Unwired Learning

Data Structures and Algorithms: The Complete Bootcamp (Course Curriculum)



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Course Introduction

- Course Introduction
- Welcome Let's Get Started!
- Curriculum Walkthrough
- Code Source Github

Big O Notation

- Section Introduction
- Complexity Analysis
- Why We Need Big O Notation?
- Big O(n) Complexity
- Big O(1) Complexity
- Counting Operations
- Simplifying Big 0 Part 1
- Big O(n²) Complexity
- Simplifying Big 0 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 and Implementing A 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 Black 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

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

- Data Structure Implementation
- Problem-Solving Approach

Question 1: Two Sum

- Two Sum
- Code Solution: Two Sum

Question 2: Min Stack

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

Question 3: Max Stack

- Max Stack
- Solution: Max Stack

Question 4: 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 Linked List

Question 5: Reverse Linked List

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

Question 6: 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 Binary Tree PI

Question 7: Invert Binary Tree

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

Question 8: Construct Binary Search Tree

- Construct BST: From Preorder Traversal
- Construct BST: From Preorder Traversal II
- Solution: Construct Binary Search Tree

Question 9: Detect Capital

- Detect Capital
- Solution: Detect Capital

Question 10: Reverse String

- Reverse String
- Solution: Reverse String

Question 11: Longest Palindromic Substring

- Longest Palindromic Substring I
- Longest Palindromic Substring II

• Solution: Longest Palindromic Substring

Course Completion Certificate 🎓

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