

CE100 Algorithms and Programming II

Dynamic Programming

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0.1 CE100 Algorithms and Programming II

0.2 Week-5 (Dynamic Programming)

0.2.0.1 Spring Semester, 2021-2022 Download DOC¹, SLIDE², PPTX³

0.3 Quicksort Sort

0.4 Outline

- Convex Hull (Divide & Conquer)
 - Dynamic Programming
 - Introduction
 - Divide-and-Conquer (DAC) vs Dynamic Programming (DP)
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- Fibonacci Numbers
 - Recursive Solution
 - Bottom-Up Solution
 - Optimization Problems
 - Development of a DP Algorithms
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- Matrix-Chain Multiplication
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¹[ce100-week-5-dp.md_doc.pdf](#)

²[ce100-week-5-dp.md_slide.pdf](#)

³[ce100-week-5-dp.md_slide.pptx](#)

- Matrix Multiplication and Row Columns Definitions
 - Cost of Multiplication Operations (pxqxr)
 - Counting the Number of Parenthesizations
-

- The Structure of Optimal Parenthesization
 - Characterize the structure of an optimal solution
 - A Recursive Solution
 - * Direct Recursion Inefficiency.
 - Computing the optimal Cost of Matrix-Chain Multiplication
 - Bottom-up Computation
-

- Algorithm for Computing the Optimal Costs
 - MATRIX-CHAIN-ORDER
 - Construction and Optimal Solution
 - MATRIX-CHAIN-MULTIPLY
 - Summary
-

0.5 References

–End – Of – Week – 5 – Course – Module–