**7. FINANCIAL FORECASTING**

**Understanding Recursive Algorithms**

Recursion is a technique where a function calls itself to solve smaller instances of a problem. It is particularly useful when a problem can be broken down into repetitive subproblems. In financial forecasting, recursion can model future value predictions based on repeated growth over time, making the code more readable and logical for problems that follow a repetitive pattern.

**Analysis**

The recursive implementation has a **time complexity of O(n)**, where n is the number of years, due to the function being called once per year.  
 To **optimize**, we can use **memoization** to cache results or convert the recursive method to an **iterative approach** to prevent stack overflow for large n. This ensures better performance and avoids redundant calculations.

**Output**

**A screenshot of a computer program

AI-generated content may be incorrect.**