**Exercise-7: Financial Forecasting – Theoretical**

**1. Understanding Recursive Algorithms:**

Recursion is a technique in programming where a function calls itself to solve a smaller version of a problem. It helps simplify complex problems by breaking them down into smaller, more manageable sub-problems. Each recursive call should progress toward a base case, which stops the recursion and starts returning results. Recursion is often used in problems like tree traversal, mathematical computations, and scenarios involving repetitive patterns.

**2. Analysis of Recursive Algorithm:**

The recursive approach here has a time complexity of O(n), where n is the number of years. This means it makes one call for each year, which is fine for small values but can slow down for large inputs. Recursion also uses more memory since each call stays in the system’s call stack. To avoid this, we can use memoization to save repeated results or switch to a loop, which is faster and uses less memory. For forecasting over many years, an iterative (loop-based) method is usually better.