Ex 7: Financial Forecasting

- **Recursion** is a programming technique where a function **calls itself** to solve smaller instances of the same problem.
- It continues calling itself with simpler inputs **until a base case is met** (which stops further recursion).

Structure of a Recursive Function:

1. **Base Case** – the condition where recursion stops.
2. **Recursive Case** – the function calls itself with a reduced/simplified input.

Time Complexity:

T(n) = O(n) where n = years.

Optimize the Recursive Solution

1. **Use Iteration Instead of Recursion**
    - Replace recursion with a loop to avoid call stack usage.
    - Time Complexity: O(n)
    - No risk of stack overflow
2. **Memoization**
    - Avoids redundant calculations
    - Still recursive, but more efficient
    - Time Complexity: O(n)