**Exercise 7: Financial Forecasting**

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

* Recursion is a programming technique where a method calls itself to solve a problem. It allows certain problems to be defined in simpler terms by solving smaller instances of the same problem. It simplifies problems by breaking them down into smaller, more manageable sub-problems of the same type.

1. **Analysis:**
   * Discuss the time complexity of your recursive algorithm.

* The time complexity of this recursive algorithm is **O(m)**, where **m** is the number of periods because the method is called once for each period.
  + Explain how to optimize the recursive solution to avoid excessive computation
* To optimize the recursive solution and avoid excessive computation, we can use **memoization**. Memoization stores the results of expensive function calls and reuses them when the same inputs occur again, reducing the number of redundant calculations. The memoization map memo stores previously calculated values for each period, significantly reducing the number of recursive calls.