

CECS 524 Unit 5 Assignments

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Rewrite the Pascal Quadratic (from Unit 2) program in C

Code:

```
#include <stdio.h>
```

```
#include <math.h>
```

```
#include <stdlib.h>
```

```
int main() {
```

```
    while(1)
```

```
    {
```

```
        double a ,b,c,rl,im;
```

```
        printf("Enter a b c values: ");
```

```
        scanf("%lf %lf %lf", &a, &b, &c);
```

```
        if(a==0&&b==0&&c==0)
```

```
        {
```

```
            printf("3 equations were solved\n");
```

```
            exit(0);
```

```
        }
```

```
        if(b*b-4*a*c>0)
```

```
        {
```

```
            printf("Roots are real\n");
```

```

    printf("Root 1: %lf\n",(-b+sqrt((b*b)-4*a*c))/(2*a));
    printf("Root 2: %lf\n",(-b-sqrt((b*b)-4*a*c))/(2*a));

}

else if(b*b-4*a*c==0)
{
    printf("One real root\n");
    printf("Root 1:%lf\n",(-b)/(2*a));
}

else if(b*b-4*a*c<0)
{
    printf("Roots are Imaginary\n");
    rl=-b/(2*a);
    im= sqrt(-((b*b)-4*a*c))/2*a;
    if(b==0)
    {
        printf("Root 1:+i*%lf\n",im);
        printf("Root 2:-i*%lf\n",im);
    }
    else
    {
        printf("Root 1:%lf+i*%lf\n",rl,im);
        printf("Root 2:%lf-i*%lf\n",rl,im);
    }
}

```

```

    }

}

return 0;

}

```

Output:

The screenshot shows the Code::Blocks IDE with a C program named `Quadratic.c` open. The program is designed to solve quadratic equations of the form $ax^2 + bx + c = 0$. It prompts the user to enter values for a , b , and c . Based on the discriminant $b^2 - 4ac$, it determines if there are three real roots, one real root, or three imaginary roots. The console output shows several test cases:

```

Enter a b c values: 1 0 -9
Roots are real
Root 1: 3.000000
Root 2: -3.000000
Enter a b c values: 1 6 9
One real root
Root 1: -3.000000
Enter a b c values: 1 0 4
Roots are Imaginary
Root 1: +i*2.000000
Root 2: -i*2.000000
Enter a b c values: 0 0 0
3 equations were solved
Process returned 0 (0x0)   execution time : 28.322 s
Press any key to continue.

```

The IDE interface includes a menu bar (File, Edit, View, Search, Project, Build, Debug, Fortran, woSmith, Tools, Tools+, Plugins, DoxyBlocks, Settings, Help), a toolbar, and a sidebar with Management, Projects, Files, and Workspace views. The status bar at the bottom indicates the current file is `C:\Users\mspur\OneDrive\Desktop\Assignments\APL\Unit 5\Quadratic.c` in C/C++ mode, with the cursor at Line 1, Col 1, Pos 0. The system tray shows the temperature is 71°F, it's hazy, and the time is 9:33 AM on 10/7/2022.