

# 6 Lecture - CS502

## Important Subjective

### 1. What is Dynamic Programming?

Answer: Dynamic Programming is a problem-solving technique used to solve complex optimization problems by breaking them down into smaller, simpler subproblems and solving them recursively.

### What are the two approaches to Dynamic Programming?

Answer: The two approaches to Dynamic Programming are top-down (memoization) and bottom-up (tabulation).

### What is memoization in Dynamic Programming?

Answer: Memoization is an approach in Dynamic Programming where solutions to subproblems are stored in a table, which can be accessed later to solve larger subproblems.

### What is tabulation in Dynamic Programming?

Answer: Tabulation is an approach in Dynamic Programming where solutions to subproblems are computed iteratively and stored in a table, which can be used to solve larger subproblems.

### What is the difference between memoization and tabulation in Dynamic Programming?

Answer: Memoization involves solving subproblems recursively and storing the solutions in a table, while tabulation involves computing the solutions iteratively and storing them in a table.

### What are the advantages of using Dynamic Programming?

Answer: The advantages of using Dynamic Programming include improved efficiency, reduced computational resources, and the ability to solve complex optimization problems.

### What is the principle of optimality in Dynamic Programming?

Answer: The principle of optimality in Dynamic Programming states that an optimal solution to a problem can be obtained by combining optimal solutions to its subproblems.

### What is the time complexity of Dynamic Programming?

Answer: The time complexity of Dynamic Programming depends on the problem being solved and the approach used.

### What are the common applications of Dynamic Programming?

Answer: The common applications of Dynamic Programming include robotics, operations research, computer science, economics, and finance.

### What are the limitations of using Dynamic Programming?

Answer: The limitations of using Dynamic Programming include high memory requirements, difficulty in solving some problems, and the need for mathematical knowledge.