Week-3
LAB-1

1BM19CS143
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// Java Program to find the roots of the given quadratic equation by the user.

```
import java.util.*;
class QuadraticEquation{
  public static void main (String args[]){
  Scanner in = new Scanner (System.in);
  int a, b, c, det;
  System.out.println("Enter the values of a, b and c:");
  a = in.nextInt();
  b = in.nextInt();
  c = in.nextInt();
  det = b*b - 4*a*c;
  double r1, r2;
  if(det>0){
  r1 = (-b + Math.sqrt(det))/(2*a);
  r2 = (-b - Math.sqrt(det))/(2*a);
  System.out.println("Root 1: " + r1 + "\n Root 2:"
+r2);
  }
  else if(det==0){
   r1 =  -b/(2*a);
   System.out.println("Both the roots are same
and equal to :"+r1);
  }
  else if(det<0){
  System.out.println("Real roots do not exist");
}
else{System.out.println("Invalid input!.");
}
}
```

Algorithm :

1. Start.
2. Double a, b, c, root1, root2, det.
3. input a, b, c.
4. det = b*b - 4*a*c.
5. if (det > 0)
   root 1 = $(-b + \sqrt{b*b-4*a*c}) / (2*a)$.
   root 2 = $(-b - \sqrt{b*b-4*a*c}) / (2*a)$
   print root 1, root 2.

   else if (det == 0)
   root 1 = -b/(2*a).
   print root 1.

   else if (det < 0)
   print "Real Roots do not exist".
   else
   print "Invalid Input".
6. End.

Sample Output.

```
Enter the values of a, b and c :
2
5
1
Root 1 : -0.21922359
Root 2 : -2.28077640
```