Financial Forecasting

I have used the recursive function in the class for predicting the future values.

Here is java code

```
1)ForeCasting.java: Code
package DeepSkilling;
public class Forecasting {
    public static double futureValueRecursive(double
presentValue, double rate, int years) {
    if (years == 0) return presentValue;
    return futureValueRecursive(presentValue * (1 +
rate), rate, years - 1);
  }
  public static void main(String[] args) {
    double presentValue = 10000;
    double rate = 0.05;
    int years = 10;
```

```
double futureValue =
futureValueRecursive(presentValue, rate, years);
```

```
System.out.println("Future Value after " + years + "
years: " + futureValue);
}
```

Pic From Eclipse IDE:

```
eclipse-workspace - FinancialForecasting/src/DeepSkilling/Forecasting.java - Eclipse IDE
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> Mark System Library [Java 59
                                               public static double futureValueRecursive(double presentValue, double rate, int years) {
     v # DeepSkilling
                                                       if (years == 0) return presentValue;
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                                                       return futureValueRecursive(presentValue * (1 + rate), rate, years - 1);
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                                               public static void main(String[] args) {
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                                                       double rate = 0.05;
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✓ O<sub>▶</sub> Forecasting

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                                                       int years = 10;
                                                                                                                                                                                                                                                       § futureValueRec
                                                                                                                                                                                                                                                        § main(String[])
                                                       double futureValue = futureValueRecursive(presentValue, rate, years);
                                 15
                                                       System.out.println("Future Value after " + years + " years: " + futureValue);
                                 16
                                 17
                                 18 }
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                               <terminated> Forecasting [Java Application] C\USers\91833\p2\poo\pol\plugins\org.ecijpse.justj.openjdk.hotspot.jre.full.win32x86_64_220.1.v20240426-1149\tipe\bin\javaw.exe (19 Jun 2025, 951:03 pm - 951:04 pm) [pid: 14664]
```

OUTPUT:

Future Value after 10 years: 16288.946267774418

Pic From Eclipse IDE:

```
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               E 8 8
                          1 package DeepSkilling;
                          2
> 🖒 ECommerceSearch
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                          3 public class Forecasting {
FinancialForecasting

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                                public static double futureValueRecursive(double presentValue, double rate, int years) {
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                        Problems @ Javadoc Declaration Console X
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                        Future Value after 10 years: 16288.946267774418
```

The Time Complexity of this Recursion is O(n)

This will cause the Stack Overflow.

It will not suit for large Numbers.

So Recursion is not memory-efficient.

^{*}To Reduce this we can use the For or While Loop.

^{*}By which TimeComplexity is O(n).

^{*}But SpaceComplexity is Better O(1). Unlike the Recursion Function.

^{*}It is more Efficient for larger inputs