**Exercise 7: Financial Forecasting**

**Explain the concept of recursion and how it can simplify certain problems.**

Recursion is a technique in programming where a function calls itself directly or indirectly to solve a problem. It is particularly useful for problems that can be broken down into smaller, similar subproblems.

Benefits of Recursion:

* Simplifies the code for problems that have a natural recursive structure (e.g., tree traversal, factorial calculation).
* Makes it easier to understand and implement certain algorithms.

**Discuss the time complexity of your recursive algorithm.**

Time Complexity

The time complexity of the recursive algorithm is O(n), where n is the number of years. This is because the function calls itself once per year, leading to n recursive calls.

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

One way to optimize the recursive solution and avoid excessive computation is to use memorization. Memorization stores the results of expensive function calls and returns the cached result when the same inputs occur again.