Python – Quadratic

**Purpose**

This lab was designed to teach you how to use decision structures to solve a problem.

**Description**

Given numbers a, b, and c, the quadratic equation ax2+bx+c=0 can have zero, one or two real solutions (i.e; values for x that satisfy the equation). The expression b2−4ac is the discriminant associated with the equation. If the discriminant is positive, the equation has two solutions. If the discriminant is zero, the equation has one solution. Finally, if the discriminant is negative, the equation has no solutions. Implement a Python function smaller\_root that takes as input the numbers a, b and c and returns the smaller solution to this equation if one exists. If the equation has no real solution, print the message "Error: No real solutions" and simply return. Note that, in this case, the function will return the special Python value None.



**Program Shell**

quadratic.py provided for you

**Sample Data**

1 2 3

2 0 -10

6 -3 5

1 0 0

**Sample Execution**

The smaller root of 1x^2 + 2x + 3 is:

Error: No real solutions

None

The smaller root of 2x^2 + 0x + -10 is:

-2.23606797749979

The smaller root of 6x^2 + -3x + 5 is:

Error: No real solutions

None

The smaller root of 1x^2 + 0x + 0 is:

Only one solution

0.0