📘 6. Dynamic Programming (DP)

🔹 **Definition:**

Dynamic Programming is an optimization technique used to solve complex problems by **breaking them into subproblems**, storing their results to avoid recalculating.

🔹 **Key Concepts:**

- **Overlapping Subproblems**
- **Optimal Substructure**

🔹 **Approaches:**

1. **Top-Down (Memoization)** – Recursion + cache
2. **Bottom-Up (Tabulation)** – Iterative DP

🔹 **Applications:**

- Fibonacci Sequence
- 0/1 Knapsack Problem
- Longest Common Subsequence

- Matrix Chain Multiplication

- Coin Change Problem
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