

Pre-Requisites.

1. Basic Programming skills in any one language Java/C++/Python with loops and Arrays topic.
2. Basic computer science knowledge.

Duration : 32 hours {weekends 2 hours a day, 2 month}

DSA

- What is DSA?
- Need of DSA

Software:

JAVA

- Install Java JDK
- Install IDE
- Java programming basics

OR

PYTHON

- Install python
- Install IDE
- Python programming basics

Introduction:

- Analysis of Algorithm
- Order of Growth
- Asymptotic annotations (Big Oh, Omega, Theta)
- Space Complexity

Mathematics:

- Palindrome numbers
- Prime Factors
- Factorial
- GCD, LCM
- Bitwise Operators

Array:

- Introduction to Arrays
- Types of Arrays (Fixed size, dynamic)
- Searching, Insertion, Deletion operations.
- Multi Dimensional arrays and Matrix
- Coding problems on Arrays.

Recursion:

- Introduction to Recursion
- Application of Recursion



- Understanding base case
- Coding problems on Recursion

Searching:

- Linear Search
- Binary Search

Sorting:

- Inbuilt sorting methods in Java
- Bubble sort
- Selection Sort
- Insertion sort
- Merge sort
- Quick Sort

Strings:

- Rabin Karp Algorithm
- KMP Algorithm
- Coding problems on Strings

Linked List:

- Introduction to Linked List
- Inbuilt methods
- Types of Linked List
- Coding problems on LinkedList

Stack:

- Introduction to Stack
- Inbuilt methods
- Infix, prefix, postfix
- Coding problems on Stack

Queue:

- Introduction to Queue
- Inbuilt methods
- Types of Queue
- Coding problems on Queue

Tree:

- Introduction to Tree
- Inbuilt methods
- BST
- Coding problems on Tree

Graph:

- Introduction to Graph
- BFS

- DFS
- Shortest Path Algorithms

