

Exercise 7: Financial Forecasting

Scenario:

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

ANSWERS:

FinancialForecast.java:

```
FinancialForecast.java × ForecastTest.java
1 public class FinancialForecast {
2     public static double forecastValueRecursive(double presentValue, double rate, int years) {
3         if (years == 0) {
4             return presentValue;
5         }
6         return forecastValueRecursive(presentValue, rate, years - 1) * (1 + rate);
7     }
8     public static double forecastValueMemoized(double presentValue, double rate, int years, double[] memo) {
9         if (years == 0) return presentValue;
10        if (memo[years] != 0) return memo[years];
11
12        memo[years] = forecastValueMemoized(presentValue, rate, years - 1, memo) * (1 + rate);
13        return memo[years];
14    }
15 }
16 |
```

ForecastTest.java:

```
FinancialForecast.java × ForecastTest.java ×
1 public class ForecastTest {
2     public static void main(String[] args) {
3         double presentValue = 2800.0;
4         double rate = 0.30;
5         int years = 8;
6         double futureValueRecursive = FinancialForecast.forecastValueRecursive(presentValue, rate, years);
7         System.out.printf("Future Value (Recursive): ₹%.2f%n", futureValueRecursive);
8         double[] memo = new double[years + 1];
9         double futureValueMemo = FinancialForecast.forecastValueMemoized(presentValue, rate, years, memo);
10        System.out.printf("Future Value (Memoized): ₹%.2f%n", futureValueMemo);
11    }
12 }
13 |
```

Output:

```
Future Value (Recursive): ₹22840.46
Future Value (Memoized): ₹22840.46
```