CS 135
Exercise #6
Point value: 40
Date due: email your source file (.cpp file) to your lab instructor by 11:59pm Sun, Feb 26

**New Skills Practiced (Learning Goals)**

- Problem solving and debugging.
- Use of selection structures (if statement).

When a ≠ 0, the roots of the equation $ax^2+bx+c=0$ can be determined by using the quadratic formula.

Design and implement a complete C++ program that

- displays your name, lecture and lab section #s, and exercise #
- interactively prompts for and reads 3 integer values that represent a, b, and c respectively
- display the 3 input values with labels (must be displayed without decimals)
- if the equation is quadratic (a is nonzero) and the roots are real ($b^2-4ac>=0$), compute the root(s) and display them with 3 digits to the right of the decimal and labels
- if the equation is not quadratic (a is zero), compute the root and display it with 3 digits to the right of the decimal and a label
- if the equation is quadratic but the roots are complex ($b^2-4ac<0$), then display a message stating that the roots are complex and will not be computed

When the program compiles and runs correctly, use the mail utility to email a copy of the program file to your lab instructor. Make sure the subject line of your email includes your name, lecture and lab section #s, and the exercise # if you wish to receive full credit.

**NOTES:**

- The 3 input values will be integer.
- If a is zero, b will not be zero (the linear equation will be solvable).
- The quadratic formula: $$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
- Make sure you include the appropriate header file(s) for any library functions used.
- It is a good idea to send a carbon copy to yourself (-c option) of all emails sent to your lab or course instructor when using the mail utility.
- A comment with your name, lecture section#, lab section#, and exercise# should be at the start of your program file.

**Sample terminal session:**

```
[lee@bobby keys]$ g++ ex06.cpp
[lee@bobby keys]$ ./a.out
Lee Misch Lec# 10__ Lab# 10__ Exercise #6
Enter the a, b, c values from the equation to be solved
0 5 6
a = 0  b = 5  c = 6
x = -1.200
[lee@bobby keys]$ ./a.out
Lee Misch Lec# 10__ Lab# 10__ Exercise #6
Enter the a, b, c values from the equation to be solved
4 5 3
a = 4  b = 5  c = 3
Roots are complex and will not be computed.
```

```
[lee@bobby keys]$ ./a.out
Lee Misch Lec# 10__ Lab# 10__ Exercise #6
Enter the a, b, c values from the equation to be solved
15 -24 -12
a = 15  b = -24  c = -12
x1 = 2.000
x2 = -0.400
```

**Return to exercises list**