**4. Analysis**

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

=> **Time Complexity:**

**T(n) = T(n−1) + 1 ⇒ O(n)**

since one recursive call is made per year.

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

=> Optimization (If required): Incase of repeated subproblems or large inputs.

Step 1: Use memoization (i.e. store intermediate results).

Step 2: Convert to iterative solution for better space usage.

Step 3: Use Math.pow() for a direct solution:  
 P × Math.pow(1 + r, n) → O(1)

Code:

