**Exercise 7 : Financial Forecasting**

🡪**Concept of Recursion**

* **Recursion is when a function calls itself to solve a smaller part of a problem. It keeps calling itself until it reaches a stopping condition called the base case.**
* **Logic :**
  + 1. **Recursive Formula :** Predicted amount (future value)= Initial amount\*(1+growth[year])^years
    2. **Growth[]:** is an array containing past growth rates year by year.

We will use recursion to multiply the value by (1+growth[year]) for each year

* **How it works :**

1. The **predict** method calls itself, each time multiplying the value by **(1+ growth[year])** and increasing the number of years by 1.
2. When years(starting from 0) reach growth.length , it return the current value.
3. The result in printed in the main method.

* **How Recursion simplifies certain problems :**

1. Recursion makes it easy to solve problems that repeat in smaller steps, like breaking a big task into mini-tasks.
2. It’s helpful for things like searching, sorting, or solving puzzles where the same logic applies again and again.

🡪**Analysis**

* **Time Complexity:** O(n) where n is the number of years
* **Optimization :** For large n, use iterative approach to avoid stack overflow and repeated calculations.

**🡪Code :**

**Please refer to Repository**