

EECE1207 Project #1, due tuesday, October 18th

To write a program that takes in the coefficients of a quadratic function, and outputs information about the roots. Quadratic functions are in the form of

$$ax^2 + bx + c$$

In this program, the user will enter values for a , b , and c , and the computer will output whether the function has real roots or not, and what the roots are.

The functions you will need to implement are:

1. Welcome: Takes no input, gives no output. This function will just display a couple of lines of welcome to the user. Be creative.
2. GetCoeff: Asks the user to enter the values for a , b , and c , and returns them to the main program. You need to use pointers here, so the function needs to accept those three variables as pointers too.
3. IsReal: Takes in a , b , and c , and returns whether the roots are real (true) or complex (false).

To find this out, we need to evaluate

$$b^2 - 4ac$$

- (a) If $b^2 - 4ac > 0$, then we have two distinct real roots
 - (b) If $b^2 - 4ac = 0$, then we have a double real root
 - (c) If $b^2 - 4ac < 0$, then we have two distinct complex roots
4. A function that takes in a , b , and c , and finds the roots of the equation. The two roots are

$$r_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

$$r_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

Be careful when you are evaluating the value under the square root. If it is less than zero, then it is a complex number. These are just guidelines for you to follow, use your own judgement on how the output should look. Consider this program as a project, take it seriously! Start early, so that you may ask me if you have any questions! Do not keep this till the last day.