**Name: Sukisivam Balakrishnan  
Superset ID:  6412333  
Exercise 7: Financial Forecasting**

**Scenario:**

This project demonstrates a **financial forecasting tool** developed in Java that uses **recursive algorithms** to predict the **future value of an investment** based on past data and annual growth rate.

**Objective:**

To showcase the power of **recursion** in simplifying complex financial calculations and to compare naive recursion with optimized approaches like **memoization** (Dynamic Programming).

**Features:**

* Accepts:
  + **Initial Investment Amount**
  + **Annual Growth Rate** (as decimal, e.g. 0.08 for 8%)
  + **Number of Years**
* Implements:
  + A **recursive function** to calculate future value
  + An **optimized recursive solution** using **memoization**
* Outputs:
  + Predicted future value of the investment
  + Performance difference between plain recursion and memoized recursion
* **Time Complexity:**

| **Approach** | **Time Complexity** |
| --- | --- |
| Recursive | O(n) |
| Memoized | O(n) |

* Memoization avoids redundant subproblem calculations and improves performance.

