### **Exercise 7: Financial Forecasting**

**Scenario:** You are tasked with building a financial forecasting application that estimates future values by analyzing historical data trends.

**Steps:**

1. **Grasp the Idea of Recursion:**
   * Describe how recursive functions work and why they are useful for breaking down complex problems into simpler sub-problems.
2. **Setup the Framework:**
   * Design a function that calculates future values using a recursive method.
3. **Code Implementation:**
   * Write a recursive solution that predicts future financial values using previous growth rates as the basis for calculation.
4. **Performance Evaluation:**
   * Evaluate the time complexity of your recursive approach.
   * Discuss techniques like memoization to enhance efficiency and prevent redundant calculations during recursion.

**SOURCE CODE :**   
  
  
public class Financial\_forecasting {

public static void main(String[] args) {

double principalAmount = 10000;

double annualGrowthRate = 0.08;

int numberOfYears = 5;

double estimatedValue = GrowthPrediction.*predictFutureValue*(principalAmount, annualGrowthRate, numberOfYears);

System.*out*.println("Estimated Future Value (Recursive): " + estimatedValue);

}

}

class GrowthPrediction {

public static double predictFutureValue(double currentValue, double growthRate, int remainingYears) {

if (remainingYears == 0) return currentValue;

return *predictFutureValue*(currentValue, growthRate, remainingYears - 1) \* (1 + growthRate);

}

}

**OUTPUT :**   
  
  
