DP intro N

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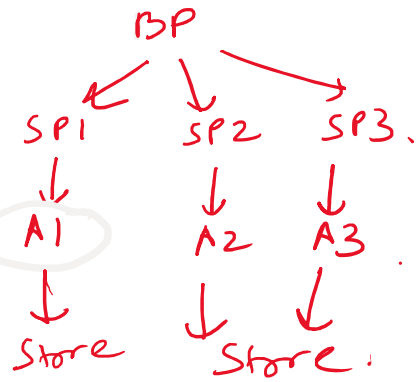
It is used to solve optimization problems

1. Breaks down the complex problem into simpler subproblems
2. Find optimal solution to these subproblems
3. Store the results of subproblems **(memoization)**
4. Reuse them so that same subproblem is not calculated more than once
5. Finally calculates the result of complex problem

→ **Applicable to problems which are having properties of:**

- **Overlapping subproblems & Optimal Substructure**

Maximum, Minimum, Longest, Shortest.



In the context of algorithms and dynamic programming, "optimal substructure" means that an optimal solution to a problem can be constructed from optimal solutions to its subproblems.

The Fibonacci series is a sequence of numbers where each number is the sum of the two numbers before it. The sequence starts with 0 and 1, and continues with 1, 2, 3, 5, 8, 13, 21, and so on.

fibonnaci series —

0 1 1 2 3 5 . . . . . .

$$f(n) = \begin{cases} 0 & , n = 0 \\ 1 & , n = 1 \\ f(n-2) + f(n-1) & , n > 1 \end{cases}$$