Smart Coding & Interview Series
Top-20 Basic Program
(1D Dynamic Programming Problems)

First, understand the solution building strategies and coding for the problems in LIVE/VIDEO session and then you apply those strategies discussed in LIVE/VIDEO session to solve the following problems. Use your favourite language(C/C++/Java/C#/Python/Scala) for coding.

1) Climbing Stairs: You are climbing a stair case. It takes n steps to reach to the top each time you can either climb 1 or 2 steps. In how many distinct ways can you climb to the top?
Example:
Input: 2
Output: 2
Source: https://leetcode.com/problems/climbing-stairs/description/

2) Unique Binary Search Trees: Given n, how many structurally unique BST's (binary search trees) that store values 1 ... n?
Example:
Input: 3
Output: 5
Source: *https://leetcode.com/problems/unique-binary-search-trees/description/*

3) Number of Regions in a Plane: Find an efficient algorithm that returns the maximum number of regions defined by n lines in the plane. Assume that no two lines are parallel and no more than two lines intersect at same point.

4) Tiling Grid-I: In how many ways can you tile a 2 × n rectangle by 2 × 1 or 2 × 2 tiles?
Source:
https://uva.onlinejudge.org/index.php?option=onlinejudge&page=show_problem&problem=1300

5) Tiling Grid-II: In how many ways can you tile a 3 × n rectangle with 2 × 1 dominoes?
Source: https://uva.onlinejudge.org/external/109/p10918.pdf