**Exercise 7: Financial Forecasting**

Scenario:

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

Steps:

Understand Recursive Algorithms:

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

Setup:

Create a method to calculate the future value using a recursive approach.

Implementation:

Implement a recursive algorithm to predict future values based on past growth rates.

Analysis:

Discuss the time complexity of your recursive algorithm.

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

**Program:**

**FinancialForecast.java**

package financialForecasting;

import java.util.\*;

public class FinancialForecast {

public static double forecast(double value, double growthRate, int years) {

if (years == 0) {

return value;

}

return forecast(value, growthRate, years - 1) \* (1 + growthRate);

}

public static void main(String[] args) {

double startingAmount = 1000;

double rate = 0.05; // Consider 5% growth

Scanner sc = new Scanner(System.in);

System.out.println("Enter the years");

int years = sc.nextInt();

double result = forecast(startingAmount, rate, years);

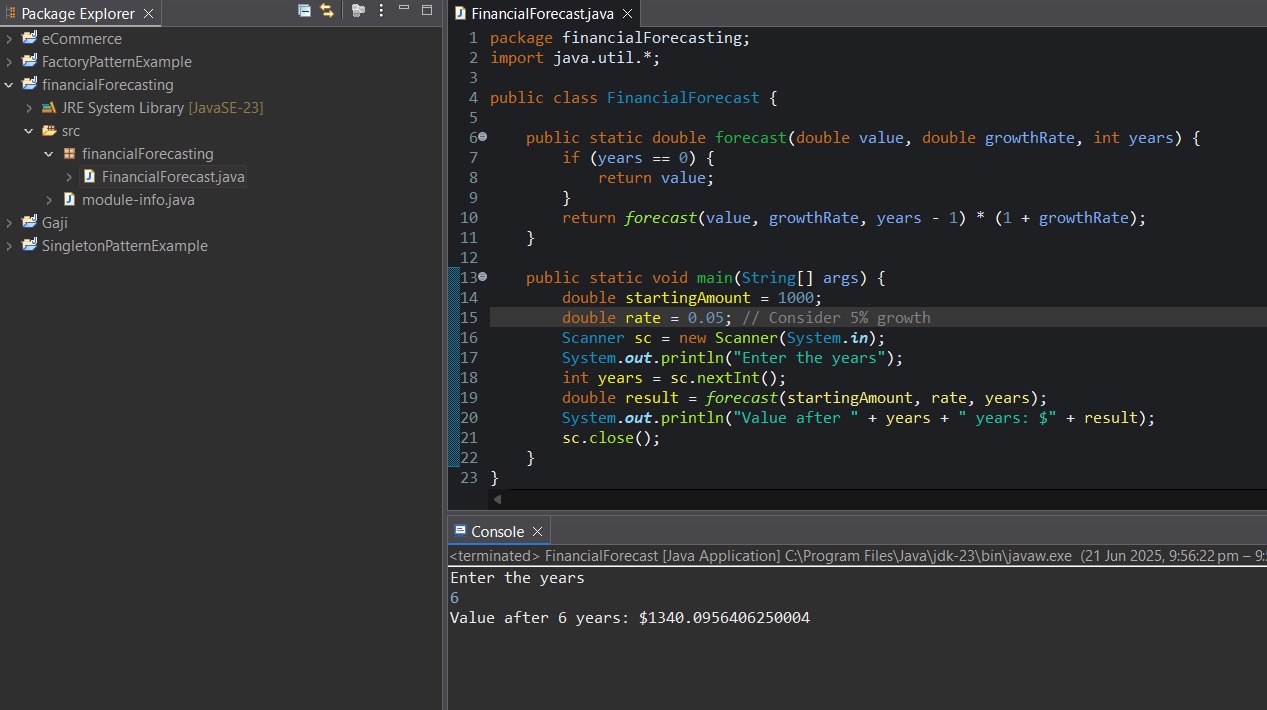
System.out.println("Value after " + years + " years: $" + result);

sc.close();

}

}

**Output:**

****