Stallers

Data Structures and Algorithms

Get ready to get a **Placement** earlier this time

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Course Overview

Unlock your potential with our 3-month intensive course in Data Structures and Algorithms. Designed for developers and tech enthusiasts, this program enhances problem-solving skills and coding efficiency by using refined resourses. Gain in-depth knowledge of essential concepts, tackle complex challenges, and excel in technical interviews. Perfect for advancing your programming prowess.

Duration: 12 Weeks
Mode: In-person (Google Meet)
Start Date: 25 Oct. 2024

Key Features

Hands-On Projects
Build real-world applications from day one

Expert Instructors:
Learn from industry professionals with years of experience.

Flexible Learning
Access course materials anytime, anywhere.

Support
24/7 access to our helpdesk and community forums.

OBJECTIVES

What we do?

At Stallers, we partner with various startups to provide real-world projects and job placements. Our mentors guide students through hands-on learning, ensuring they gain practical skills. This approach helps students secure job opportunities quickly.

How we Teach ?

At Stallers, our skilled mentors provide interactive sessions, hands-on projects, and regular assessments. Their guidance ensures practical skills and personalized support, with job placement assistance to help you succeed in 3 months.

Placements we provide

Join Stallers and boost your career with guaranteed placement support. Our expert team connects you with top opportunities, ensuring you're job-ready upon course completion. Secure your future with us today!

Course Roadmap

Week 1

INTRODUCTION TO DATA STRUCTURES

- Arrays and Linked Lists
- Time and Space Complexity Basics

Week 2

INTRODUCTION TO DATA STRUCTURES (CONTINUED)

- Stacks and Queues
- Basic operations and implementations

Week 3

ADVANCED DATA STRUCTURES

- Binary Trees and AVL Trees
- Tree traversal methods

Week 4

ADVANCED DATA STRUCTURES (CONTINUED)

- B-Trees and their applications
- Introduction to Graphs and representations

Course Roadmap

Week 5

HASHING AND HEAPS

- Hash Tables and Collision Resolution
- Heaps (Min-Heap, Max-Heap) and Priority Queues

Week 6

ALGORITHMS BASICS

- Sorting Algorithms: Bubble, Merge, Quick, Insertion, Selection
- Basic Searching Algorithms: Binary Search, Linear Search

Week 7

ADVANCED ALGORITHMS

- Dynamic Programming Basics and techniques
- Greedy Algorithms and their applications

Week 8

ALGORITHMIC PROBLEM SOLVING

- B-Trees and their applications
- Introduction to Graphs and representations

Course Roadmap

Week 9

ADVANCED GRAPH ALGORITHMS

- Integrating APIs and handling asynchronous operations
- Error handling and middleware

Week 10

SEGMENT TREES AND FENWICK TREES

- Fundamentals of database design and SQL
- Performing CRUD operations and managing data

Week 11

TRIE AND UNION-FIND

- Building a complete web application: Front-end and back-end integration
- Implementing features and functionality learned throughout the course

Week 12

CAPSTONE PROJECT & REVIEW

- Complete a project to implement and optimize algorithms
- Review concepts and practice with mock interviews

DETAILED
SYLLABUS

Week 1 and 2

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Introduction to Data Structures

- **Arrays:** Learn how arrays store and manage data, their types, applications, and limitations.
- **Linked Lists:** Explore singly, doubly, and circular linked lists, and understand their advantages over arrays.
- **Stacks and Queues:** Study these sequential data structures, their implementations, and algorithm applications.
- **Time and Space Complexity:** Understand how to evaluate algorithm efficiency by analyzing time and space complexity.

Outcomes

Learn to use arrays, linked lists, stacks, and queues effectively for data management. Understand their advantages, applications, and limitations. Gain skills in implementing these structures and evaluating algorithm efficiency through time and space complexity analysis, enhancing your problem-solving and optimization capabilities.

