ACCIOJOB FULL STACK DEVELOPMENT WEEK-WISE SYLLABUS

- Week 1 -
  - Programming Basics
    - Printing and reading inputs
    - Datatypes and variables
    - Space and Time Complexity
  - Arrays and Matrices
    - Declaration & iteration
    - Handling Input & printing output
    - Iterating over arrays
  - Strings
    - Initialization and basic string methods
    - Iterating over characters
- Week 2 -
  - Recursion
    - Basic concept
    - Simple recursion questions
  - Sorting Algorithms
    - Definition of Greedy Algorithms (basic intro)
      - Some example algorithms of maybe min number of coins
    - Types of Sorting
      - Merge Sort
      - Quick Sort
  - Searching
    - Linear Search
- Week 3 -
  - Binary search
    - Recursive Binary Search
    - Iterative Binary Search
    - Time Complexity
  - Object Oriented Programming Basics
  - Linked List
    - Linked Lists vs Array time complexities and differences.
    - Single Linked List
    - Linked Lists operations
    - Double Linked List
    - Circular Linked List
    - Must Do Questions: Using linked lists for finding sum of 2 long numbers, cycle detection in linked lists, etc.
- Week 4 -

    - Two Pointers and sliding window
        - Sliding window question.
        - Working of two pointer
        - Time Complexity
    - Stacks, Queues and Deques
        - LIFO FIFO basic functioning
        - Implementation using arrays and linked lists
        - Popular questions like closest larger element using stacks, using queues to solve some 2D matrix questions like finding islands in a boolean matrix
- Week 5 -
    - Kadane's Algorithm
        - Prefix Sum
    - String Algo - KMP
    - Hashing
        - Full theory including hash functions, collisions, probing, probing problems, chaining.
        - Popular questions. Hash sets and HashMaps differences, also discuss treeMaps and differences
    - Heaps
        - Introduction - Insert, Delete, find min, max, parent/child indexes
        - Heap Sort
        - Types of Heaps (Max & Min)
        - Build Heap
        - Popular questions for finding K largest etc.
- Week 6 -
    - Some popular Algorithms
        - Sieve of Eratosthenes
        - GCD & LCM
        - Prefix, postfix infix operation conversion
    - BIt Manipulation
        - Popular questions. 1 lecture.
    - Recursion Revisited
        - Theory revisit
        - Discuss questions like create a group from array summing to K (questions about choosing combinations and printing permutations)
        - BackTracking - nQueens, solving Sudoku.
- Week 7 -
    - Trees
        - Definition of trees, height, Binary Trees, complete trees, balanced trees, root, leaves, ancestor,
        - Traversals - 4 types
        - Binary Search Trees

        - Implementation
        - Deletion, insertion, search, ancestor, next maximum, common ancestor
        - Problems without balancing
- Week 8 -
    - Graphs
        - Basic implementation using adjacency list and matrix. Time complexity in common operations
        - BFS and DFS with implementation
            - Common problems on both including bipartite
            - Cycle detection using back edge and its intuition
        - Dijkstra's Algorithm
            - Logic and implementation
            - Using a PriorityQueue
- Week 9 -
    - Dynamic Programming
        - Problems with recursion, issues of complexity and stack overflow
        - Tabulation and memoization
        - Fibonacci, KnapSack Problem, Coin Change problem, Matrix multiplication number of operations.
- Week 10 and 11 -
    - DSA Revision and more practice questions on DSA - all topics
    - SQL - basics, joins, group by , having, normalization
    - Low Level System Design

DSA + OOP PROJECT

- Week 12 -
    - HTML
        - What is frontend? Why it is important?
        - Common HTML tags and their usage. Viewing webpages in browsers
        - HTML Tables and Forms. Discussion on more tags & display properties.
- Week 13 -
    - CSS
        - Specificity, common style properties
        - Selectors, Box model, positioning, flex model
        - Grids in CSS, pseudo selectors.

HTML + CSS PROJECT

- Week 14 - 19
    - Javascript
        - Intro to DOM model
        - Intro to Javascript

        - Solving DSA in javascript
        - Let, var, const, hoisting and closures
        - Filters, maps, arrow functions and other ES6 syntaxes
        - Arrow Functions and bind, apply usage.
        - async, await, event loop, callbacks
        - Promises, event handling in Javascript
        - Prototypes and classes in JS

—————————————— JS + HTML+CSS PROJECT

- Week 19-23
    - ReactJS
        - Understanding class based and function based components
        - Lifecycle methods
        - Intro to Hooks
        - React router
        - Intro to redux toolkit
        - Using global redux stores in complex web apps

—————————————— REACTJS FRONTEND PROJECT

- Week 24-28
    - Intro to NodeJS
    - Creating APIs in nodeJS
    - Fs module, expressJS, streams and buffers in nodeJS
    - REST APIs
    - Intro to mongoDB
    - Designing schema in mongoDB and Postgres/MySQL
    - Mongoose and Sequelize ORMs
    - Integrating SQL and noSQL databases in express based projects
    - Authentication - stateful and stateless
    - Aggregation Queries
    - Integrating backends and frontends using REST APIs
    - Hosting your projects on Heroku

—————————————— BACKEND ONLY PROJECT

- Week 28 Onwards
    - Revision Sessions and Project Building

—————————————— FULL STACK CAPSTONE PROJECT