Data Structures and Algorithms for CP

DS/ALGO	TUTORIALS	PROBLEMS
	BASICS	
Ad Hoc(No extra knowledge needed)	I/O Basics Time/Space Complexity	First 3 Problems of any Codechef Long Challenge Div2A Problems Level 1 problems here GCDQ QMAXTRIX
Greedy (Easy)	1) https://www.hackerearth.com/practice/algorithms/greedy/basics-of-greedy-algorithms/tutorial/ 2) http://stackoverflow.com/questions/7887487/how-to-spot-a-greedy-algorithm 3) https://www.topcoder.com/community/data-science/data-science-tutorials/greedy-is-good/	Little Monk and Library 218B 545D 534B 597B
Dynamic Programming (DP) (Easy)	1) https://www.topcoder.com/community/data-science/data-science-tutorials/dynamic-programming-from-novice-to-advanced/ (Beginner and elementary only) 2) https://www.codechef.com/wiki/tutorial-dynamic-programming 3) https://www.quora.com/Are-there-any-good-resources-or-tutorials-for-dynamic-programming-besides-t	Introductory Problems COINS 189A BYTESM2 455A CHEFSOC2

	he-TopCoder-tutorial	
C++ STL (Easy)	1) https://www.topcoder.com/community/data-science/data-science-tutorials/power-up-c-with-the-standard-template-library-part-1/ 2) https://www.topcoder.com/community/data-science/data-science-tutorials/power-up-c-with-the-standard-template-library-part-2/	Solve every question here. Try using STL wherever possible.
DS Level-1 (Easy-Med)	Stack+Queue, Deque, Linked List etc (implementation not required)	Stack+Queue Data Structures
DS Level-2 (Medium)	1) Segment Tree and Lazy Propagation 2) Binary Indexed Tree(Fenwick Tree) 3) Disjoint Set DS	BRCKTS (Segment Tree) GSS1 (Medium,Strict Time Limit) 339D Lazy Propagation: HORRIBLE, FLIPCOIN, MULTQ3, BGQRS
Graph Algorithms (Medium)	1) Introduction - Tutorial, Graph Representation 2) DFS and BFS - Tutorial, BFS, DFS 3) Dijkstra - Floyd Warshall - Tutorial, Tutorial 2 4) MST - Kruskal, Prim - Tutorial, Tutorial 2	377A 580C CAM5 BUGLIFE SHPATH
Basic Math (Easy-Med)	Basic Mathematics Number Theory(Must Read/Know): Part 1 Part 2 Linear Diophantine Equations: Intro,Finding Particular Solution, Finding all Solutions Matrix Exponentiation: Tutorial 1, Tutorial 2 Primality Tests	Find the Power City Selection Monk and Fredo 595B 615D 803C

Bit Manipulation (Easy)	Overkill but Relevant Tutorial Topcoder Tutorial Bitmasking Basic , Bit Manipulation Tricks	Lonely Integer, Subset Sum, ASSIGN
Binary Search & Sorting Algorithms (Easy)	Topcoder Binary Search Tutorial Binary Search Tutorial Ternary Search	Monk and Search, Circular Distance, Help Fredo
String matching (Easy-Med)	KMP and Rabin Karp Z - Algorithm	NHAY (take input as usual, write code as while(cin>>n){...}) Z-function: uva455 uva760
Persistent Data Structures (Medium-Hard)	Basic Idea and Persistent Segment Tree	GPD (Persistent Trie)

Contributors: Kumar Abhinav, Aditya Jain, Gvs Akhil