**Exercise 7:**

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

Recursion is when a method calls itself to solve a smaller instance of the problem.

It simplifies problems like mathematical computations (e.g., factorial, Fibonacci) by breaking them down into base and recursive cases.

Recursive methods must have a base case to avoid infinite loops.

Discuss the time complexity of your recursive algorithm.

The recursive function has O(n) time complexity, where n is the number of years.

Each recursive call reduces years by 1 until it reaches 0.

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

Use memoization to avoid repeated calculations if needed.

For large values of years, prefer an iterative or exponentiation by squaring method to optimize performance.

Output:

