Exercise 7: Financial Forecasting

1. Understand Recursive Algorithms:

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

= Recursive Algorithms: Recursion is a method where the solution to a problem depends on solutions

to smaller instances of the same problem. It simplifies certain problems by breaking them down into smaller, more manageable sub-problems.

Advantages:

1. Simplifies code for problems that can be divided into similar sub-problems.

2. Reduces the need for complex looping constructs.

4. Analysis:

o Discuss the time complexity of your recursive algorithm.

= Time Complexity Analysis:

- Recursive Algorithm:

- Time Complexity: O(n) - Each recursive call processes one period.

- Space Complexity: O(n) - Due to the recursion stack.

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

= Optimization:

- To avoid excessive computation, use memorization to store and reuse previously computed results.

- Alternatively, use an iterative approach to reduce space complexity to O(1).