Loan Calculator

PART 1

Many people don't realize how much money they spend in interest on bank loans. lose on bank-loan repayments. To protect you against foolish commitments, you will build a repayment calculator that tells you how much money you repay over the life of a loan. Here is the algebraic equation that defines the monthly repayment on a loan:

$$payment = \frac{(1 + rate)^{months} * principle * rate}{(1 + rate)^{months} - 1}$$

where **principal** is the amount of dollars borrowed, **months** is the number of months required to repay the loan in full, **rate** is the interest rate that is charged each month on the unpaid principal. The answer, **payment**, is the amount of money the borrower must repay each month to pay back the loan on time. We will approximate **rate** by taking an annual interest rate and dividing it by 12.

Write a python program in a file named *lastname_firstname_hw1.py* that takes the amount of money borrowed, the number of years required to repay the loan, and the annual interest rate as input from a user. The amount should be entered as a raw number, not currency (100, NOT $100). The interest rate should be entered as a decimal (.1 for 10%, NOT 10). Payment should be formatted to **two** decimal places as **currency,** ex: $1,771.89. *Note: To help figuring out to do the comma, see the python documentation located here.* The program should use **variables** that have relevant names. Also, beyond calculating the **monthly payment**, you should also print out the annual **payment** and the **total amount of money paid** throughout the life of the loan and the total interest paid (the difference between total price and the principal.

A private student loan for $56,000 would cover half the loaded cost of a CS degree (tuition, fees, books, and dorm bill). 5.5% is a good but not great interest rate and a 10 year pay back is standard.

Please enter the loan amount: 56000
Please enter annual interest rate: .055
Please enter the number of years to pay back the loan: 10
Monthly payments are $607.75
Annual payments are $7,292.97
Total payments are $72,929.66
Total interest paid is $16,929.66

INPUT REQUIEMENTS
No naked prompts: 'input()' is BAD

OUTPUT REQUIREMENTS
Explain what value is … values must be in the order presented above

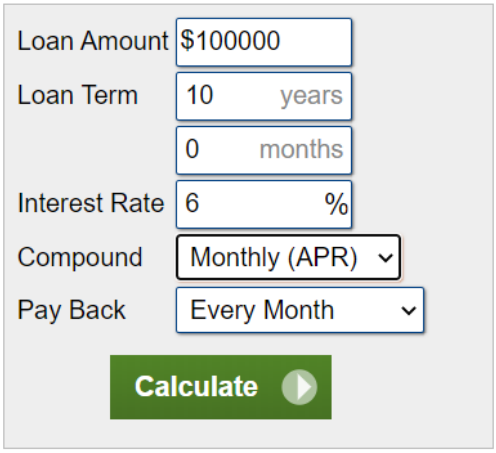
PART 2

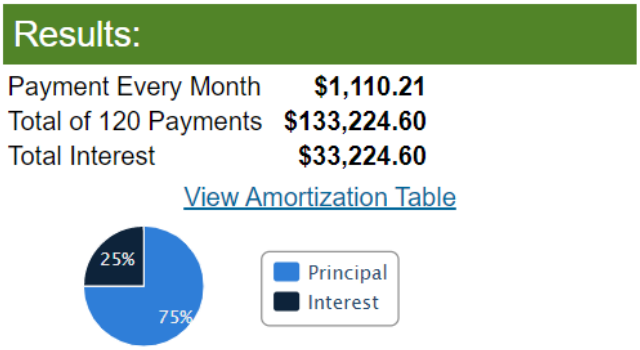
After your calculations are working, add another prompt for the person's annual income, assume they are paid in 12 equal monthly installments (this is not true if you are paid every 2-weeks).

Check if the monthly payment is greater than their monthly income. If so, check if the interest rate is higher than 5%. If so, let them know they should refinance; otherwise, tell them they should seek financial counseling. If the monthly payment does not exceed the monthly income, assure them that if they make all the payments, they should get their loan paid off in time.

Please enter the loan amount: 56000
Please enter annual interest rate: .055
Please enter the number of years to pay back the loan: 10
Monthly payments are $607.75
Annual payments are $7,292.97
Total payments are $72,929.66
Total interest paid is $16,929.66
Please enter your annual income: 60000
Your cash flow is good enough to cover the loan and pay it no time

https://www.calculator.net/loan-calculator.html has a calculator that uses the same formula as long as you select Compound: APR(monthly) -- you can use it as an "oracle" for different loan settings—this is not an endorsement of the site, but intended solely for reference.





The top of the file should look like this

```
"""
   File Name:  …
   Author:  <your name>
   Section: <your section>
   Description: <Insert detailed description of what program does here>
"""
```

This is called a doc-string and loosely follows the current python standard for file documentation.

Please be sure to make sure your program produces correct output, as well as including your name in the file name) before submitting to Canvas. **Programs that do not run with Python 3 will receive a grade of ZERO. NO EXCEPTIONS.**

Another Example:
$ 5000 on a credit card at minimum payments (~ 12-year payback but it depends on your card)
Please enter the loan amount: 5000
Please enter annual interest rate: .21
Please enter the number of years to pay back the loan: 12
Monthly payments are $95.34
Annual payments are $1,144.08
Total payments are $13,728.97
Total interest paid is $8,728.97

Please enter your annual income: 60000
Your cash flow is good enough to cover the loan and pay it on time