Week 3 and 4

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Advanced Data Structures

- **Trees:** Dive into tree data structures like Binary Trees, AVL Trees, and B-Trees. Learn about their properties, operations, and applications in hierarchical data management.
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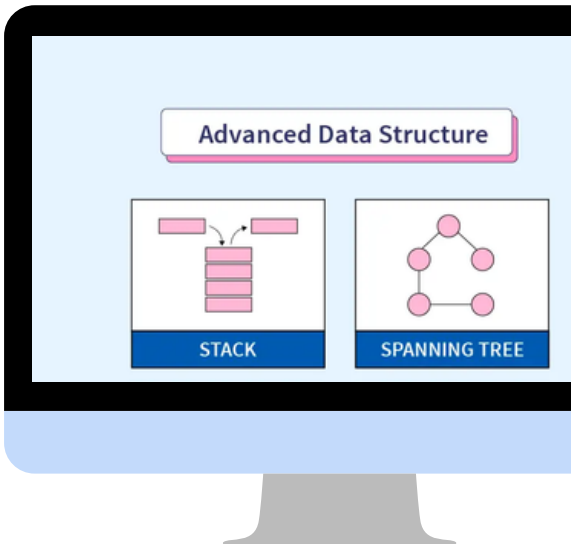
- **Graphs:** Study graph data structures, including adjacency matrices and adjacency lists. Understand how to model relationships and solve problems using graph-based techniques, such as traversals and shortest path algorithms. Gain insights into their practical applications in various domains.



Outcomes

Understand tree data structures like Binary Trees, AVL Trees, and B-Trees, focusing on their properties, operations, and applications in managing hierarchical data. Study graph data structures, including adjacency matrices and lists, to model relationships and solve problems using graph-based techniques effectively.

Week 5 and 6

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Algorithms Basics

- **Sorting Algorithms:** Compare sorting techniques such as Bubble Sort, Merge Sort, and Quick Sort. Understand their time complexities, advantages, and best use cases for different scenarios.

- **Searching Algorithms:** Explore searching methods like Binary Search, focusing on efficiently locating data within sorted datasets. Learn how each algorithm performs and when to apply them based on the data and requirements. Gain a comprehensive understanding of these fundamental algorithms.

Outcomes

Sorting Algorithms: Compare various sorting techniques such as Bubble Sort, Merge Sort, Quick Sort, and others. Understand their time complexities and best use cases.

Searching Algorithms: Explore searching algorithms like Binary Search, and learn how to efficiently locate data within sorted datasets.

Week 7 and 8

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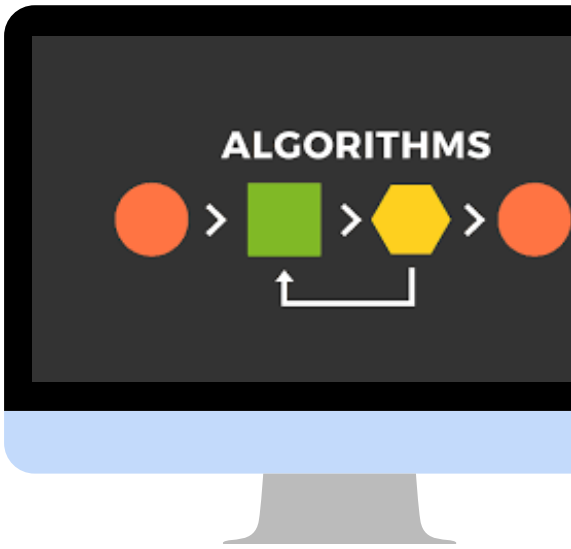
Advanced Algorithms

- **Dynamic Programming:** Learn the principles of dynamic programming, which involves breaking down problems into simpler sub-problems and solving them efficiently. Study techniques such as memoization and tabulation.

- **Greedy Algorithms:** Understand greedy algorithms, which build up a solution piece by piece, always choosing the next piece that offers the most immediate benefit. Learn how to apply this approach to optimization problems.



Outcomes

Learn dynamic programming principles by breaking problems into simpler sub-problems and solving them efficiently using techniques like memoization and tabulation. Understand greedy algorithms, which build solutions incrementally by selecting the most immediate benefit at each step, and apply this approach to solve optimization problems effectively.

Week 9 and 10

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Algorithmic Problem Solving

- **Backtracking:** Master the technique of backtracking to explore all potential solutions by systematically searching through possibilities and reverting to previous steps when necessary. This method is crucial for solving complex problems where multiple solutions need to be considered.

- **Graph Algorithms:** Delve into advanced graph algorithms, including Dijkstra's Shortest Path, Breadth-First Search (BFS), and Depth-First Search (DFS). Learn to address complex network and relationship problems by efficiently traversing and analyzing graph structures to find optimal solutions.

Outcomes

Master backtracking to systematically explore and find all possible solutions by searching through options and reverting when needed. Delve into advanced graph algorithms like Dijkstra's Shortest Path, BFS, and DFS to effectively solve complex problems involving networks and relationships.

