

# CPEN 3710 - Lab 11

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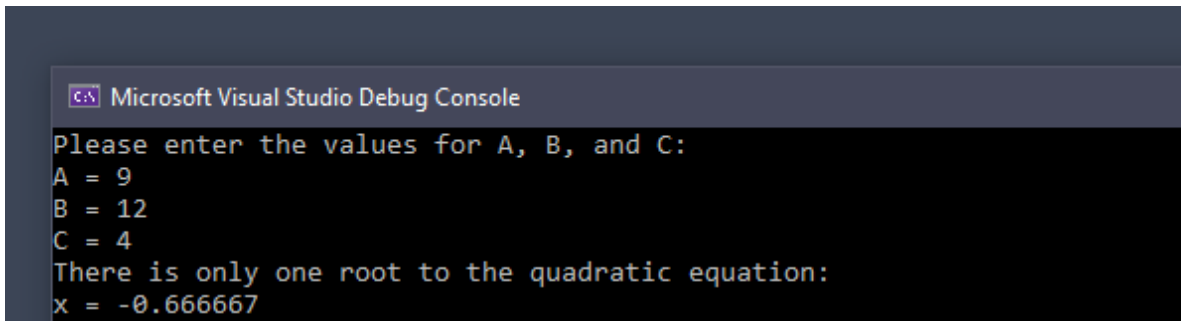
November 13, 2020

## 1 Program Outputs

Submit the results of your program as follows: run it from the command prompt and capture several “screen shots” of the output produced by the program. Do this for at least three test cases: real, unequal roots; real, equal roots; and complex roots.

### 1.1 Real, Equal Roots

Given the quadratic equation  $ax^2 + bx + c = 0$ , where  $a = 9$ ,  $b = 12$ , and  $c = 4$  the output of the quadratic equation for both roots is  $x = -0.666667$ .

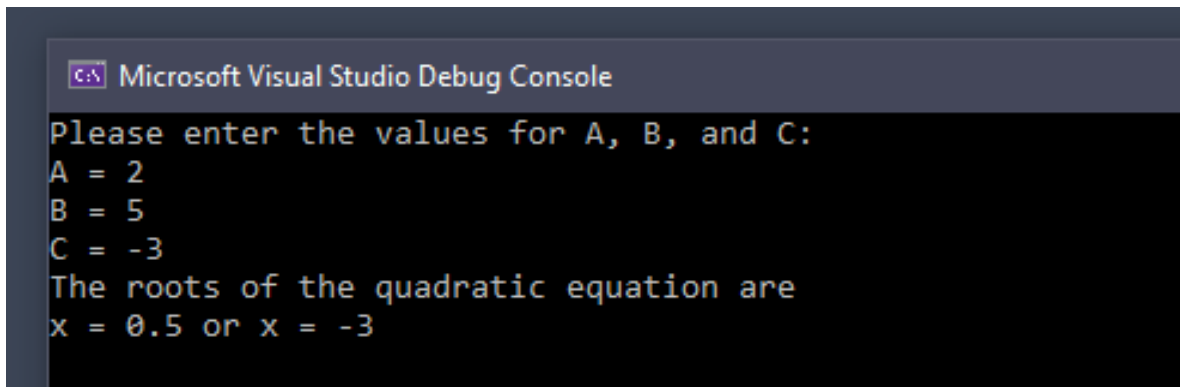


```
Microsoft Visual Studio Debug Console
Please enter the values for A, B, and C:
A = 9
B = 12
C = 4
There is only one root to the quadratic equation:
x = -0.666667
```

Figure 1: Program output for one root

### 1.2 Real, Unequal Roots

Given the quadratic equation  $ax^2 + bx + c = 0$ , where  $a = 2$ ,  $b = 5$ , and  $c = -3$  the output of the quadratic equation for both roots are  $x = 0.5$  or  $x = -3$ .



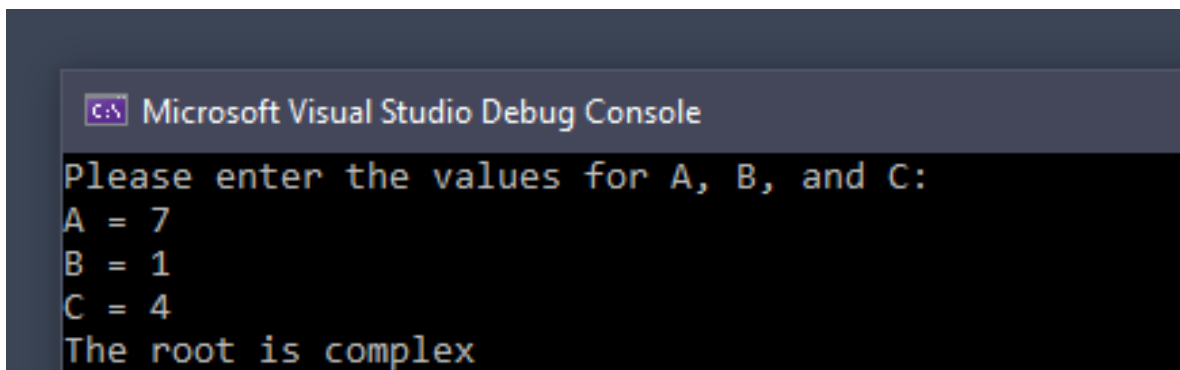
```
Microsoft Visual Studio Debug Console

Please enter the values for A, B, and C:
A = 2
B = 5
C = -3
The roots of the quadratic equation are
x = 0.5 or x = -3
```

Figure 2: Program output for two unequal roots

### 1.3 Complex Roots

Given the quadratic equation  $ax^2 + bx + c = 0$ , where  $a = 7$ ,  $b = 1$ , and  $c = 4$  the output of the quadratic equation for both roots is a complex number.



```
Microsoft Visual Studio Debug Console

Please enter the values for A, B, and C:
A = 7
B = 1
C = 4
The root is complex
```

Figure 3: Program output for complex roots