SEED
– INSTITUTE OF TRAINING

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Program Duration:	**For Second Year Plan** * Technical Coding Training - **18 Days - 108 Hrs** Phase – I – 6 days - Basic C Programming to While Loop Implementation and Problem Solving for All the students. *Mid Assessment Phase – II – 6 Days – Arrays to Structures and Pointers *Mid Assessment Phase – III – 6 Days – Data Structures till Linked List *Product Batch - Assessment (Product Batch Student Split up and Service Company student Split up based on their performance in Phase I Training + Assessment Consideration) Product Batch Students – Advanced Data Structures and Advanced C programming, Problem Solving using Algorithmic Thinking. Service Batch Students – Problem Solving Skills in Portal. Daily Practice Assessment in Portal for Both Product and Service Batch Students. **NOTE: Class will be 3 hrs. Hands-On Session 3 hrs in Dedicated Hackerrank Server.** **(Portal access will be available till the candidate is passed out)** **********ONLY LIVE CODING**********
	For Third Year Plan till Placement Hands-On Training in Real-Time Problem Solving in **Leetcode** (Based on Slots available). (OPTIONAL) * Technical Coding Training – **6 days –** Basics of Python with OOPs * Technical Coding Training – **6 days –** Basics of JAVA with OOPs

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SEED - C – Program Syllabus/Schedule

Phase I:

Day	Topics
1	Introduction to C- Programming, Number Systems, Basic Input/Output, Operators
2	Conditional Statements
3	Looping
4	For Loop Implementation (Patterns – I)
5	Advanced Patterns – II
6	While Loop Implementation (Number Crunching & Number Based Problems)

Phase II:

Day	Topics
1	Arrays (SSID – (Searching/Sorting/Insertion/Deletion)
2	Multi-dimensional Arrays (2d Arrays)
3	String Concepts
4	Advanced String Problem solving
5	Functions & Pointers
6	Structures and Pointers

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Phase III:

Day	Topics
1	Introduction to Data Structures Stack and Queue with Arrays, Dynamic Memory Allocation
2	Linked List Introduction
3	SSID in Linked List with Types of Linked List
4	Stack and Queue with Linked List
5	Problems Solving with Linked List
6	Sorting Algorithms, Introduction to Non-Linear Data Structures (Trees and Graphs)

NOTE: Only Live Coding will be taught throughout the training.

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Advanced Phase for Product Batch:

Advanced C:

Day	Topics
1	Introduction to Bit Manipulation with Problems Solving
2	Introduction to Recursion and Types
3	Recursion – Problem Solving
4	Recursion – Taylor Series – Optimization I & II
5	Fibonacci Series, Tower of Hanoi with Implementation
6	Matrices – Diagonal, Lower/Upper Triangular, Symmetric, Tri-Diagonal, Square band, Toeplitz Matrices, Addition of Sparse Matrix

NOTE: Topics will be added and covered based on no of days.

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Advanced Phase for Product Batch:

Advanced Algorithm:

Day	Topics
1	Introduction to Algorithms and Backtracking - N Queen Problem - Knight's Tour Problem - Rat in a Maze Problem - Subset Sum Problem
2	- Hamiltonian Cycle - Sudoku Solver - Prime Numbers after Prime P with sum S - Print all possible paths from top left to bottom right of a m x n matrix.
3	Introduction to Graphs Representation of Undirected Graphs Representation of Directed Graph Breadth First Search,Depth First Search
4	Graph Coloring Problem – Kruskal's Minimum Spanning Tree Overview about algorithms – Prim's Minimum Spanning Tree – Boruvka's Minimum Spanning Tree – Dijkstra's Shortest Path Algorithm – Minimum cost to connect all cities

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5	Introduction to Dynamic Programming – Longest Common Subsequence – Longest Palindromic Subsequence – 0/1 Knapsack Problem – Subset Sum Problem – Minimum Cost Path – Coin Change Problem
6	Coin Change Problem Boyer Moore Algorithm for Pattern Searching -Bad Character Heuristic Boyer Moore Algorithm, Good Suffix heuristic Floyd-Warshall Algorithm Longest Common Subsequence Dutch National Flag Branch & Bound Branch and bound vs backtracking Traveling Salesperson problem using branch and bound

NOTE: Algorithm Topics allocated each day may vary based on Students level and no of days allocated.