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Project: Calculating Future Investment Value

Problem Description:

Write a program that reads in investment amount, annual interest rate, and number of years, and displays the future investment value using the following formula:

and displays the future investment value using the following formula:

futureInvestmentValue =

investmentAmount \* (1 + monthlyInterestRate)numberOfYears\*12

For example, if you enter amount 1000, annual interest rate 3.25%, and number of years 1, the future investment value is 1032.98.

Hint: Use the Math.pow(a, b) method to compute a raised to the power of b.

Here is a sample run:

Sample 1:

Enter investment amount: 1000

Enter annual interest rate: 4.25

Enter number of years: 1

Accumulated value is 1043.34

Sample 2:

Enter investment amount: 1000

Enter annual interest rate: 4.25

Enter number of years: 1

Accumulated value is 1043.34

Analysis:

(Describe the problem including input and output in your own words.)

The problem is to calculate the future value of an investment based on a specified investment amount, annual interest rate, and the number of years the money is invested. The calculation considers the effect of compound interest, which is applied monthly.

Input: Investment amount, annual interest rate in percentage, and the number of years.

Output: The program outputs the accumulated value of the investment after the specified number of years, considering the monthly compounding of interest. This value is displayed as a dollar amount, truncated to two decimal places.

Design:

(Describe the major steps for solving the problem.)

Input gathering: Prompt the user to enter the investment amount, annual interest rate, and the number of years and store them all in their respective variables.

Conversion of interest rate: Convert the annual interest rate from a percentage to a decimal by dividing it by 100. Then, further convert the annual interest rate to a monthly interest rate by dividing by 12.

Future investment value calculation: Use the provided futureInvestmentValue formula, then calculate the future investment value considering the compound interest applied monthly.

Truncation: Truncate the calculated future investment value to two decimal places.

Output display: Display the accumulated value to the user in a readable format.

Coding: (Copy and Paste Source Code here. Format your code using Courier 10pts)

[Copy and Paste Your program here]

Testing: (Describe how you test this program)

Test with sample data: Use the provided sample data in the problem statement to verify the program's accuracy.

Boundary Testing: Use extreme values such as very high or very low interest rate, a long duration, or very small/ large investment amount. Ensure calculations are performed accurately without overflow or performance issues.

Negative Testing: Use invalid inputs such as negative numbers or non-numerical inputs to ensure reliability within the program.

Precision Testing: Ensure the program consistently outputs values truncated to two decimal places.

Submit the following items:

1. Print this Word file and Submit to me before the class on the due day
2. Compile, Run, and Submit