

Homework #1

Basic Input and Arithmetic

Assigned: Mon. Aug. 28, 2017

Due: Wed. Sep. 6, by 11:59:59 PM

Write a C++ program which prompts the user to enter two numbers and a choice of operation and then displays the result of applying the operation to the numbers.

Requirements:

- The program is only required to work if the numbers entered by the user are integers. All calculation done in the program should be using integer values.
- The program should accept numbers that are positive, negative, or zero. If the second number is zero and the selected operation is division, then the program must not attempt the division, but instead display a message as shown in the sample run below.
- Valid choices for the operation are 1, 2, 3 or 4 – if the user enters an invalid choice, the program must quit with a message as shown in the sample run below.
- Name the source file for your program `program1.cpp`
- The prompts and output displayed by the program must be formatted as shown in the sample runs below (e.g. blank lines, spacing, case of text).
- A sample run of your program should look like:

This program will prompt for two integers and an operation and then display the result of applying the operation to the numbers.

```
Enter the first integer: 2
Enter the second integer: 8
```

```
The available operations are:
```

- ```
1. addition
2. subtraction
3. multiplication
4. division
```

```
Enter the number for your choice of operation: 2
```

```
2 - 8 = -6
```

(The numbers 2, 8 and 2 are entered by the user.)

- A sample run that quits due to invalid input should look like:

This program will prompt for two integers and an operation and then display the result of applying the operation to the numbers.

Enter the first integer: 31

Enter the second integer: 4

The available operations are:

1. addition
2. subtraction
3. multiplication
4. division

Enter the number for your choice of operation: 9

9 is an invalid operation. Valid choices were 1, 2, 3 or 4. Quitting program.

(The numbers 31, 4 and 9 are entered by the user.)

- A sample run that avoids a divide-by-zero error should look like:

This program will prompt for two integers and an operation and then display the result of applying the operation to the numbers.

Enter the first integer: 77

Enter the second integer: 0

The available operations are:

1. addition
2. subtraction
3. multiplication
4. division

Enter the number for your choice of operation: 4

77 / 0 can not be found because can't divide by zero.

(The numbers 77, 0 and 4 are entered by the user.)

- Compile your program using `g++ -Wall -o program1 program1.cpp`

### Hints:

Before you start writing the program, think about these questions:

- How many variables will you need to use?
- Do the variables need to be initialized?
- What data type should each variable have?

**Reminders:**

- Be sure that your program includes your name, ID, description, etc. as listed in the document posted on the Information page in Blackboard, called “Requirements for Programs Submitted for Assignments”.
- Use good style including indentation, comments, etc. Part of the grade will be for style.
- Carefully test your program.
- You are welcome to write your program at home. If you do, be sure to compile and test it in the lab before submitting it.

**How to submit your program:**

- Submit the file program1.cpp electronically using `~cs211a/bin/handin 1 program1.cpp`  
*The first parameter to the handin program (“1”) is the assignment number, and the second parameter (“program1.cpp”) is the file name.*