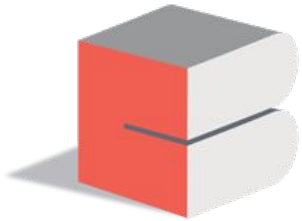
Master Data Structure and Algorithms using Java - Classroom Orientation



CODING BLOCKS

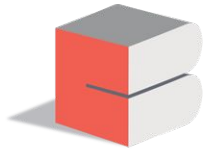
Code Your Way To Success

Who am I ?

- Gaurav Puniya
  - Java Instructor and Product Engineer @ **CodingBlocks**
  - B.Tech (ICE) from **NSUT Delhi**
  - Former **GSoC Contributor**

Tell me about yourself

Objectives



CODING BLOCKS
Code Your Way To Success

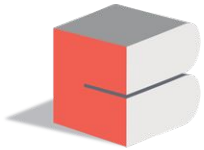
- Course Information
- Puzzles
- Placement Process
- Q&A

Course Information

About this course

- **No** Prerequisites
- Duration (~3-4 months)
  - **30+** Live Sessions
  - Saturday and Sunday from **9:30PM*** to **12:30PM***
- Course Assignment from **HackerBlocks** / **LeetCode**
- Doubt Support by a **Teaching Assistant** (TA).
- Access to **Class Recordings** within 12 Hours + Real-time Access to **Class Notes**
- **Personal Mentoring** and **Progress Tracking** by **mentor** & **TA**.

Course Structure



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Basic of Programming
1D Arrays, Functions, Strings, 2D Arrays
DMA, OOP, Binary Search
Recursion
Linked List, Stack and Queues
Trees (Binary Trees, BST, Heaps)
Hash Maps, Sliding Window, Tries
Dynamic Programming
Graphs

How can you excel this course ?

— — —

- Attend the live sessions regularly.
- Study the concepts before the class and revise them after as well.
- Make notes**
- Complete your assignments**
- Don’t use help unless you have tried the question yourself.

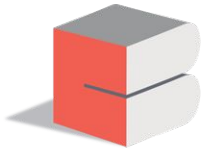
Anything else ?

– – –

- Patience
- Discipline
- Hard
- Determination

Work

Course Outcomes*



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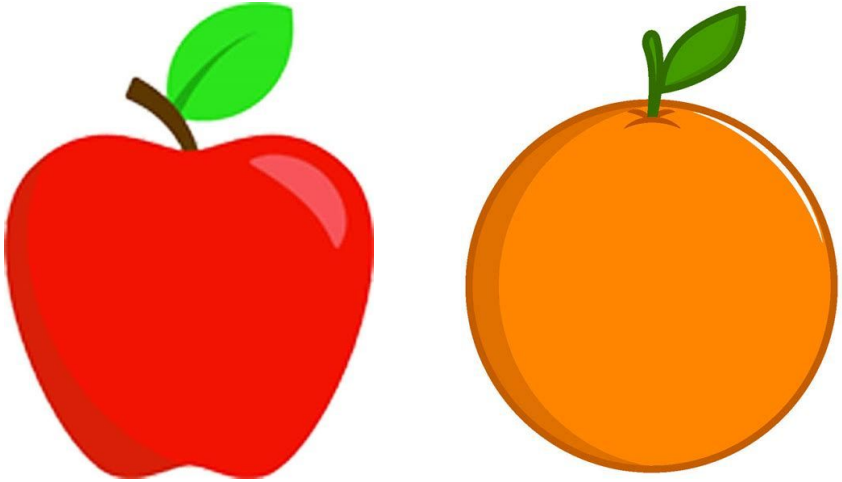
- You will build a **SOLID** foundation of data structures and algorithms.
- You will develop working **PROFICIENCY** in JAVA programming language.
- Your problem solving skills will **IMPROVE**.
- **STEPPING STONE** for advanced courses.
- **Improved Confidence** and a better understanding of company's selection process.

The Coin Puzzle

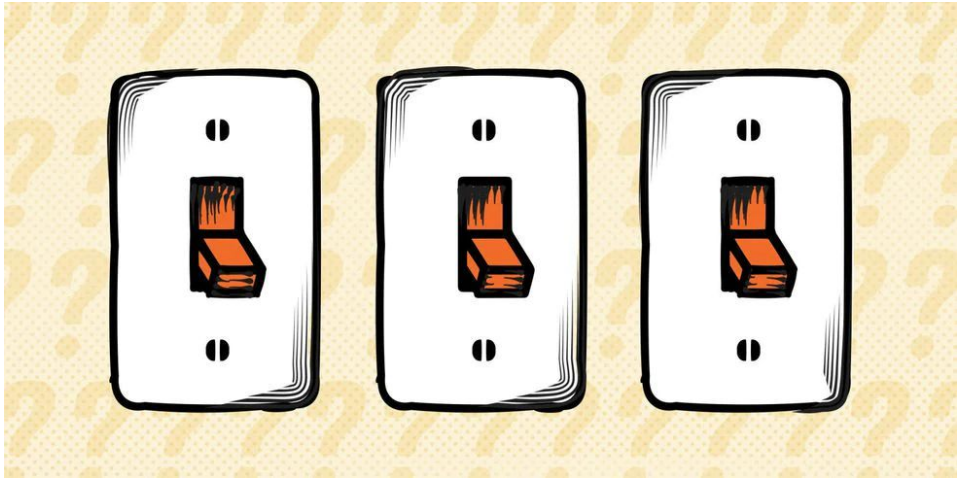
There are 8 coins, all except one are of same weight, the odd one is heavier than the rest. You must determine which one is the odd one out using an old fashioned balance such that you can use the balance only twice.

