

SYLLABUS

MASTER DATA STRUCTURES & ALGORITHMS USING JAVA

THIS COURSE IS IDEAL FOR
students stepping into the world of
coding or for those who have
intermediate expertise and want to
become a Pro Coder

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WHY SHOULD YOU DO THIS COURSE?

Required for Development level programs

Concepts like Data structures, algorithms are required to write good code and are the basis of Development level programs like Full stack Web development or Mobile development.

Foundation concepts of coding

The concepts taught in this course are the foundation of coding. Having mastery over them ensures that you come up as a great coder.

Highly important for Jobs and internships

Any good developer is expected to be well conversant with Data structures and algorithms and these concepts are tested in almost good companies while screening candidates for Software developer role.

COURSE HIGHLIGHTS

01 350+ problems

02 70 Hours Duration

03 6 Live projects

04 Taught in Classroom,
Online and Live modes

THIS COURSE INCLUDES

- 350+ Problem Set
- 6 Live Projects
- 4/6 Months Course
- Certificate of completion and Certificate of Excellence
- Placement assistance



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- **Welcome aboard**
- **Welcome to the course**
- **Flowcharts and Psuedocode (completed)**
- This helps you to understand how to convert logic and write it in the form of diagrammatic and textual way.
- **Basics of Programming (completed)**
- For any language the first and the most important thing to learn is the syntax, variables, loops, and conditionals. In this section, we will cover how to convert our logic to Java Code.
- **Operators in Java (completed)**
- To help you understand different types of operators such as Arithmetic, Compound assignment, Bitwise, and Logical operators.
- **Functions (completed)**
- In this section, you will learn to write code in a modular way to help you reuse the code in different C++ files and make it more readable and organized.
- **Arrays (completed)**
- This is the one of most important data structure that is generally easy to understand but algorithms and concepts of this topic can be very tricky and it is asked in almost every tech company.
- Algorithms such as Binary Search, Sorting, Maximum Subarrays, and Searching are must to do in order to get a good grasp of this topic.
- **Bitmasking (completed)**
- In this section, we will understand how Bitwise operators like AND, OR, XOR, and NOT to work on machine code to help write the programs that works faster, since computer understands machine code.
- This concept is also very useful in Recursion as well as Dynamic programming advanced concepts.
- **Strings (completed)**
- It's an alternative to Character Array, Strings data type helps in handling string easier and faster. In depth understanding of this concept becomes easier after understanding OOPs concepts.
- **ArrayList (completed)**

In Java, ArrayList class uses a dynamic array for storing the elements. It is like an array, but there is no size limit.

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- **Recursion Introduction (completed)**
- Inorder to understand Recursion we must understand Recursion, so this is what is focussed here i.e. write codes using Recursion.
- It is used in Dynamic Programming and as well as in data structure such as Trees, Graphs, and Heap etc.
- **Deep Diving into recursion (completed)**
- In this section, we will start exploring how to form recurrence relations using problem statements and mainly discussing recursion on arrays and strings.
- **Recursion on Subsets (completed)**
- In this section, we will understand how to solve algorithms such as phone search and advanced concept of Knapsack that is mostly asked in Interviews.
- **Backtracking (completed)**
- It is the most important concept to understand in Recursion and it is thoroughly checked in Interviews and Technical Rounds. If one has to master recursion they need to master backtracking.
- **Time and Space Complexity (completed)**
- It helps us to compare the algorithms on the basis of Time and Space it takes to run the code and help us to master how to write codes by considering constraints of the problem.
- **Object Oriented Programming (completed)**
- One of the most important topic to build data structures, this is not only used in every data structure but also help us to understand how to associate the real world with programming language.
- **Stack (completed)**
- It follows the principle of Last In and First Out, although this data structure can be easily understood but the concept of LIFO can be used to solve some typical problems such as Histogram Area, Stock Span, and Balanced Parentheses etc.
- **Queues (completed)**
- This data structure works just like a normal queue does and it is mainly used as a helping data structure in Trees and Graphs.
- **Linked List (ongoing)**
- **In this topic we learn how to store data in a non-contiguous manner and we understand how the Linked List can work in a better time complexity than other data structures in some operations.**

