

## Comparison of dynamic programming and Divide and Conquer strategies

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Difference between Divide-and-Conquer & Dynamic Programming

S. No.	Divide-and-conquer algorithm	Dynamic Programming
1.	Divide-and-conquer algorithms splits a problem into separate subproblems, solve the subproblems, and combine the results for a solution to the original problem. Example : Quick sort, Merge sort, Binary search.	Dynamic Programming splits a problem into subproblems, some of which are common, solves the subproblems, and combines the results for a solution to the original problem. Example : Matrix Chain Multiplication, Longest Common Subsequence.
2.	Divide-and-conquer algorithms can be thought of as top-down algorithms.	Dynamic programming can be thought of as bottom-up.
3.	In divide and conquer, sub-problems are independent.	In Dynamic Programming, sub-problems are not independent.
4.	Divide & Conquer solutions are simple as compared to Dynamic programming.	Dynamic programming solutions can often be quite complex and tricky.
5.	Divide & Conquer can be used for any kind of problems.	Dynamic programming is generally used for Optimization problems.
6.	Only one decision sequence is ever generated.	Many decision sequences may be generated.

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