**Exercise 7: Financial Forecasting**

**Understand Recursive Algorithms:**

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

Answer -

**Analysis:**

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

Answer - Recursion is a problem-solving approach in which a function makes direct or indirect calls to itself. Base Case: The circumstance in which the recursive function ceases to call itself in order to avoid an endless cycle.  
The portion of the function that divides the problem into smaller instances and calls itself using these smaller instances is known as the recursive case.  
Benefits of Recursion  
Simplicity: Recursion can make the code for tasks that naturally have a recursive structure, including Fibonacci sequence, factorial computation, and tree traversal, simpler.  
Readability: Compared to iterative solutions, recursive solutions may be easier to read and comprehend.

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

Answer – There are two ways to optimize recursion –

1. Memoization – Uses the pre calculated values and do not have overlapping subproblems.
2. Dynamic Programming – This is an iterative approach to give a linear time complexity many times.