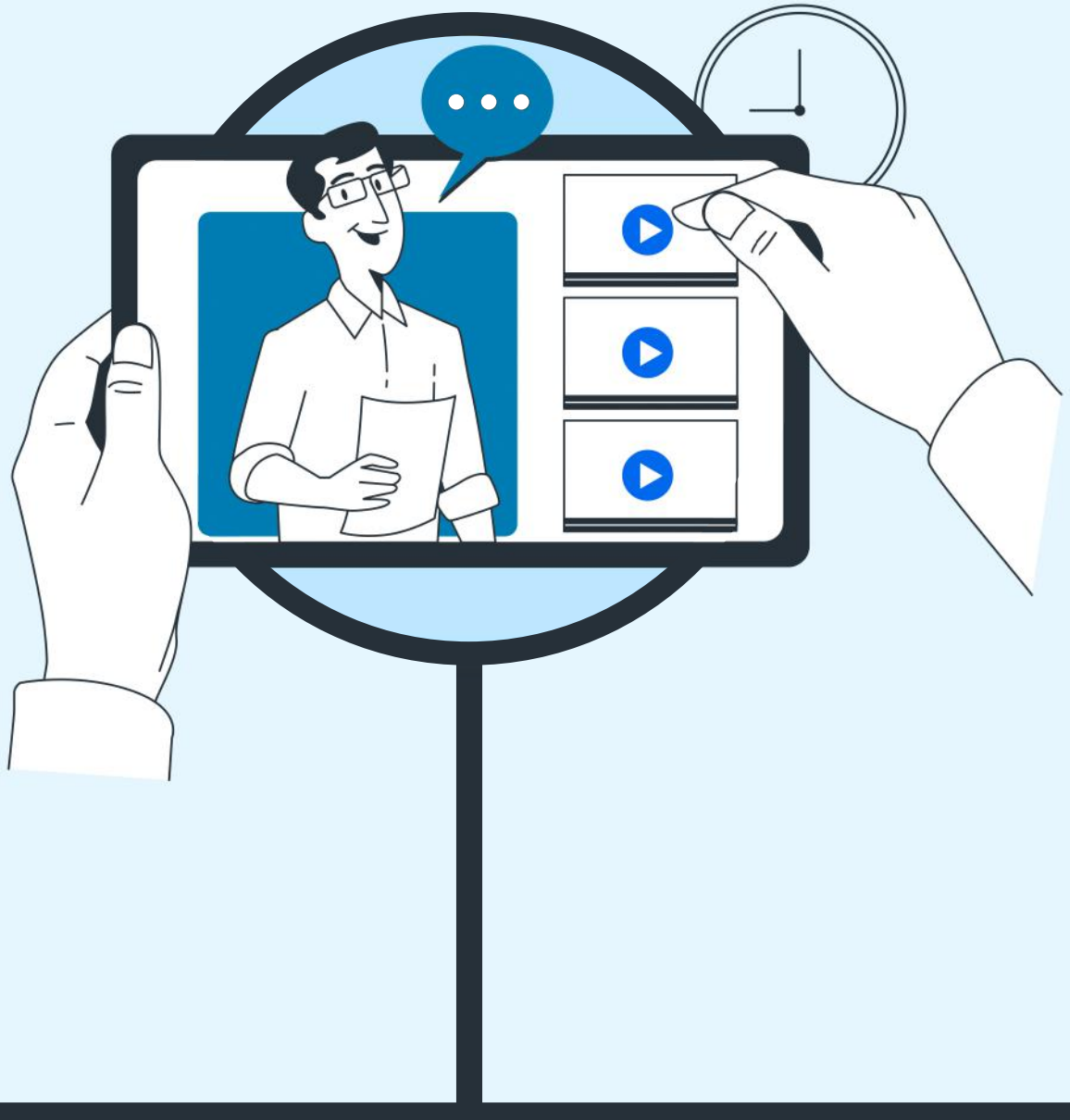
School

FIRST STEP TO DSA



DETAILED COURSE SYLLABUS

Content

Week 1

Lecture 1 -

- Get to know your Mentor
- Discussion on what you know and what you wish to know
- All you need to know about Data Structures and Algorithms
- Advantages of Data Structure and Algorithms.
- Basics of Arrays
- Basics of Loops.

Lecture 2 -

- Problem solving based on arrays and loops.
- Maths implementation problem solving (addition, subtraction, multiplication, division, exponentiation)

Lecture 3 -

- Introduction to searching algorithm
- Linear Search
- Binary Search
- Overview of Mathematics Algorithms
- Euclid Algorithm
- Sieve Algorithms

Lecture 4 -

- Problem Solving on searching algorithms
- Problem Solving on Maths concepts

Content

Week 2

Lecture 1

- Introduction to Hashing and implementation.
- Collision Handling and related concepts
- Introduction to recursion concepts

Lecture 2

- Problem solving on hashing techniques

Lecture 3

- Introduction to sorting algorithms
- Bubble Sort
- Selection Sort
- Insertion Sort
- Quick Sort
- Merge Sort

Lecture 4

- Problem solving on sorting algorithms.

Content

Week 3

Lecture 1

- Introduction to LinkedList
- Singly LinkedList
- Doubly LinkedList

Lecture 2

- Problem solving using LinkedList

Lecture 3

- Introduction to Stack,
- Introduction to Queue
- Introduction to Priority Queue
- Implementation of the above data structure.

Lecture 4

- Problem solving using Stack
- Problem Solving using Queue
- Problem solving using Priority Queue.

Content

Week 4

Lecture 1

- Introduction to Trees
- Graph Overview
- Breadth First Search
- Depth First Search

Lecture 2

- Problem Solving based on concepts on Trees & Graph
- Problems Solving on Bread First Search.
- Problem Solving on Depth First Search.

Lecture 3

- Overview of Greedy approach to solve problems
- Basic concepts of Dynamic Programming.

Lecture 4

- Problem Solving on greedy
- Problem Solving on memonization concepts.