

Develop a C program to find all possible roots of a quadratic equation

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

```
#include <conio.h>
```

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

```
void quadratic_roots (float, float, float);
```

```
int main () {
```

```
    float p, q, r;
```

```
    printf ("In a quadratic Equation of form  

 $ax^2 + bx + c = 0$ , enter the coefficients  

    a, b and c: \n");
```

```
    scanf ("%f %f %f", &p, &q, &r);
```

```
    quadratic_roots (p, q, r);
```

```
    getch();
```

```
    return 0;
```

```
}
void quadratic_roots (float a, float b, float c) {
    float discriminant, root1, root2, realPart, imagPart;
    discriminant = pow (b, 2) - 4 * a * c;
```

// condition for real and different roots :-

```
if (discriminant > 0) {
```

```
    root1 = (-b + sqrt (discriminant)) / (2 * a);
```

```
    root2 = (-b - sqrt (discriminant)) / (2 * a);
```

```
    printf ("root 1 = %f and root 2 = %f", root1, root2);
```

```
}
```

condition for real and equal roots:-

```
else if (discriminant == 0) {  
    root 1 = root 2 =  $-b / (2 * a)$ ;  
    printf ("root 1; root 2 = %.f", root 1);  
}
```

// condition for non-real roots:-

```
else {  
    real Part =  $-b / (2 * a)$ ;  
    imag Part =  $\sqrt{\text{discriminant}} / (2 * a)$ ;  
    printf ("1st root = (%.f + %.f i) and 2nd root  
    = (%.f - %.f i), where  $i = (-1)^{(0.5)}$ ", real Part  
    imag Part, real Part, imag Part);  
}  
return;  
}
```