# Exercise 7: Financial Forecasting

# 1.UNDERSTAND THE PROBLEM:

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

**Recursion:**

* **Concept:** A recursive algorithm solves a problem by solving smaller instances of the same problem. The algorithm typically includes a base case to terminate recursion and a recursive case that breaks the problem into smaller sub-problems.

**Example:**

* **Fibonacci Sequence:** A classic example of recursion, where each number is the sum of the two preceding ones.

# 2. ANALYSIS:

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

**Time Complexity:**

* The recursive method has a time complexity of O(n) due to the depth of recursion. Each recursive call is made once per year.

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

**Optimization:**

* **Memoization:** Storing the results of sub-problems to avoid redundant calculations.
* **Iterative Approach:** Using an iterative approach (loop) to avoid the overhead of recursive calls and stack space.