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| LEARNING PROFILE FOR Interest2 | | | | | |
| *Name* | *:* | *Tyler Lucas* | *Due Date* | *:* | *N/A* |
| *Student ID* | *:* | *3305203* | *Submission Date* | *:* | *N/A* |

# 1. Problem Statement:

Textbook example program.

# 2. Description of the Code:

Computes interest earned on an investment over time. Initial amount and interest rate input by the user.

# 3. Errors and Warnings:

*Note: No errors in version 1.0, only in 2.0.*

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| # | Errors / Warnings | Details | How I solved them |
| 1 | Exception in thread "main" java.util.UnknownFormatConversionException: Conversion = 'i' | I had use the printf() conversion specifier %i, which doesn't exist in Java (it's from C/C++). | Changed %i to %d. |
| 2 | Exception in thread "main" java.util.IllegalFormatConversionException: d != java.lang.Double | I thought the printf() method would convert the variable from floating point to integer, but it didn't. | Changed %d to %1.0f. |
| 3 | Exception in thread "main" java.util.MissingFormatArgumentException: Format specifier '%1.2f' | I missed one of the output variables (t), so printf() didn't have an argument for the last format specifier. | Added t to the argument list in the appropriate spot. |

# 4. Sample Input and Output:

Version 1.0:

Enter the initial investment: 9000

Enter the annual interest rate (as a decimal): 0.1

The amount of interest is $900.00

The value after one year is $9900.00

Version 2.0

Starting investment value/principal: $100

The starting principal has been set to $100.00

Annual interest rate [%]: 7.5

The annual interest rate has been set to 7.5%

Accrual time, in years: 3

The accrual time has been set to 3.0 years

Number of compound periods per year: 12

The number of compound periods per year has been set to 12

The interest earned on $100.00 initial principal with 7.5% annual interest over 3.0 years with 12 compounding periods per year is $25.14, for a final investment value of $125.14.

# 5. Discussion:

The author acknowledges the limitations I found in the previous similar example *Interest.java*. He had written a class, *TextIO.java*, that simplifies input and output. I had changed the first example *Interest.java*, to use *Scanner*, and catch and either repair or notify the user of input errors. Eck does some error handling in *TextIO.java* as well. I’m glad I was on the right track by identifying this weakness and improving on it, as Eck does.

I had improved on the investment calculations in the first example, and, after verifying the example program ran as expected, upgraded it as well.

Below is a comparison of the output of my programs *Interest.java* and *Interest2.java*, showing improvements using Eck’s *TextIO.java* and the printf() method.

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| --- | --- |
| Interest.java | Interest2.java |
| Starting investment value/principal: $100  The starting principal has been set to $100.0  Annual interest rate [%]: 7.5  The annual interest rate has been set to 7.5%  Accrual time, in years: 3  The accrual time has been set to 3.0 years  Number of compound periods per year: 12  The number of compound periods per year has been set to 12.0  The interest earned on $100.0 initial principal with 7.5% annual interest over 3.0 years with 12.0 compounding periods per year is $25.144613551440777, for a final investment value of $125.14461355144078. | Starting investment value/principal: $100  The starting principal has been set to $100.00  Annual interest rate [%]: 7.5  The annual interest rate has been set to 7.5%  Accrual time, in years: 3  The accrual time has been set to 3.0 years  Number of compound periods per year: 12  The number of compound periods per year has been set to 12  The interest earned on $100.00 initial principal with 7.5% annual interest over 3.0 years with 12 compounding periods per year is $25.14, for a final investment value of $125.14. |