**Exercise 7: Financial Forecasting**

1. **Understand Recursive Algorithms**

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

Recursion is a technique where a function calls itself to solve smaller parts of the same problem. In financial forecasting, each year's value depends on the previous year's value, making it a perfect fit for recursion. It simplifies the logic by breaking the problem into smaller steps until reaching the base case (initial amount).

1. **Analysis**

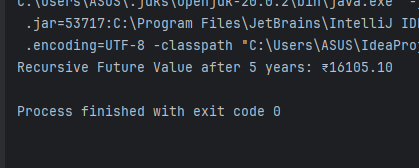
**Discuss the time complexity of your recursive algorithm.**

The recursive algorithm has a time complexity of **O(n)** because it makes one recursive call for each year.  
It also uses **O(n)** space due to the function call stack.  
This is efficient for small inputs but can lead to stack overflow for large values of n.

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

To avoid excessive computation, we can replace recursion with an **iterative loop**.  
This reduces space complexity to **O(1)** and avoids deep call stacks.

1. **Output**

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