**Exercise 7: Financial Forecasting**

**Scenario:**

You are developing a financial forecasting tool that predicts future values based on past data.

Sure, I'll provide concise, humanized responses to each question based on your current approach.

**Concept of Recursion**

Recursion is a technique where a method calls itself to solve a problem. It can simplify problems by breaking them down into smaller, more manageable sub-problems. For instance, in financial forecasting, instead of calculating the future value for multiple years all at once, we calculate it year by year, with each step building on the previous one. This reduces the complexity of the task into a series of simpler steps.

**Time Complexity**

The time complexity of my recursive algorithm is (O(n)), where (n) is the number of years. This is because each recursive call represents one year of growth, resulting in a linear number of calls.

**Optimization to Avoid Excessive Computation**

To avoid excessive computation, one common optimization is memoization, where previously computed results are stored and reused. However, in this specific scenario, memoization is less beneficial because each year depends on the value of the previous year. Instead, ensuring valid input and handling edge cases efficiently can prevent unnecessary recursive calls. Additionally, for larger problems, an iterative approach might be more efficient.