Week 11 and 12

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Capstone Project & Review

- **Capstone Project:** Apply your knowledge by working on a comprehensive capstone project that involves implementing and optimizing algorithms. This project will demonstrate your skills and help you create a valuable addition to your portfolio.

- **Review and Interview Preparation:** Review key concepts from the course and prepare for technical interviews with mock interviews, practice problems, and strategies for effective problem-solving.

Outcomes

Capstone Project: Apply your knowledge by working on a comprehensive project that involves implementing and optimizing algorithms, showcasing your skills and enhancing your portfolio. Review and Interview Preparation: Review key concepts, prepare for technical interviews with mock sessions, practice problems, and effective problem-solving strategies.

ROADMAP

PLACEMENT WEEK

PLACEMENTS WEEK

our comprehensive one-week placement training program designed to equip you with essential skills, knowledge, and confidence for your job search.

SCHEDULE OVERVIEW

- **Day 1:** Introduction to Placement Strategies and Resume Writing
- **Day 2:** Interview Preparation and Body Language
- **Day 3:** Skill Assessment and Improvement Workshops
- **Day 4:** Mock Interviews and Feedback Sessions
- **Day 5**: Personal Branding and Online Presence
- **Day 6:** Networking Strategies and Career Planning
- **Day 7:** Final Review and Q&A Session.

WEEKS HIGHLIGHTS

Resume Building: Craft a compelling resume that stands out to employers.

Interview Techniques: Master strategies for acing interviews and handling common questions.

Skill Development: Enhance key skills including communication, problem-solving, and teamwork.

Mock Interviews: Gain practical experience with simulated interviews.

Networking Opportunities: Connect with industry professionals and expand your network.

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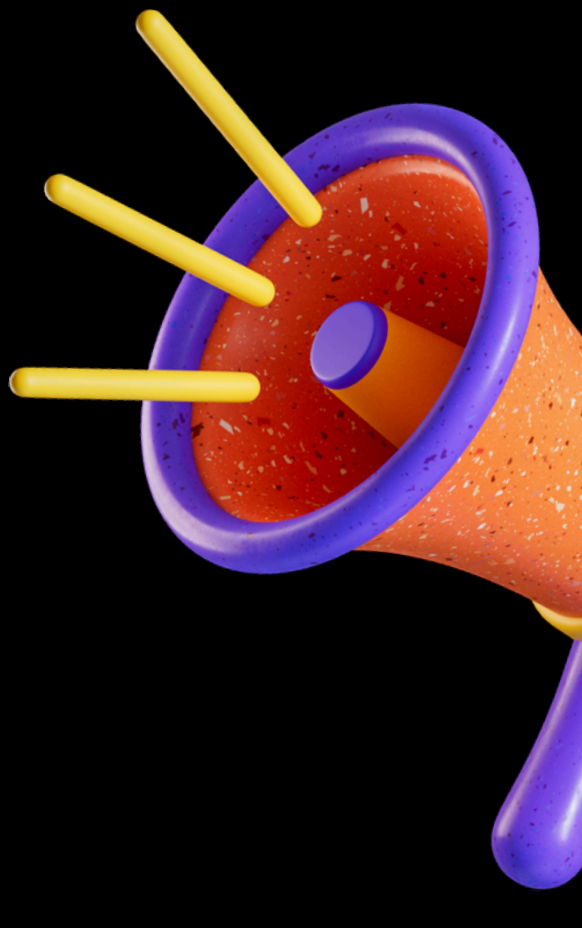
YOU'LL GET
ATLEAST

10 different job opportunity at the end of

3 MONTHS



Guranteed

By the end of our transformative 3-month course, you'll be overwhelmed with job offers from at least 10 top companies. This is your chance to choose from a wealth of exciting career opportunities and launch yourself into a successful future!

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Testimonials

Arjun Mehta,

★★★★★

3 months with Stallers course helped me secure a front-end developer job quickly!.

Priya

★★★★★

The personalized mentorship at Stallers gave me the skills and confidence to succeed.

Raghav

★★★★★

Having placement earlier than compeleting my collges was the best experience, Thanks Stallers

Kavya

★★★★★

Stallers' support was outstanding, helping me land a software engineer position effortlessly.

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THANK YOU

SEE YOU IN THE CLASSES!

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