Unwired Learning

Data Structures and Algorithms
(Course Curriculum)

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Course Introduction

- Course Introduction
- Curriculum Walkthrough

Big O Notation

- Section Introduction
- Complexity Analysis
- Why do we need Big O Notation?
- Big O(n) Complexity
- Big O(1) Complexity
- Counting Operations
- Simplifying Big O - Part 1
- Big O(n^2) Complexity
- Simplifying Big O - Part 2
- Big O(n!) Complexity
- Space Complexity
- Space Complexity - II
- Section Summary

Essential Concepts - I

- Memory
- Logarithm

Data Structure - Introduction

- Introduction to Data Structures

Data Structures - Array

- Array Introduction
- Array - Common Operations I
- Array - Common Operations II
- Static vs Dynamic Array - Common Operations III

Data Structures - Linked List

- Linked List
- Linked List Complexities

- Doubly Linked List
- Circular Linked List

Data Structures - Stack and Queue

- Stack and Queue

Data Structures - Hash Tables

- Hash Tables

Data Structures - Trees

- Tree - Part 1
- Tree - Part 2
- Binary Tree
- Types of Binary Tree
- Binary Search Tree
- AVL - Red Back Tree

Data Structures - Heaps

- Heaps
- Heap Sort and Priority Queue

Data Structures - Trie

- Trie - I
- Trie - II
- Why are Tries Important?

Data Structures - Graph

- Graph

Essential Concepts - II

- What is Recursion?
- Recursion: Control of a Function
- Recursion: Tracing Tree
- Recursion: Understanding Call Stack

- Recursion: Tree Recursion
- Recursion Example - Factorial of a Number
- Practice Questions

Algorithm: Searching

- Linear Search
- Binary Search
- Binary Search Complexity
- Binary Search Implementation
- Binary Search Implementation - Recursion

Algorithm: Sorting Elementary

- Sorting Algorithm Introduction
- Bubble Sort
- Bubble Sort Visualization
- Bubble Sort Implementation
- Bubble Sort Complexity
- Selection Sort
- Selection Sort Visualization
- Selection Sort - Implementation
- Selection Sort - Complexity
- Insertion Sort
- Insertion Sort Implementation
- Insertion Sort Complexity
- Performance Analysis

Algorithm: Sorting Advanced

- Divide and Conquer Algorithms
- Quick Sort
- Quick Sort Complexity
- Quick Sort Implementation
- Merge Sort
- Merge Sort Complexity
- Merge Sort Implementation

Algorithms: Tree Traversal

- Tree Traversal
- Depth First Search - Preorder Inorder Postorder
- Binary Tree Implementation
- Depth First Search - Implementation
- Depth First Search - Complexity
- Breadth First Search - Level Order
- Breadth First Search - Implementation
- Breadth First Search - Complexity

Algorithms: Graph Traversal

- Graph Traversal
- Graph Implementation
- Breadth First Search - Implementation
- Depth First Search - Implementation
- Graph Traversal Complexity

Implementations and Interview Questions (IQ)

- Data Structure Implementation
- Problem Solving Approach

IQ: Two Sum

- Two Sum
- Solution: Two Sum

IQ: Min Stack

- Min Stack
- Min Stack Implementation
- Solution: Min Stack

IQ: Max Stack

- Max Stack

IQ: Design a Linked List

- Design a Linked List - I

- Design a Linked List - II
- Design a Linked List - III
- Design a Linked List - IV
- Solution: Design a Linked List

IQ: Reverse Linked List

- Reverse Linked List - I
- Reverse Linked List - II
- Solution: Reverse Linked List

IQ: Construct Binary Tree

- Traversal (Preorder-Inorder-Postorder)
- Construct BT: From Preorder and Inorder Traversal - I
- Construct BT: From Preorder and Inorder Traversal - II
- Solution: Construct BT

IQ: Invert Binary Tree

- Invert Binary Tree - I
- Invert Binary Tree - II
- Solution: Invert Binary Tree

IQ: Construct Binary Search Tree

- Construct BST: From Preorder Traversal
- Construct BST: From Preorder Traversal - II
- Solution: Construct BST

IQ: Detect Capital

- Detect Capital
- Solution: Detect Capital

IQ: Reverse String

- Reverse String
- Solution: Reverse String

IQ: Longest Palindromic Substring

- Longest Palindromic Substring - I
- Longest Palindromic Substring - II
- Solution: Longest Palindromic Substring

Thank You For Being Here!

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