**Exercise 7: Financial Forecasting**

**1.Understand Recursive Algorithms:**

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

Ans) Recursion is the technique where a function calls itself to assist in solving a problem. A recursive algorithm usually presents a neat way to solve a problem that possesses a recursive structure since the basic recursion in the problem may be used to determine and solve smaller subproblems of the same type.

Generally, a recursive function is made up of two divisions: The base case is understood as the condition through which the recursion stops. Where it makes a call to itself is usually known as the recursive case.

**4.Analysis:**

Q) Discuss the time complexity of your recursive algorithm.

Ans) The time complexity for this recursive algorithm will be O(n), where 'n' is the number of years. This is so because the function calls itself once for each year.

Q) Explain how to optimize the recursive solution to avoid excessive computation.

Ans) Excessive computation and a potential stack overflow for large inputs can be avoided by memorizing or the problem can be converted into an iterative approach.

Memorization: Involves storing the expensive function calls and reusing them when the same inputs occur again. Iterative Approach: Solves for the future value without recursion but with a loop.