**Exercise 7: Financial Forecasting**

**Scenario:**

You are developing a financial forecasting tool that predicts future values based on past data.

**Steps:**

1. **Understand Recursive Algorithms:**
   * Explain the concept of recursion and how it can simplify certain problems.
2. **Setup:**
   * Create a method to calculate the future value using a recursive approach.
3. **Implementation:**
   * Implement a recursive algorithm to predict future values based on past growth rates.
4. **Analysis:**
   * Discuss the time complexity of your recursive algorithm.
   * Explain how to optimize the recursive solution to avoid excessive computation.

**Source Code:**

**Financial.java:**

**package** mypro.finan;

**import** java.util.Scanner;

**public** **class** Forecast

{

**public** **static** **double** fVal(**double** pval, **double** grp, **int** years)

{

**if** (years == 0)

{

**return** pval;

}

**double** nval=pval\*(1+grp/100.0);

**return** *fVal*(nval,grp,years-1);

}

**public** **static** **void** main(String[] args)

{

Scanner scanner=**new** Scanner(System.***in***);

System.***out***.print("Enter present value:");

**double** pVal=scanner.nextDouble();

System.***out***.print("Enter annual growth rate in %:");

**double** growthRate=scanner.nextDouble();

System.***out***.print("Enter number of years to forecast:");

**int** years=scanner.nextInt();

**double** res=*futureVal*(pVal, growthRate, years);

System.***out***.printf("\nForecasted future value after %d years:%.2f\n", years, res);

scanner.close();

}

}

**Output:**

Enter present value :45000

Enter annual growth rate in %:4

Enter no of years to forecast:8

Forecasted future value after 8 years:61585.61