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- **DeQueue (completed)**
- It will help you in the Interview questions based on Sliding Window.
- **Binary Trees and Binary Search Trees**
- In this data structure, we learn how to store data in a hierarchical format. It is one of the most important topic from Interview point of view and questions from this topic is frequently asked in companies such as Amazon, Microsoft, Flipkart and Google etc.
- **Heap**
- This data structures helps you to understand how the infinite stream of data coming can be accessed to fetch the useful information, for example, find the most sold products on any website?
- **Hashmap**
- It helps us to understand how we can store, update and delete the data in constant time. It is majorly used in Dynamic Programming and Graphs to help us make the time complexities of the algorithms better.
- **Graphs**
- The most popular data structures in companies like Direct-i, Google, and Arcesium etc.
- It is usually considered tough because of the dependency on other data strucutres such as queue, hashmaps, sets, and heap etc. but once you get a taste of how to apply these things together it will make you a better programmer.
- **Tries**
- It helps us to search in constant time and incase you want to use auto suggestions features of Amazon, Flipkart or other sites search bar this is the solution.
- Many problems such as Maximum-Xor, and Maximum Sum etc. uses tries to help improve complexity of the problem.
- **One Dimensional Dynamic Programming (completed)**
- We learn how we can improve the time complexities of Recursive algorithms drastically using concepts like Top Down approach. Also we convert out Top down approach to bottom up approach using the recurrence relation and DP concept, it's exactly what is required for the master DP.
- **Two Dimensional Dynamic Programming (completed)**
- The most important concepts of DP are Knapsack, Optimal Game strategy, and solving string problems using 2D storage there by improving their complexities multiple folds.



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- **DP Algorithms (completed)**
- Knapsack, LCS, LIS, Matrix Chain Multiplication are amongst the topics/algorithms that one should know to crack top placements.
- **Greedy Algorithms**
- This is where you learn how being greedy can benefit you to solve certain problems in a faster way. The main point of focus here is to understand where we can apply Greedy over Dynamic Programming.
- **Java Collection Framework**
- The Collection in Java is a framework that provides an architecture to store and manipulate the group of objects. Java Collections can achieve all the operations that you perform on a data such as searching, sorting, insertion, manipulation, and deletion.
- **Top Tech Company Questions**
- Practise from the most asked questions in companies such as Amazon, Facebook, Microsoft, LinkedIn, and Google etc. Become the programmer to crack any of your dream company.
- **Google, Amazon, GoJek, Flipkart, Uber, Amex Interview mantras**
- This will give you an idea of how you should prepare yourself for the final interviews and prepare yourself for everything that you may face during the placement process of any company.



