MGMT 58600 Python Programming

Lab 2

# Lab Purpose:

The purpose of this lab is to provide more experience with Python types and expressions, get familiar with flow control (especially an introduction to loops), and provide experience with Python functions.

# Lab Instructions:

## Description:

Krannert Specialty Motors is a unique auto dealer that sells both brand new and “lovingly driven” high-end automobiles.

Part of the guidance as an auto dealer is helping buyers figure out what they can afford (based on figures like their income and credit score). One of the difficult parts of figuring out which house or car to buy is knowing how much you can spend on each purchase, given your income (along with other financial obligations, which we will mainly ignore for now). You can go to a bank or a credit union and get “pre-approved” for a number of loan products, including mortgages and automobile loans. This generally means that the bank will tell you how much you can spend, according to general formulas. Write a Python program that will provide auto loan pre-approval information to a customer, when asked for his or her income, length of loan, interest rate, and credit score. Your program should ask the user

1) what his/her annual gross income is

2) how long the auto loan is for

3) what the interest rate is (be sure that you account for annual or monthly use in your program)

4) and what their credit score is

You can assume that the user can afford to spend 15 - 30% of his/her monthly gross income on auto loan payments (depending on their credit score see chart below for maximum allowable percentage based on credit score). **Your program will output the principal (loan amount) and monthly payment for auto loan the based on the inputs received from the user.** The interest rate entered must be entered as annual rate. The loan length may be specified in months or years, but be sure your prompt is obvious to the user as to how you expect the length to be entered.

The equation you will work with is loaneq4, where P is the monthly payment, i is the monthly interest rate, N is the number of monthly payments or the loan’s term, and A is the loan’s principal (i.e., the total amount that you can afford to spend on the car). Your program should assume that the user will not put any money down on any of the loans (although in real-life this is more difficult). You can assume a fixed interest rate for the auto loan (use Google to check recent rates if you want to be realistic, however, your code should work regardless of interest rate). You should create an auto loan function to handle the calculation of the loan amount for the auto loan. In addition, you should also have another function that determines the monthly payment amount. The auto loan function and the monthly payment function must receive at least one argument with an appropriate return usage. You may not use/create global variables (this also includes using same names for variables in the main program or functions). Hint: you will need to use functions with a RETURN and that pass arguments that are stored in parameters.

Lastly, your program should run until the user indicates that they have no more pre-approvals to process.

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| --- | --- |
| Credit Score | Monthly Payment |
| Above 720 | 30% of gross monthly income |
| 640 - 720 | 20% of gross monthly income |
| 590 - 639 | 17% of gross monthly income |
| 530 - 589 | 15% of gross monthly income |
| < 530 | 15% of gross monthly income |

**Grading Criteria**

|  |  |
| --- | --- |
| **Element** | **Points** |
| Correct use of loop | 10 |
| Correctly calculated principal (loan) amount | 10 |
| Correctly calculated monthly amount | 10 |
| Proper use of function with return for Mortgage principal and arguments(s)/parameter(s) | 15 |
| Proper use of function with return for monthly payment amount for loan and arguments(s)/parameter(s) | 15 |
| Correct use of IF statements to determine percentage of income allowed based on credit history | 15 |
| Program executes correctly | 15 |
| Comments | 10 |
| Total Points Possible | 100 |