Three Boxes of Fruits

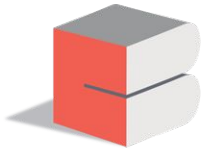


You are given three boxes of fruits. The first box is marked apples, the second is marked oranges, and the third box is marked apples and oranges. Each of the boxes is labeled incorrectly. How could you label each box correctly if you were allowed to select only one fruit from one of the boxes?

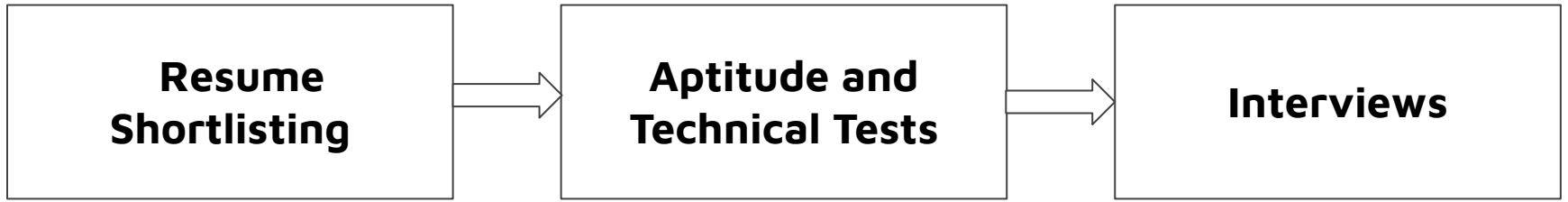
Light Bulbs



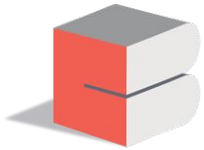
There is a room with three light bulbs inside it. Outside the room, there are three switches, connected to the bulbs. You may manipulate the switches as you wish, but once you open the door you can’t change them. Identify each switch with respect to its bulb such that you can open the door only once.



The Placement Process


Resume Shortlisting
Aptitude and Technical Tests
Interviews

Resume Shortlisting



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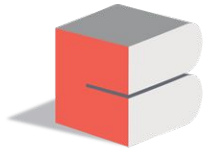
- CGPA (>= 7.5 for SDE Roles, >= 8.0 for Research Roles, no backlogs)
- Technical Skills
- Projects (Development/Research)
- Past Experience (Internships etc.)
- Achievements (Certifications / Hackathons etc.)
- Coursework

Aptitude MCQ Test - (optional)

- **Non-Technical**
  - Quantitative Ability
  - Logical Reasoning
  - Verbal Ability
- **Technical****
  - Database Management System (DBMS)
  - Operating System (OS)
  - Compute Networks (CN)
  - Data Structure and Algorithms (DSA)

Technical Test



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Coding test based on **Data Structure and Algorithms (DSA)**

What is an algorithm ?

An algorithm is a **recipe** to solve a problem.

What is an algorithm ?

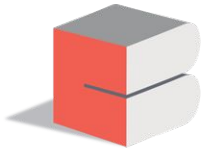
It is a set of unambiguous instructions which when executed sequentially transforms the input into output.

How can you express an algorithm ?

– – –

- FlowChart
- PseudoCode
- Programming Language (e.g. using C++, JAVA)

What is a data structure ?



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It is a container utilised by an algorithm to store, and manipulate data.

- Arrays
- Linked List
- Stack and Queues
- Trees
  - Binary Trees
  - Binary Search Trees (BST)
  - Heaps (Priority Queues)
- Hash Tables (Hashing)
- Tries
- Graphs

Interviews

On-Campus

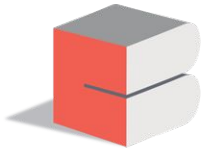
- **Online Assessment (DSA Round)**
- **Technical Interview (1-2* Rounds)**
  - Data Structures and Algorithms
  - CS Fundamentals
  - Projects and Internships
  - System Design
- **Non-Technical Interview (1 Round)**

  **Just a formality*
  - HR Round
  - Behavioural/Leadership

Off-Campus

- **Online Assessment (DSA Round)**
- **Technical Interview (3-5* Rounds**
  - Data Structures and Algorithms
  - CS Fundamentals
  - Projects and Internships
  - System Desig
- **Non-Technical Interview (1-2 Rounds)**
  - HR Round
  - Behavioural/Leadership
  - *Culture fit round**

Coding Environment



Q&A

- WhatsApp :+91 8527-99-8963
- Email : gaurav.puniya@codingblocks.com