

RECURSION ROADMAP (PATTERN-WISE + INDEXED)

LEVEL 1: BASIC RECURSION (1–15)

1. Print numbers 1 to N
2. Print numbers N to 1
3. Factorial of N
4. Sum of first N numbers
5. Power (a^b)
6. Fibonacci
7. Reverse string/array recursively
8. Palindrome check recursion
9. Max/min recursively
10. Count digits
11. Sum of array recursively
12. Binary search recursion
13. GCD recursion
14. Head vs tail recursion
15. Recursion tree dry runs

LEVEL 2: SUBSEQUENCE / SUBSET PATTERN (16–35)

16. Generate all subsets of array
17. Generate all subsequences of string
18. Subsequence sum = K
19. Subset sum (true/false)
20. Count subsets with given sum
21. Subseq sum divisible by K
22. One subsequence with sum K
23. Power set recursion
24. Binary strings length N
25. Phone number letter combinations
26. Combination Sum I

- 27. Combination Sum II
- 28. Subset II (handle duplicates)
- 29. Permutation of string
- 30. Permutation of array
- 31. Kth permutation sequence
- 32. Unique permutations
- 33. All subsets with duplicates removed
- 34. Pascal triangle recursion
- 35. Equal subset partition recursion

LEVEL 3: BACKTRACKING PATTERN (36–63)

- 36. N-Queens
- 37. Sudoku solver
- 38. Rat in a maze
- 39. Knight's tour
- 40. Word search
- 41. Graph M-coloring
- 42. Hamiltonian path
- 43. Generate valid parentheses
- 44. Restore IP addresses
- 45. Palindrome partitioning
- 46. Partition into K subsets
- 47. Equal sum K partition
- 48. String anagrams
- 49. Decode ways
- 50. Expression add operators
- 51. Combination sum III
- 52. Combinations $C(n,k)$
- 53. Balanced parentheses generation
- 54. Phone keypad backtracking
- 55. All paths in matrix

- 56. Unique paths recursion
- 57. All partitions of string
- 58. Subset with duplicates backtracking
- 59. Combination sum with limits
- 60. K-length combinations
- 61. Climb stairs recursion paths
- 62. Roll dice outcomes
- 63. Negative subset sum recursion

LEVEL 4: GRID / MATRIX RECURSION (64–82)

- 64. Unique paths grid
- 65. Unique paths with obstacles
- 66. Flood fill
- 67. Count islands DFS
- 68. Enclosed islands
- 69. Longest matrix path
- 70. All matrix paths
- 71. Maze backtracking
- 72. Paths with jumps
- 73. Diagonal traversal recursion
- 74. Knight move board recursion
- 75. Matrix word search
- 76. Minimum cost path recursion
- 77. Max path sum matrix
- 78. Longest increasing path
- 79. Matrix boundary traversal recursion
- 80. Flood escape recursion
- 81. Connected components recursion
- 82. Region cut count recursion

LEVEL 5: ADVANCED RECURSION + DP (83–105)

- 83. Fibonacci memoized
- 84. Climbing stairs DP
- 85. House robber recursion
- 86. House robber II
- 87. LCS recursion
- 88. Edit distance recursion
- 89. Regex matching recursion
- 90. Wildcard matching recursion
- 91. Min cost path DP recursion
- 92. 0/1 Knapsack recursion
- 93. Unbounded knapsack recursion
- 94. Coin change (ways)
- 95. Coin change (min coins)
- 96. Equal partition DP recursion
- 97. Scramble string
- 98. Boolean parenthesization
- 99. Matrix chain multiplication recursion
- 100. Palindrome partitioning II
- 101. Min jumps recursion
- 102. Burst balloons recursion
- 103. Wildcard regex recursion
- 104. Unique paths memo
- 105. Sequence pattern recursion

LEVEL 6: HARD RECURSION & PRUNING (106–130)

- 106. TSP bitmask recursion
- 107. Optimal game strategy recursion
- 108. Minimax algorithm
- 109. N-Queens optimized pruning
- 110. Remove invalid parentheses
- 111. Longest DAG path recursion

- 112. Advanced partition recursion
- 113. Wildcard string generation
- 114. String compression recursion
- 115. Kth permutation recursion
- 116. Recursion-based optimization
- 117. Generate all BSTs
- 118. Count unique BSTs
- 119. Tree diameter recursion
- 120. Tree max path sum recursion
- 121. Recursive merge intervals
- 122. Graph recursion memoized
- 123. Advanced sudoku variants
- 124. Crypto-arithmetic recursion
- 125. Knight's tour optimized
- 126. Branch-bound scheduling
- 127. Subset convolution recursion
- 128. State compression recursion
- 129. Binary lifting recursion
- 130. Hard graph backtracking