**Exercise 7: Financial Forecasting**

**Scenario:**

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

**Steps:**

1. **Understand Recursive Algorithms:**
   * **Explain the concept of recursion and how it can simplify certain problems.**

Recursion involves a function calling itself to break down a problem into smaller, manageable parts. It simplifies problems by reducing them to similar, smaller instances.

Base Case: This is the condition where recursion stops. Without it, recursion would continue indefinitely, leading to a stack overflow.

Recursive Case: This is where the function calls itself to solve smaller sub-problems, progressively simplifying the original problem.

1. **Setup:**
   * **Create a method to calculate the future value using a recursive approach.**
2. **Implementation:**
   * **Implement a recursive algorithm to predict future values based on past growth rates.**
3. **Analysis:**
   * **Discuss the time complexity of your recursive algorithm.**

The time complexity of the recursive algorithm is O(n), where n represents the number of periods involved in the recursive calls.

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

To optimize the recursive method and reduce unnecessary computations, previously computed results should be stored and reused as needed.