

	Topic	Details	Practice	Links
1	Introduction to Programming	Basic syntax, I/O operations, variables, data types	Solve 5-7 basic problems on HackerRank	https://www.hackerrank.com/master/challenges/10-days-of-javascript/
2	Control Structures (If, Else, Switch)	Conditional statements and logical operators	Solve problems on Codecademy and LeetCode	https://www.youtube.com/watch?v=2yGvD7T8knc&list=P1tU6_uoq9CfXal_FzhnmlMgQZ8_AKegpGzBdA0g
3	Loops (For, While, Do-While)	Basic looping concepts and nested loops	Solve looping-based problems	https://www.geeksforgeeks.org/loops-in-c-and-cpp/
4	Arrays	Understanding 1D and 2D arrays, basic operations	Solve problems involving arrays	https://www.geeksforgeeks.org/array-in-c-cpp/
5	Strings	String manipulation, functions, and operations	Work on string-based problems	https://www.geeksforgeeks.org/string-manipulation-in-c-cpp/
6	Functions	Defining, calling, recursive functions, and pass-by-value/reference	Practice problems on recursion and functions	https://www.geeksforgeeks.org/functions-in-c/
7	Time Complexity & Space Complexity	Understanding Big-O notation, analyze simple problems	Evaluate time complexity of practice problems	https://www.geeksforgeeks.org/understanding-time-complexity-simple-examples/
8	Mathematics and Number Theory	Prime numbers, GCD/LCM, factorial, modular arithmetic	Solve number theory problems	https://www.geeksforgeeks.org/prime-numbers/
9	Searching Algorithms	Binary Search, Linear Search	Solve binary search problems	https://www.geeksforgeeks.org/binary-search/
10	Sorting Algorithms	Bubble sort, Insertion sort, Merge sort, Quick sort	Practice sorting algorithm problems	https://www.geeksforgeeks.org/sorting-algorithms/
11	Recursion	Advanced recursion problems like Tower of Hanoi	Solve complex recursion problems	https://www.geeksforgeeks.org/recursion/
12	Hashing	Hash functions, hash maps, dictionaries	Solve hash-based problems	https://www.geeksforgeeks.org/hash-table-data-structure/
13	Greedy Algorithms	Greedy approach for problem-solving	Solve classic greedy problems (e.g., activity selection)	https://www.geeksforgeeks.org/greedy-algorithms/
14	Dynamic Programming (DP) Basics	Introduction to DP, memoization, tabulation	Solve basic DP problems (e.g., Fibonacci, knapsack)	https://www.geeksforgeeks.org/dynamic-programming/
15	DP (Advanced)	Advanced DP problems (e.g., longest common subsequence, matrix chain)	Solve more advanced DP problems	https://www.geeksforgeeks.org/advanced-dp-problems/
16	Backtracking	Solving problems using backtracking (e.g., N-Queens, Sudoku)	Practice backtracking problems	https://www.geeksforgeeks.org/backtracking-problem/
17	Graph Theory Basics	BFS, DFS, graph representation	Solve graph traversal problems	https://www.geeksforgeeks.org/graph-theory-structures-and-algorithms/
18	Graph Algorithms	Dijkstra's algorithm, Floyd-Warshall, Kruskal's MST	Solve graph algorithms problems	https://www.geeksforgeeks.org/graph-algorithms/
19	Trees	Binary trees, Binary Search Trees (BST), Tree traversal	Solve problems on tree traversal	https://www.geeksforgeeks.org/tree-traversal-recursion-order-and-postorder/
20	Heaps & Priority Queue	Min-heap, max-heap, heap sort	Practice heap-related problems	https://www.geeksforgeeks.org/heap-sort-theory/
21	Linked Lists	Singly, doubly linked lists, basic operations	Solve problems on linked lists	https://www.geeksforgeeks.org/linked-lists-linked-list/
22	Stack & Queue	Implementations and applications of stack and queue	Solve problems involving stacks and queues	https://www.geeksforgeeks.org/stack-data-structure/
23	Bit Manipulation	XOR, AND, OR, left shifting, right shifting	Solve bit manipulation problems	https://www.geeksforgeeks.org/bitwise-algorithms/
24	Practice Mock Test	Attempt a full-length mock test under timed conditions	Identify weak areas and work on them	https://leetcode.com/
25	Brute Force Approach	Solve problems using brute force and optimize solutions	Solve brute force to optimized problems	https://www.geeksforgeeks.org/algorithms-greedy-vs-dynamic-vs-brute-force/
26	String Matching Algorithms	KMP, Rabin-Karp, Z algorithm	Practice string matching problems	https://www.geeksforgeeks.org/kmp-string-matching-long-algorithm-for-pattern-searching/
27	Advanced Math Concepts	Permutations, combinations, inclusion-exclusion principle	Solve combinatorics problems	https://www.geeksforgeeks.org/permutation-and-combination/
28	Competitive Programming Platforms	Solve problems on platforms like Codeforces, CodeChef	Practice mixed problems (easy to medium)	https://www.codechef.com/practice
29	Problem Solving Strategy	Analyze previous CodeVita problems	Solve 3-5 previous year CodeVita problems	https://www.hackerrank.com/challenge/questions
30	Final Revision & Mock Test	Review important concepts, take another mock test	Focus on weak areas, solve 5-7 final practice problems	https://leetcode.com/

Hacker Rank https://www.youtube.com/watch?v=2yGvD7T8knc&list=P1tU6_uoq9CfXal_FzhnmlMgQZ8_AKegpGzBdA0g

TCSS NOT <https://www.geeksforgeeks.org/algorithm/longest-common-subsequence/>

Python Workshop <https://www.geeksforgeeks.org/python-workshop/>