ENGR 1204 Programming Languages in Engineering
MATLAB Lab 2 (Solution to Quadratic Equation)

Note: For all labs and assignments copy and paste into a Word file your program (script file), the relevant command window and plots if applicable. Try to condense the print-out as best as possible.

Write a MATLAB program (.m script file) to use the quadratic formula to solve for the roots of the equation

$$a\,x^2 + b\,x + c = 0$$

Recall there are three cases, depending on the value of the discriminant

$$disc = b^2 - 4\,a\,c$$

Set up your program to allow you to enter numerical values for the coefficients a, b and c. Use nested if-else selection statements to display one of the three messages below, followed by the solution for the roots:

> Two real roots exist.

> Double equal root exists.

> Two complex conjugate roots exist.

Note that if the roots are complex, MATLAB will automatically display them in complex form (using "i", the unit imaginary quantity).

A sample output is shown below:

Enter quadratic equation coefficient a: 2
Enter quadratic equation coefficient b: 5
Enter quadratic equation coefficient c: 4
Two complex conjugate roots exist.
The roots are:
x1 =
  -1.2500 + 0.6614i
x2 =
  -1.2500 - 0.6614i

Run your program for the three cases shown:
>   (1) a = 1, b = 4, c = 2
>   (2) a = 1, b = 4, c = 4
>   (3) a = 1, b = 4, c = 8