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PROJECTS



This project uses Arrays to build a very interesting Snake game



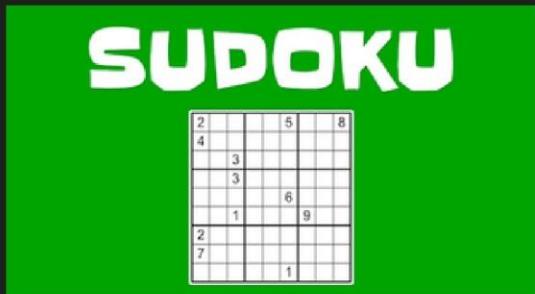
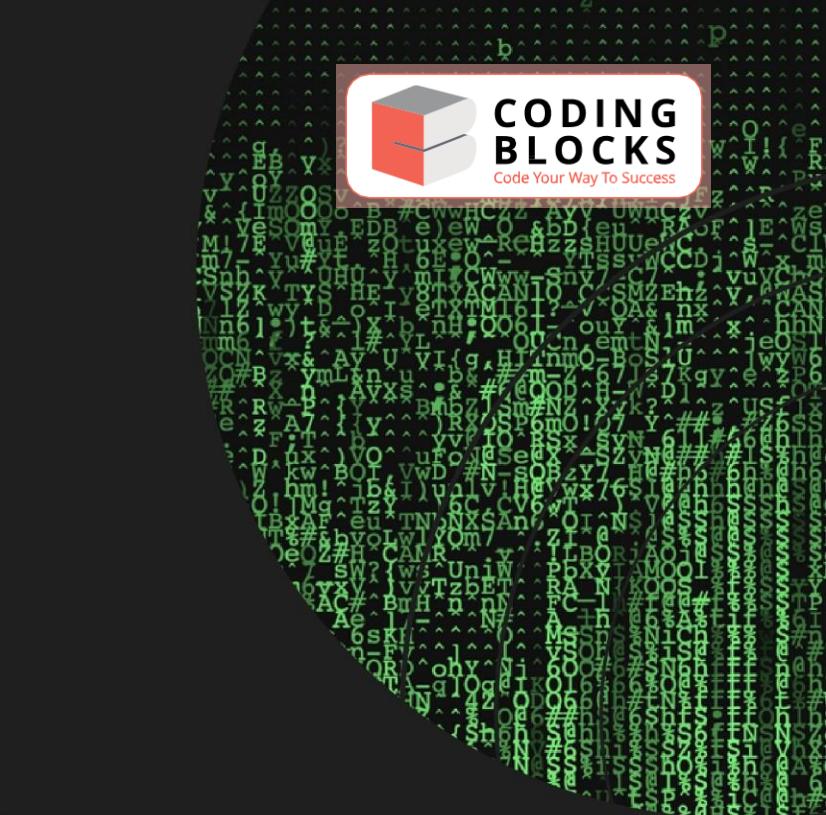
This project uses concepts of DSA to build Splitwise App



Plan your travel when you build your own application by using Graphs



Use DP optimisation to build this all time favourite game and be a leader in your pack



Make your very own Sudoku solver with Backtracking



Design your very own Frog game while using Greedy optimisation in DSA

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CHOOSE BATCH



Classroom Batch



LiveBatch



Online Batch

WHY CHOOSE CODING BLOCKS

01 Superb mentors

02 Project based learning

03 Industry-vetted curriculum

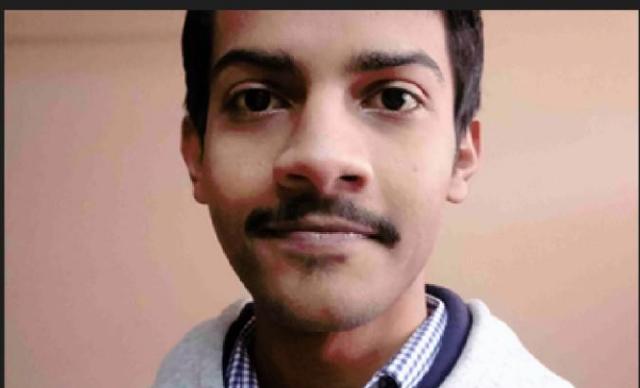
04 Superb placements

INSPIRATIONAL SUCCESS STORIES OF CB ALUMNI



Abha Aggarwal

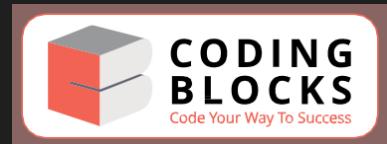
SDE-1, Microsoft



Anshul Gautam

SDE-1, Oracle

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Anshuman Diwakar
SDE-1, Goldman Sachs



Isha Gautam
SDE-1, Google



Sahrika
SDE-1, Flipkart

YOU CAN BE ONE OF THEM! 

