## **Program 1**

Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminate b2 -4ac is negative, display a message stating that there are no real solutions.

## Code:

```
import java.util.Scanner;
class quadraticequation
 public static void main(String args[])
   Scanner S = new Scanner(System.in);
   System.out.println("Enter the values of a b and
  c"); double a,b,c,d,r1,r2; a=S.nextFloat();
  if(a==0)
     System.out.println("invalid input");
   else
   b=S.nextFloat();
  c=S.nextFloat(); d=(b*b)-
  (4*a*c);
   if(d>0)
      r1=(-b+Math.pow(d,0.5))/(2*a); r2=(-b-
     Math.pow(d,0.5)/(2*a);
        System.out.println(" Roots are Real and Distinct and The values are: " + r1 + "and" +
r2);
   }
        else if(d==0)
         {
        r1=-b/(2*a);
          System.out.println("Roots are Equal and the values are " + r1);
   else
       {
```

```
r1=-b/(2*a);
r2=(Math.sqrt(Math.abs(d)))/(2*a);
System.out.println("Roots are not real and the values are " + r1 + "+i" +Math.abs(r2)+
"and" + r1+ "-i" +Math.abs(r2));
}
}
}
```

## **Observation:**

```
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                                                                system out Println ( Roote are equal and value
                 PROGRAM - 1
                                                                                                is "+ r1);
                QUADRATIC EQUATIONS
                                                                  Jelse &
                                                                  Ator 11 = 6/(2*a);
                                                                      12 = (Math. Sqrt (Math. abs (d)))/(2*a);
 import java util Scannor
import java . Util scanner
                                                                 System . out Println ("Roorls are not real good the
class quadratic equation
                                                                     valus are " + + 1 + "+i" + Maths abs(12) + "and" + m
                                                                          -i" + Maths abs (re)); } } } }
                                                                 output
  Public static void main (string angs[])
                                                                 Enter the value of a b and C
   Scanner S = new Scanner (8 yster in);
                                                                 2 49
    System out Println ("Ents the values a b and c");
                                                                 Roots are Equal and the values are -1
     double
    fre a.b.c.d, r. . 72;
                                                                Ento the values of a b and c
a = 8. next Float ();

If (a == 0) { Systim out Printin ("invalid input"); }

clief b = 6. next Float ();
                                                                 1 5 6
                                                                 Roots are Real and Distinct and the values are
      C = S. next Float();
                                                                    -2 and -3.
      d= (b*b)- (4 * a * c);
    4 (a>>)
                                                                Enter the values of a band c
                                                                 1 23
     71= (-b + 89/7+ (d)) / (2 x d).
                                                                 Roots ou not Real
       72 = (b - Sgrt(a))/(2*d);
    System out Printle (" Roots on ""+ 17 + "and" + 12)
                              real and distinct. The values are
   else if (d==0)
     71 = - b / (3+a);
```

## **Output:**

