

# CSE 1321L: Programming and Problem Solving I Lab

## Lab 3

### Types, Rounding and Expressions

#### What students will learn

- o Printing to the screen (i.e. prompting the user)
- o Creating variables and assigning values variables
- o Reading input from the user and storing it into a variable
- o Doing basic calculations with variables to generate a solution

#### Overview:

In this lab, you're going to continue practicing your coding skills by writing programs that interact with the user and do calculations using variables. The labs below also reinforce the concept of creating variables that hold "intermediate solutions" to avoid having one "giant" equation. What you should focus on is trying to understand the problem, understanding the steps needed to solve it, and then converting them into a working program.

Also, please note that while the structure of the output of your program needs to match the samples provided, your solution needs to be correct for any given input.

Lastly, your program output must be exactly the sample output provided for each lab except for

## Lab3A: Credit Cards

Financial advisors will almost always tell you that you should pay for things in cash and avoid credit card debt. Further, they tell you that you should have a small emergency fund that you keep work that way and sometimes we need to charge things for our credit cards. So, for this part of the lab, we're going to write a calculator that calculates your minimum monthly payment on your card.

### For this lab:

- o Write a program that prompts the user for their Current.Balance and their credit card interest rate.  
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- o Make sure to read these inputs as .
- o Then, the program should calculate Monthly.Percentage.Rate by dividing the APR by 12.
- o Use the Monthly Percentage Rate (MPR) to calculate the Minimum.Payment. Remember to use the MPR as a decimal value for this calculation by dividing it by 100.  
You can calculate this value by multiplying the current balance on the credit card (Amount Owed) times the Monthly.Percentage.Rate

$$\text{Amount Owed} \times \text{Monthly Percentage Rate} = \text{Minimum Payment.}$$

or

$$\text{Amount Owed} \times \text{APR} \div 12 = \text{Minimum Payment.}$$

- o Lastly, the program should output the Monthly.Percentage.Rate and Minimum.Payment

### Note:

- o The input APR is a percentage so be sure to divide it by 100 when calculating the minimum payment
- o The Monthly Percentage Rate is calculated by dividing APR by 12 since there are 12 months in a year.
- o When printing the monthly percentage rate and the minimum payment,

Sample Output #2:

Amount owed: \$

APR:

Monthly percentage rate: 2.417

Minimum payment: \$205.42

Sample Output #3:

Amount owed: \$

APR:

Monthly percentage rate: 3.142

Minimum payment: \$172.8

## Lab3B *GPA Calculator*

We're getting more practice making calculators. GPA is important. It's one of the many things that employers look at when recruiting new candidates. You also need a GPA of at least 2.0 to graduate from KSU. GPA is measured by "quality points" using the following scale:

A = 4 quality points  
B = 3 quality points  
C = 2 quality points  
D = 1 quality point  
F = 0 quality points

Each course counts for a certain number of credit hours. For instance, most courses are 3 credit hours. This lab is a 1 credit hour course. Calculus counts 4 credit hours. To calculate the quality points for one course, multiply the number of hours of that course with the quality points you earn

Grade for course 3:  
Course 4 hours:  
Grade for course 4:  
Total hours: 11  
Total quality points: 29  
Your GPA for this semester is 2.64

### Lab3C: Sandwiches

We are going to design a program that determines how long an oven at a sandwich shop will take to heat up a sandwich.

For this lab:

- o The program will prompt the user to enter how many of each sandwich type needs to be cooked
- o Make sure to read these inputs as integers
- o It will then print out the number of sandwiches ordered for each sandwich type on separate lines
- o Calculate the total amount of time the oven will have to run to cook them all.
- o Output the cooking times in minutes and seconds

Below is a table showing how long each sandwich needs to stay in the oven:

Sandwich Size	Oven Time
Small	30 Seconds
Medium	60 Seconds
Large	1 Minute and 15 Seconds
Extra-Large	2 Minutes and 15 Seconds

Note:

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