Laboratory Exercise #1

This Lab Exercise assumes:

1. You have read Chapter 1
2. The Pre-Lab Assignment has been completed before attending your lab session.

Assignment Overview

This exercise provides practice with numeric computations in Python.

You will work with a partner on this exercise during your lab session. Two people should work at one computer. Occasionally switch the person who is typing. Talk to each other about what you are doing and why so that both of you understand each step.

Roots of a Quadratic Equation

Consider the quadratic equation:

A * x**2 + B * x + C = 0

where x is the unknown and A, B and C are constants (with A not equal to 0). A quadratic equation has two solutions (called roots), which may not be distinct values and which may not be real values.

The two roots of a quadratic equation may be calculated using the quadratic formula. See the brief article at Wolfram MathWorld if you don't recall the formula:

http://mathworld.wolfram.com/QuadraticFormula.html

Develop a program to compute the two roots of a quadratic equation.

1. Copy the file named "lab01.py" into your computer or you can directly work on the Coding Rooms IDE (coding window).

2. Modify that program to compute the two roots of a quadratic equation, as described in the program comments. Note that the program does not perform any error checking, so the results displayed by the program may not be correct in all cases. For example, when A is zero, the equation is not quadratic (e.g. if you get a `ValueError: math domain error`, you have tried to take the square root of a negative value.) We include the `round(number, precision)` function to round the long result to assist with automatic checking of your output by Mirmir.

3. Test your completed program using the following values:

```
A = 1, B = 0, C = -4

  Root #1 = _____________  (should be 2.0)

  Root #2 = _____________  (should be -2.0)

A = 1, B = 5, C = -36
```

```
  Root #1 = _____________

  Root #2 = _____________

A = 2, B = 7.5, C = 6

  Root #1 = _____________

  Root #2 = _____________

A = 0, B = 3.5, C = 8    # this test case fails and generates an error (why?):
                         # ZeroDivisionError: float division by zero

  Root #1 = _____________

  Root #2 = _____________

A = 5, B = 0, C = 6.5    # this test case fails and generates an error (why?):
                         # ValueError: math domain error

  Root #1 = _____________

  Root #2 = _____________
```

★ **Submit the completed program (named "lab01.py") for grading via the Coding Rooms system or just copy and paste your code into Coding Rooms window.**