

CISC1600/1610 R03

Lab Instruction #2

Sept 12, 2022

Goal: In this lab, we will focus on practicing the following topics by writing a C++ program under the guidance of the instructor and lab TA:

- Variables declaration, initializations, assignment
- Built-in types: bool, char, int, double, float
- Writing literal constants
- Read value from standard input (i.e., keyboard) and assign it to a variable
- Arithmetic operations and simple expressions

Note: Please feel free to refer to the slides.

Step 1: Turn on the desktop and login as student

Password is: 441EastFordhamRoad

These lab PCs are running Linux operating system.

Step 2: Follow the instructor to find the “Terminal” program in the desktop

Step 3: Log on to storm, using the username/password handed out by the instructor (see [the tutorial](#))

```
ssh -l your_account storm.cis.fordham.edu
```

Step 4: If you haven’t done so already, create a directory named cs1, and go to the directory.

Step 5: Use emacs type up a simple file with the following content (See [emacs tutorial](#)), command to use: emacs labex2.cpp

```
/* Lab exercise on variables and types
   By Xiaolan Zhang (replace with your own name)
   Sept 12, 2022
*/
#include <iostream> // allows program to output data to the screen
#include <string> //in order to use the string type
```

```

using namespace std;
// function main begins program execution
int main()
{
    //display info. about this program.
    cout << "This is lab exercise on variables, types and expressions!\n";

    return 0; // indicate that program ended successfully
} // end function main

```

Step 6: [Variables Declarations] After the cout statement, add a few statements to

- * Declare one variable for each of the built-in C++ type: bool, char, int, double, float type (use different names/identifiers for each variable).
- * Declare one variable of **string** type
- * And then use cout to output their values

e.g.,

```

int a;
cout << "a=" << a << "\n";

```

Compile the program by typing the following command into the terminal

```
g++ labex2.cpp
```

If you have any compilation errors, read them carefully and try to see if you can make sense of them. Call the instructor or lab TA for help if you don't understand the errors.

Run the program by typing the following command into the terminal:

```
./a.out
```

What are values these variables? Why?

Step 7: [Variable initializations] Modify your program so that you assign an initial value to each variable right after you declare them:

```

//declare variable a of int type, and assign 0 to it right away (i.e., initialize it to 0
int a=0;

```

Follow above example to initialize the bool type variable to true, char type variable to character of value 'A', and double type variance to 3.1415.

Compile and run the program and notice that the output are different now, as the variables have different values.

Step 8: [Read from standard input] Now we practice read values from standard input (keyboard)

Add this line to your code (after all variables are declared and initialized)

```
cout << "Enter an integer value, and press enter\n";  
cin >> a;
```

Compile and run the program and notice the program's behavior: how the program waits for the user to type something on the keyboard and press enter, before it continues. Notice that before typing enter, the user can use backspace to change the input...

Now, please proceed to add lines to read a char, a floating point, and a string type value to the corresponding variables.

Compile and run the program, and notice whether the values are read correctly (or as you expected) into each variable.

Step 9: [Wrong inputs?] Run the program and try the following scenarios, and notice what values are assigned to each variable and think about why...

1. If the user types "ten" when prompted to enter an integer?
2. If the user types 102, when prompted to enter a string?
3. If the user types "labs" when prompted to enter a char?
4. If the user types "10 23" when prompted to enter an integer?

Discuss your answers with students next to you...

You have finished this lab exercise! Now you can start to work on [lab programming assignment](#).