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#include <stdio.h>
#include <math.h>
int main()
{
    float a, b, c, discriminant, root1, root2, realPart, imaginaryPart;

    // Input coefficients
    printf("Enter coefficients a, b and c: ");
    scanf("%f %f %f", &a, &b, &c);

    if (a == 0)
    {
        printf("This is not a quadratic equation (a cannot be zero)");
        return 0;
    }

    // Calculate the discriminant
    discriminant = b * b - 4 * a * c;

    // Check the nature of the discriminant
    if (discriminant > 0)
    {
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    // Two distinct real roots
    root1 = (-b + sqrt(discriminant)) / (2 * a);
    root2 = (-b - sqrt(discriminant)) / (2 * a);
    printf("Roots are real and distinct:\n");
    printf("Root 1 = %.2f\n", root1);
    printf("Root 2 = %.2f\n", root2);
}
else if (discriminant == 0)
{
    // One real root (double root)
    root1 = -b / (2 * a);
    printf("Roots are real and equal:\n");
    printf("Root = %.2f\n", root1);
}
else
{
    // Complex roots
    realPart = -b / (2 * a);
    imaginaryPart = sqrt(-discriminant) / (2 * a);
    printf("Roots are complex and imaginary:\n");
    printf("Root 1 = %.2f + %.2fi\n", realPart, imaginaryPart);
    printf("Root 2 = %.2f - %.2fi\n", realPart, imaginaryPart);
}

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}
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return 0;
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}
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