)

ii. [Knuth-Morris-Pratt's Algorithm](algorithms/kmp.cpp)

iii. [Rabin Karp Pattern Searching](algorithms/rabin_karp.cpp)

iv. [Z Algorithm](algorithms/z.cpp)

v. [Finite Automata Pattern Searching](algorithms/Finite_Automata_Pattern_Searching.cpp)

vi. [Trie (Prefix/Radix Tree)](algorithms/Trie.cpp)

vii. [Longest Common Subsequence](algorithms/lcs.cpp)

viii. [Edit Distance](algorithms/edit_distance.cpp)

ix. [Longest Palindromic Subsequence](algorithms/lps.cpp)

x. [Suffix Array](algorithms/suffix_lcp.cpp)

xi. [Longest Common Prefix](algorithms/suffix_lcp.cpp)

xii. [Minimum Expression](algorithms/Minimum_expression.cpp)

xiii. [Suffix Automata](algorithms/suffix_automata.cpp)

12. Mathematics

13. Computational Geometry

14. Miscellaneous

i. [Template](template.cpp)