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My Programming Assignment 1 Report: Verifying Quadratic Equations

I developed a C project to check the correctness of solutions for quadratic equations using complex number operations. Below is a summary of my approach:

Input:

Users are prompted to input coefficients a, b, and c for the quadratic equation aX^2 + bX + c = 0. Ensuring a isn't zero is crucial for the equation to be quadratic.

Equation Display:

To enhance clarity, I implemented a function to neatly display the quadratic equation based on the coefficients provided by the user.

Finding Roots:

Utilizing the quadratic formula, I computed the roots of the equation. Special attention was given to handling complex roots when the discriminant is negative.

Verification:

Following the computation of roots, I conducted a verification process to ensure

their correctness. This involved substituting the roots back into the equation and comparing the result with a small margin of error to account for precision issues.

Conclusion:

The program effectively serves its purpose in verifying the accuracy of solutions for quadratic equations. It's a straightforward yet reliable tool for mathematical verification tasks.

The following includes the result of my assignment.

```
Enter coefficients a, b, and c for quadratic equation a*X^2 + b*X + c = 0: 1 0 9
The quadratic equation is: X**2 + 9.0000 = 0

The two roots of the quadratic equation are: 3.0000 i and -3.0000 i

Quadratic equation solution is a pair of valid roots. Verification succeeds.
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```
Enter coefficients a, b, and c for quadratic equation a*X^2 + b*X + c = 0: 4 -12 9
The quadratic equation is: 4.0000 X**2 - 12.0000 X + 9.0000 = 0

The two roots of the quadratic equation are: 1.5000 and 1.5000

Quadratic equation solution is a pair of valid roots. Verification succeeds.
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```
Enter coefficients a, b, and c for quadratic equation a*X^2 + b*X + c = 0: 3 -4 5
The quadratic equation is: 3.0000 X**2 - 4.0000 X + 5.0000 = 0

The two roots of the quadratic equation are: 0.6667 + 1.1055 i and 0.6667 + -1.1055 i

Quadratic equation solution is a pair of valid roots. Verification succeeds.
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