**Lab #3 (10 points) + Bonus (10 points)**

# Practice: if statement

Problem: Solving quadratic equations ax2 + bx + c = 0 where a, b, and c are integers. The roots may be real numbers.

Write a program to do:

1. Ask user to enter the coefficients a, b, c of a quadratic equation
2. If a is 0, print out a message “not quadratic equation”
3. If roots not exist print out a “No real roots” message.
4. If two roots are same, indicate it and print the root out.
5. Otherwise print out the two real roots.

Square root:

from math import sqrt #put this line on top of your program

x = sqrt (5) #x will be set to the value of the square root of 5

Required testing cases:

|  |  |  |
| --- | --- | --- |
| A | b | c |
| 2 | -1 | -1 |
| 3 | 11 | 4 |
| 3 | 11 | 0 |
| 4 | 0 | -7 |
| 1 | 4 | 4 |
| 0 | 4 | 5 |
| Your choice | Your choice | Your choice |

Submission requirement:

1. Copy and paste the output of all your test runs to the end of your program and comment out the output
2. Upload your Python program (with output added) to blackboard along the Lab 3 link.

Programming and testing guidelines:

1. Well comment your program – improve readability
2. Properly name your program by affiliating your last name to the file name, e.g. yangQuad.py or YangQuad.py
3. Test all possible scenarios – exhaustive testing

Bonus Problem (5 points)

SymPy is a software package that could solve quadratic equations and many others. When you pass an expression to the *solve* method, you get a list of values where the expression equals zero. For example, on login.cpp.edu, solve(“x\*\*2+2\*x-8”) yields [-4, 2] (note: must use from sympy import \*) Use the SymPy on login.cpp.edu or Try to install this library on your computer and solve the quadratic equations listed on above test cases. Show your program and results to instructor.