// PROGRAM 2- Roots of Quadratic equation

Algorithm to find roots of quadratic equation

Step1: Start

Step 2: read the co-efficient values a,b,c

Step3: calculate discriminant value dis=b^2 - 4ac

Step4: if dis<0

Print roots are imaginary

and calculate

R1 = -b/(2*a),sqrt(-dis)/(2*a) and R2 = -b/(2*a),-sqrt(-dis)/(2*a)

Step 5: else

Print Roots are real and calculate

r1 = (-b + sqrt(dis))/(2.0*a);

r2 = (-b - sqrt(dis))/(2.0*a);

Step 6: printf (“R1 and R2”)

Step 7: Stop

```
//Write a Program to Find the Roots of a  Quadratic Equations :
#include<stdio.h>
#include<math.h> //for sqrt() function

main()
{
   float a,b,c,dis,r1,r2;//a,b,c are constant coefficients, dis= discriminant and r1,r2 are roots
   printf ("\nQuadratic Equation is of the form: ax^2 + bx + c = 0 \n");
   printf("\nEnter the values of a, b and c: ");
```

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

    dis = pow(b,2) - 4*a*c; // calculation of discriminant
    if(dis < 0) //checking the value of discriminant
    {
        printf("\nThe roots are imaginary.\n\n");
        printf("Root1= %.3f % + .3fi",-b/(2*a),sqrt(-dis)/(2*a));
        printf("\nRoot2= %.3f %+ .3fi\n",-b/(2*a),-sqrt(-dis)/(2*a));
    }
    else
    {
        r1 = (-b + sqrt(dis))/(2.0*a);
        r2 = (-b - sqrt(dis))/(2.0*a);
        printf("\nThe first root is = %f\nThe second root is = %f\n",r1,r2);
    }
    return 0;
}
```

Output:

```
Quadratic Equation is of the form: ax^2 + bx + c = 0

Enter the values of a, b and c: 1
-5
5
The first root is = 3.618034
The second root is = 1.381966
```

Quadratic Equation is of the form: ax^2 + bx + c = 0

Enter the values of a, b and c: 4

5

6

The roots are imaginary.

Root1= -0.625 +1.053i

Root2= -0.625 -1.053i

VIVA QUESTIONS

1.Why C is called middle level language?
2. What is the difference between compiler and interpreter?
3. Explain roots of quadratic equations.
4. What is imaginary value
5. When the roots will be equal
6. When the roots will be Imaginary
7. What is the formula for discriminant value
8.What are the co-efficient values