RECURSION ROADMAP (PATTERN-WISE + INDEXED)

LEVEL 1: BASIC RECURSION (1–15)

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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)

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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)

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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)

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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)

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

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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