

# Competitive Programming



Detailed  
Course Syllabus

## • Week 1

- a) Intro to CP, time complexity, basic concepts, Searching, Sorting, CP Basic techniques, etc..
- b) Prefix Sum, Binary Search, Euler Totient Function, Primes, Binary Exponentiation, LDE, etc..

## • Week 2

- a) Sieve, Segmented Sieve, Wilson's Theorem
- b) Modular Arithmetic, Combinatorics
- c) Bit Manipulation, Shortcuts used in CP.

## • Week 3

- a) Recursion
- b) Backtracking(Basic to Advanced)
- c) Divide and Conquer and its related algorithms.

## • Week 4

- a) Stack, Queue, Priority Queue
- b) Greedy, String Algorithms(Hashing included in advanced)

## • Week 5

- a) Trees (Covering all algorithms and tricks related)
- b) Graphs (Covering all algorithms and tricks related)

## • Week 6

- a) Dynamic Programming-I (Basic Medium DP)
- b) Dynamic Programming-II (Hard DP - Probability DP, Digit DP, Bitmask DP)

- **Week 7**

- a) Disjoint Set and Sparse Table
- b) Fenwick Trees/BIT and LCA

- **Week 8**

- a) Segment Tree (Complete)
- b) Sqrt Decomposition and Mo's Algorithm