JP TECH INSTITUTE

ISO : 9001-2015

DSA COURSE

Crack every code with master DSA

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Introduction

1)Analysis of Algorithm

Background analysis through a Program and its functions

A mathematical explanation of the growth analysis through l limits and functions

2)Order of Growth

A direct way of calculating the order of growth

3) Big O Notation

Graphical and mathematical explanation

Calculation

4) Omega Notation

Graphical and mathematical explanation , Calculation

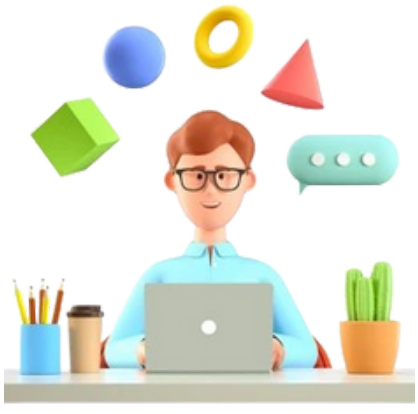
5) Space Complexity

Basic Program

Auxiliary Space

Space Analysis of Recursion

Mathematics



1) Mathematics

Count Digits

Palindrome Numbers

Factorial of Numbers

GCD of Two Numbers

Bit Magic

1)Bitwise Operators in C++

Operation of AND, OR, XOR operators

Operation of Left Shift, Right Shift and Bitwise Not

2)Bitwise Operators in Java

Operation of AND, OR

Operation of Bitwise Not, Left Shift

Operation of Right Shift and unsigned Right Shift

3)Problem(With Video Solutions): Check Kth bit is set or not

Method 1: Using the left Shift

Method 2: Using the right shift

4)Practice Problems

This track contains many practice problems for the users which are considered important and must-do as far as Data Structure and Algorithm is concerned.

Recursion

1)Introduction to Recursion

2)Applications of Recursion

3)Writing base cases in Recursion

Factorial

N-th Fibonacci number

Arrays

1)Introduction and Advantages

2)Types of Arrays

Fixed-sized array

Dynamic-sized array

3)Operations on Arrays

Searching ,Insertions , Deletion

4)Problems (With Video Solutions)

Left Rotation of the array by 1

Trapping Rainwater Problem

Maximum Circular sum subarray.

Searching

1)Binary Search Iterative and Recursive

2)Binary Search and various associated problems (With Video Solutions)

Index of First Occurence in Sorted Array

Count of 1s in a binary sorted array

Sorting

1)Sorting in Java

2)Problems (With Video Solutions)

Kth Smallest element

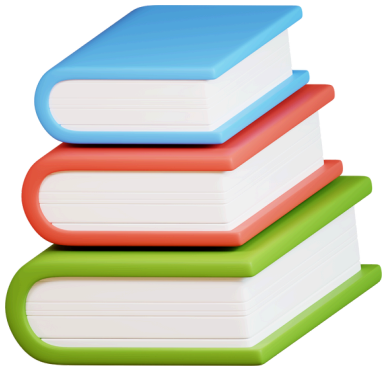
Matrix

1)Introduction to Matrix in C++ and Java
2)Multidimensional Matrix
3)Pass Matrix as Argument

Hashing

1)Introduction and Time complexity analysis

2) Application of Hashing



3)Java
HashSet
HashMap

4)Problems (With Video Solutions)
Count Distinct Elements
Count of the frequency of array elements
The intersection of two arrays
Union of two unsorted arrays

4)Problems (With Video Solutions)

Strings

1)Discussion of String DS

2)Problems(With Video Solutions)

Given a string, check if they are an anagram of each other

Various Pattern Searching Algorithms.

Queue

1)Introduction and Application

2)Problems (With Video Solutions)

Reversing a Queue
Generate numbers with given digits

Deque

1)Introduction and Application

2)Implementation

In C++ STL
In Java

Binary Search Tree

1)Background, Introduction and Application

2)Floor in BST

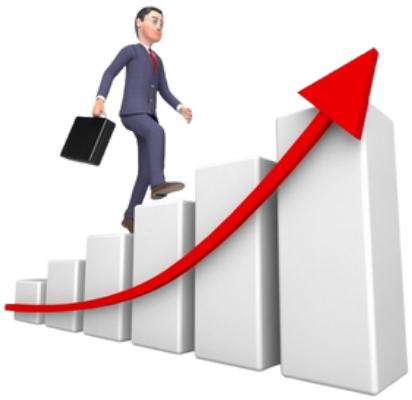
In CPP
In Java

Heap

1)Introduction & Implementation

2)Binary Heap

Insertion
Heapify and Extract
Decrease Key, Delete and Build Heap



Greedy

1) Introduction
2)Activity Selection Problem
3)Fractional Knapsack
4)Job Sequencing Problem

Backtracking

1)Concepts of Backtracking
2)Rat In a Maze
3)N Queen Problem

Trie

1)Introduction

Representation
Search
Insert
Delete

Segment Tree

1)Introduction
2)Construction
3)Range Query

Disjoint Set

1)Introduction
2)Find and Union Operations
3)Union by Rank
4)Path Compression

Dynamic Programming

1) Introduction
2)Dynamic Programming

Memoization
Tabulation

1) Problems(With Video Solutions)

Longest Common Subsequence
Coin Change Count Combinations
Edit Distance Problem