LAB #2

Purpose:

The purpose of this lab is to learn how to use the Geany IDE (Integrated Development Environment), to know about the basic steps to write a C program, and to understand common compiling and runtime errors.

Before the lab:

1. Read the tutorials and watch the videos on Geany (links in the left margin).

During the lab:

Programming Exercises >>>

Exercise #1:

a. Using Geany, write the program "My first C program" as found on the example programs website (ihypress.net) in the "Overview of C" section.
b. Compile and build the program.
c. Run the program and see that it works properly.
d. Can you make the program write this also?
This
is
my
first
C
program.

Exercise #2:

a. Write a simple C program that will display the following pattern on the screen:

X 0 X
X X 0
0 0 X

Exercise #3:

a. Using Geany, write the following C program as is:

```
#include <stdio.h>

inx
main (void)
{
        int a = 3; b = 4, e;
        Double f = 4, c, d;

        d = a + b;
        c = a / (f - b);
        printf (The value of d is %d"\n, d)
        return (0);
}
```

b. Compile the program.
c. This program contains syntax errors. On a piece of paper, indicate each one of them and make the appropriate corrections.
d. Write your answers in a text file.
e. Try to correct the errors. Compile and build the program with all the corrections made.
f. Once the syntax errors have been corrected, there are two errors that remains when you try to run it (one is called a runtime error because you are trying to do something illegal, the other is a logic error because you made a small mistake in the program). What are they? Tell your TA or ask for hints!
g. Correct the errors and compile and run the program again. What value of **d** is displayed?

Exercise #4:

a. Write and run in Geany a C program that does this:
Ask the user for a real number (like 316,501.6735) and display the rounded number to the nearest hundredth, and the nearest thousandth.
Can you do it with what you know at this moment?

Exercise #5:

a. Find the formula of the ellipse on the internet and write and run another C program that asks the user for both the long and short radiuses and then calculates and displays the circumference of the ellipse. You should be able to do that one without difficulty.

Exercise #6:

Answer these 10 questions by reading your notes, your textbook or by trying with Geany:

1. What is the difference between char and Char?
2. What is displayed by `printf ("%d", 3/4);` ?
3. Is `printf ("%f", 50);` valid?
4. If you omit the ; at the end of a C statement, is it still working?

5. What is the difference between %f and %lf?
6. What happens when you attempt a division by zero in C?
7. Is the expression `35%15.3` valid?
8. Is there a difference between starting your program with `main()` instead of `int main (void)`?
9. What happens if you try to display an integer between 0 and 255 with a %c placeholder?
10. Are the expressions 5/3, 5%3, 5.0/3 exactly the same?

Show your answers to your TA and write the answers in the same file as exercise #3.

Discovery activities: >>>

1. Using your text book or an Internet search (do not ask friends or TA!), explain in one or two sentences the difference between the printf and scanf statements in C.
2. Using your text book or an Internet search (do not ask friends or TA!), explain in one sentence or two the difference between integer and double variables in C.
3. Write the answers to the two discovery questions in the same file as programming exercises 3 and 6.

Lab Submission: >>>

1. Submit the .c files for programming exercises 1, 2, 4, and 5.
2. Submit the text file containing the answers to programming exercises 3 and 6 and the discovery activities.
3. Submit on D2L/Brightspace under Lab #2. Submissions are due at the end of the lab session. You must submit your work before leaving the lab.

After the lab:

1. Review the steps you took to perform the various operations in the lab.
2. Try to install Geany and the C compiler (or Quincy or C-free) on your home computer. Find the instructions in the Toolbox section of the course website.

Homework:

- On paper (no computer needed), do the following programming project (write the code by hand as you would on a test or an

exam).

1. Write a program that calculates mileage reimbursement for a salesperson at a rate of $.35 per mile. Your program should interact with the user in this manner:

```
MILEAGE REIMBURSEMENT CALCULATOR
Enter beginning odometer reading=> 13505.2
Enter ending odometer reading=> 13810.6
You traveled 305.4 miles.  At $0.35 per mile,
your reimbursement is $106.89.
```

- Show your homework to your lab assistant at the **beginning of next week's lab**.
- If you wish, you may try your solution with the computer to see if you got the correct solution (no need to show the computer version).
- **Homeworks are to be done individually and their submission is optional.**

Last modified: January 15 2020 23:02:49.