OUR STUDENTS CAN BE FOUND IN



RETURN ON INVESTMENT

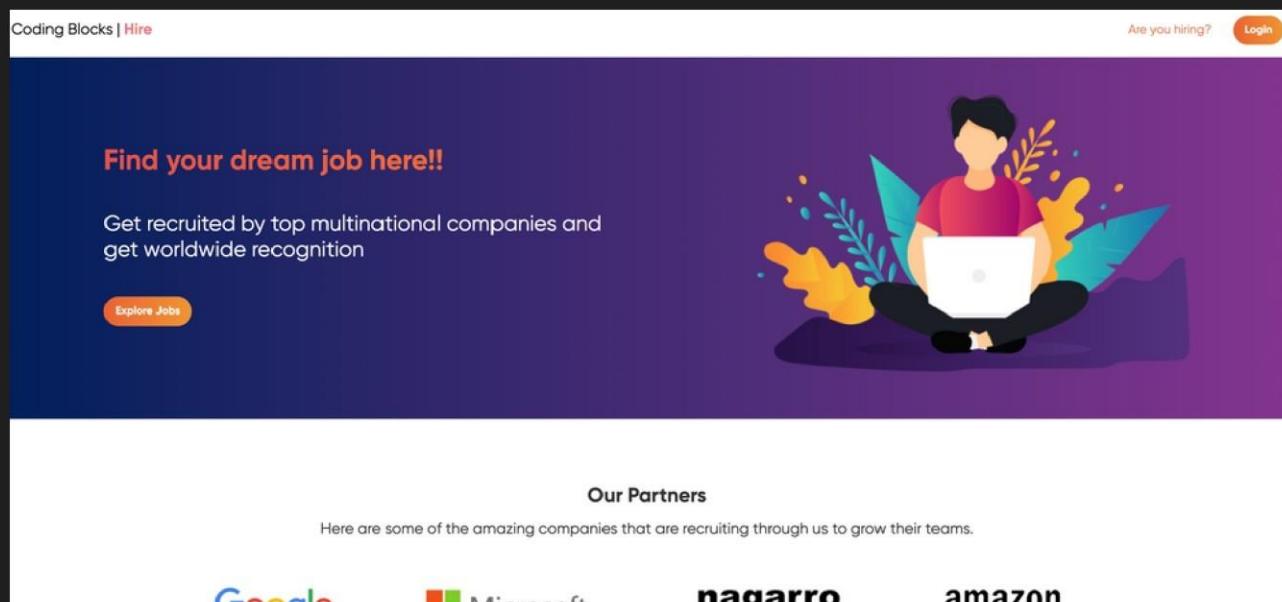
45x - 200x

After the completion of the course you will
get a ROI of 45 - 200x



PLACEMENT ASSISTANCE

A dedicated Placement team along with Hiring Blocks, the placement portal of Coding Blocks work round the clock to ensure the best of opportunities in the Tech arena are available to you.



The screenshot shows the Coding Blocks Hiring Portal. At the top, there's a navigation bar with 'Coding Blocks | Hire' on the left, 'Are you hiring?' in the center, and a 'Login' button on the right. Below the header, a large purple banner features the text 'Find your dream job here!!' and 'Get recruited by top multinational companies and get worldwide recognition'. It includes a 'Explore Jobs' button and an illustration of a person sitting cross-legged, working on a laptop, surrounded by leaves. Below the banner, a white section titled 'Our Partners' lists several company logos: Google, Microsoft, nagarro, and amazon.

ALL THE HELP YOU NEED

- 01** Developer CV and Dev profile preparation
- 02** Interview preparation
- 03** 150+ Partner companies for Placements and internships
- 04** Mock interviews

TESTIMONIALS



Mahima
Microsoft



Dhruv Aggarwal
JP Morgan Chase & Co.



Anshul Mittal
Google



Dheeraj
Amazon



Srishti Kohli
Walmart



Rajat Gupta
Walmart

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