

3 Lecture - CS502

Important Subjective

1. **What is the Divide and Conquer strategy?**

Answer: The Divide and Conquer strategy is a problem-solving approach that involves breaking down a complex problem into smaller subproblems, solving them recursively, and combining the solutions to obtain the final solution.

What is the time complexity of the Divide and Conquer strategy?

Answer: The time complexity of the Divide and Conquer strategy is usually $O(n \log n)$, where n is the size of the problem.

What is the difference between top-down and bottom-up approaches in the Divide and Conquer strategy?

Answer: In the top-down approach, the problem is broken down into smaller subproblems until the subproblems become simple enough to solve directly. In the bottom-up approach, the simple subproblems are solved first and then combined to solve the larger problem.

What is the main advantage of the Divide and Conquer strategy?

Answer: The main advantage of the Divide and Conquer strategy is that it reduces the time complexity of solving complex problems.

Give an example of a problem that can be solved using the Divide and Conquer strategy.

Answer: Merge sort is an example of a problem that can be solved using the Divide and Conquer strategy.

What is the role of recursion in the Divide and Conquer strategy?

Answer: Recursion is used to solve the smaller subproblems in the Divide and Conquer strategy.

What is the base case in the Divide and Conquer strategy?

Answer: The base case is the simplest form of the subproblem that can be solved directly without further division.

How does the Divide and Conquer strategy relate to dynamic programming?

Answer: The Divide and Conquer strategy is a recursive approach that breaks down a problem into smaller subproblems. Dynamic programming, on the other hand, is an optimization technique that solves subproblems once and stores the solutions for later use.

Can the Divide and Conquer strategy be used to solve non-numerical problems?

Answer: Yes, the Divide and Conquer strategy can be used to solve non-numerical problems as long as they can be broken down into smaller subproblems.

What is the main disadvantage of the Divide and Conquer strategy?

Answer: The main disadvantage of the Divide and Conquer strategy is that it may require additional memory to store the solutions of the subproblems.