public class FinancialForecasting {

public static double predictFutureValue(double initialValue, double growthRate, int years) {

if (years == 0) return initialValue;

return predictFutureValue(initialValue \* (1 + growthRate), growthRate, years - 1);

}

public static double optimizedPredictFutureValue(double initialValue, double growthRate, int years) {

return initialValue \* Math.pow((1 + growthRate), years);

}

public static void main(String[] args) {

double initialValue = 1000.0;

double growthRate = 0.05;

int years = 5;

System.out.println("Recursive Prediction: " + predictFutureValue(initialValue, growthRate, years));

System.out.println("Optimized Prediction: " + optimizedPredictFutureValue(initialValue, growthRate, years));

}

}

OUTPUT:

