Financial Forecasting

1. **Explain the concept of recursion and how it can simplify certain problems.**
   What is Recursion?
   Recursion is a technique where a function calls itself to solve smaller instances of a problem until it reaches a base case.
   Why Use Recursion?

- Simplifies complex problems like tree traversal, backtracking, and mathematical computations.
- Replaces iteration in some cases for elegant solutions

2. **Discuss the time complexity of your recursive algorithm.**
   Basic Recursion : O(n) (linear calls for n years)
   Memoization : O(n) (but avoids repeated calculations)

3. **Explain how to optimize the recursive solution to avoid excessive computation.**

   Without memoization, the recursion:

- Makes redundant computations (especially in tree-based or fib-style recursions).
- Uses call stack space: risk of stack overflow for large n.

   Memoization or converting to iteration avoids this.