

Programming Assignment 2: Quadratic Equation Solver

- **How to produce pretty printing of the quadratic equation and solution.**

1. The process

When I first saw this assignment, I realized that the most difficult part would be printing the “pretty printing format”. Therefore, I decided to skip that part and do the calculating part first to make it print out the roots of the equation correctly. At the beginning, I divided the type of roots into three sections, one is when the discriminant=0, which means the equation has two same roots, another is when the discriminant<0, which means the equation has two different roots, and the other is when the discriminant>0, which means the equation has the roots that aren't belong to the real number. After the calculation part was all done, I moved on to printing the right format. First, I wrote a code to determine the discriminant and print out the corresponding sentence, for instance, when $D=0$, print out “The multiple real root of equation”, and if $D>0$, print out “The real roots of equation”, else when $D<0$, print out “The complex roots of equation”. Second, I separated the equation into a, b, c, and determined them respectively. As for the part “a”, there were four situations, when $a=0$, $a=1$, $a=-1$, and the others. And for the part “b”, there were five situations, when $b=0$, $b=1$, $b=-1$, $b>1$, and the others. In part “c”, there were three situations, when $c=0$, $c>0$, and the others. If $a=1$ or -1 , $b=1$ or -1 , only print out the necessary sign, not the value. And if $b>1$ add “+” before printing out the value of b. Also if $c>0$, adding “+” in front of the value. Last part was determining the discriminant and printing out the correct roots of the equation. Besides, also determine the root whether it's zero or not.

2. Problems I encountered

While doing the assignment, the first problem I encountered was when discriminant<0, how to print out the imaginary roots. Then I figured out just dividing the roots into two

sections, the real number, and the imaginary number and printed them out separately. Also included the character i after the imaginary number. The second problem was there was always a negative sign when the value of the roots were zero. My solution to this problem was when the value of the root came to zero, printed out "0.0000", not the value of the root.