# Exercise 7 – Financial Forecasting

## Objective:

To implement a recursive financial forecasting tool that calculates future values based on past data and growth rates.

## Recursive Algorithm Explanation:

Recursion is a programming technique where a function calls itself to solve smaller instances of a problem. In financial forecasting, it simplifies the calculation of future values using the formula:

FutureValue(n) = FutureValue(n-1) \* (1 + rate)

## Time Complexity Analysis:

The recursive method has a time complexity of O(n), where n is the number of years. However, it also incurs O(n) space complexity due to the recursive call stack.

## Optimization Suggestion:

To optimize the recursive method, memoization can be used to cache intermediate results and avoid redundant calculations. Alternatively, converting the recursion to an iterative approach can save stack space.

## Conclusion:

The recursive implementation successfully models the financial forecast based on compound growth. While elegant, it can be optimized for performance in large-scale applications.