ECGR 3183 - Fall 2004: Lab 5 (Version 1.1)

A comparison of C and Assembly – Due ~~11/22/2004~~**11/29/04**

Learning Objectives

This lab will require you to write C code enter in two numbers from the keyboard and multiply them together. It is nearly identical to the program written for Lab 3 and 4.

Prerequisites

You should be familiar with the following concepts:

- With basic programming skills and also be familiar with C language.
- Completed Lab 4 successfully. Have a good idea of the requirements of Lab 3.

Prelab Assignment

Write a flowchart or pseudocode of the lab solution. You must turn this in with the lab report.

Laboratory Assignment

You are required to write code which will print a message on the screen to enter two numbers to multiply. Multiply these numbers together and display the results on the screen. Cease the program when the number zero is entered. Negative numbers will not be entered.
An example of the console display would be (***bold/italic*** characters are user inputs):

Welcome to the ECGR 3183 multiplier problem-solver. This program will multiply two numbers you enter and display the result.

Enter the first number, then type the enter key. Type zero ("0") and enter to end: ***234***
Enter the second number, then type the enter key. Type zero ("0") and enter to end: ***90***
The product is: 21060

Enter the first number, then type the enter key. Type zero ("0") and enter to end: ***0***
Thanks for using the ECGR 3183 multiplier problem-solver!

Steps

1. Build your program slowly, testing along the way. Solve each requirement one at a time. Make sure comments are written as you progress.
2. Use the Unix cc or gcc application to compile and run your code.
3. Continue to build and test the program until all of the requirements have been met. Did we mention you should write your comments as you progress, not at the end?
4. Once all the requirements have been met ensure that everything works.
5. Demonstrate the working program to your TA or professor.
6. Finish lab write-up and turn in your report as a print out. Also, email the code to the lab TA.

Requirements

Req. 1 – The code generated is to be written in C language.
Req. 2 – The code is well commented and easy to follow.
Req. 3 – Your lab report should include the final code listing.

Req. 4 – Create a subroutine for “number entering”. The subroutine should pass back to the calling program a number between 0 and 999.
Req. 5 – When the program starts, print a welcome message. Then print the first number message.
Req. 6 – When processing the “first number”, accept only numbers between 0 and 999.
Req. 7 – If the number is not in the range of 0 to 999, prompt again for a number.
Req. 8 – **When t**~~T~~he number entering subroutine runs, it should take input one ~~character~~ **line** at a time and only accept numerals and the enter key. Ignore all other characters. Echo valid characters to the screen.
Req. 9 – In the number entering subroutine, as soon as ~~three numerals are entered~~**the enter key is pressed**, complete the conversion from ASCII to binary and return. ~~You can also return after one or two numerals and the enter key are typed.~~
Req. 10 – After the second number is entered, multiply the two numbers together, then output the result.
Req. 11 – Continue to have users to input numbers and multiply them together until a single 0 is typed and entered.