

Lab 06 - Amortization Schedule

Learning Objectives: demonstrate understanding of while input validation.

This is a continuation of Lab 06 part 1. If you haven't done that part yet, go back and do it first.

Step 1: Create 3 functions to collect loan information from the user:

1. Create a function that retrieves the total amount of the loan from user and returns the amount for further use.

Make sure to safeguard your code from invalid user input by using a *while* loop. This is an example user interaction with the calculator:

Please enter the initial loan amount: \$-500

Invalid input. Please enter the initial loan amount: \$20000

Test your function several times with both valid and invalid input to make sure it is working correctly.

2. Create a function that prompts the user to enter an annual percentage rate and returns a *monthly* percentage rate.

This is an example user interaction with the calculator:

Please enter the annual interest rate in percentages: 101

Invalid input. Please enter the annual interest rate in percentages: -1

Invalid input. Please enter the annual interest rate in percentages: 5

Make sure to safeguard your code from invalid user input. Think of all possible error cases. Test your function several times with both valid and invalid input to make sure it is working correctly.

3. Create a function that asks the user for the number of years within which the loan needs to be paid off. For example:

Please enter the number of years to pay off the loan within: 0

Invalid input. Please enter the number of years to pay off the loan within: -1

Invalid input. Please enter the number of years to pay off the loan within: 2

Anticipate any potential invalid input. Test your function several times with both valid and invalid input to make sure it is working correctly.

Step 2: Create a function that calculates and displays the amortization schedule

Copy over the *create_schedule* function that you created in part I of Lab 06.

Step 3: Set up the main function

Create an introductory message for the user.

Welcome to the Amortization Calculator! With its help we can calculate and display the complete Amortization Schedule for a loan.

Call the functions you created to get valid user input for the loan, rate, and term.

Then, invoke the *create_schedule* function and display the table to the console.

Test

Test your program by entering a variety of values. There are also 4 input/output tests provided. They test for invalid input for total loan amount, rate, and term, as well as for the schedule function output. Be sure to keep this in mind when creating your program. Here is an example with valid input you can use as a format guide:

Welcome to the Amortization Calculator! With its help we can calculate and display the complete Amortization Schedule for a loan.

Please enter the initial loan amount: \$20000

Please enter the annual interest rate in percentages: 3.5

Please enter the number of years to pay off the loan within: 2

Payment Number	Payment	Interest	Principle	Balance
1	(\$ 864.05)	(\$ 58.33)	(\$ 805.72)	\$ 19,194.28
2	(\$ 864.05)	(\$ 55.98)	(\$ 808.07)	\$ 18,386.21
3	(\$ 864.05)	(\$ 53.63)	(\$ 810.43)	\$ 17,575.78
4	(\$ 864.05)	(\$ 51.26)	(\$ 812.79)	\$ 16,762.99
5	(\$ 864.05)	(\$ 48.89)	(\$ 815.16)	\$ 15,947.83
6	(\$ 864.05)	(\$ 46.51)	(\$ 817.54)	\$ 15,130.29
7	(\$ 864.05)	(\$ 44.13)	(\$ 819.92)	\$ 14,310.36
8	(\$ 864.05)	(\$ 41.74)	(\$ 822.32)	\$ 13,488.05
9	(\$ 864.05)	(\$ 39.34)	(\$ 824.71)	\$ 12,663.33
10	(\$ 864.05)	(\$ 36.93)	(\$ 827.12)	\$ 11,836.21

11	(\$ 864.05)	(\$ 34.52)	(\$ 829.53)	\$ 11,006.68
12	(\$ 864.05)	(\$ 32.10)	(\$ 831.95)	\$ 10,174.73
13	(\$ 864.05)	(\$ 29.68)	(\$ 834.38)	\$ 9,340.35
14	(\$ 864.05)	(\$ 27.24)	(\$ 836.81)	\$ 8,503.54
15	(\$ 864.05)	(\$ 24.80)	(\$ 839.25)	\$ 7,664.29
16	(\$ 864.05)	(\$ 22.35)	(\$ 841.70)	\$ 6,822.58
17	(\$ 864.05)	(\$ 19.90)	(\$ 844.16)	\$ 5,978.43
18	(\$ 864.05)	(\$ 17.44)	(\$ 846.62)	\$ 5,131.81
19	(\$ 864.05)	(\$ 14.97)	(\$ 849.09)	\$ 4,282.73
20	(\$ 864.05)	(\$ 12.49)	(\$ 851.56)	\$ 3,431.16
21	(\$ 864.05)	(\$ 10.01)	(\$ 854.05)	\$ 2,577.12
22	(\$ 864.05)	(\$ 7.52)	(\$ 856.54)	\$ 1,720.58
23	(\$ 864.05)	(\$ 5.02)	(\$ 859.04)	\$ 861.54
24	(\$ 864.05)	(\$ 2.51)	(\$ 861.54)	\$ 0.00

Submit

There are automated tests for this lab so make sure they pass before submitting. As always, stop by student hours, send an email, check in with a peer, or stop by the STEM Center if you need any assistance.