Week-3

Lab 1

09-10-2020

Shreshtha Aggarwal
1BM19CS155

Page No: 7
Date: / /

Q- Develop a Java program that prints all real solutions to the quadratic eqn → $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminate is negative, display a message that there are no real roots.

Sol 2

```
import java.util.*;
class Series {
    public static void main (String args[]){
        double a, b, c, d, r1, r2;
        Scanner in = new Scanner (System.in);
        System.out.println ("Enter the three
            coefficients : \n");
        a = in.nextDouble ();
        b = in.nextDouble ();
        c = in.nextDouble ();
        System.out.println ("a:"+a+"b:"+b+"c:"+c);
        d = b*b - 4*a*c;
        if (d >= 0){
            System.out.println ("Roots are real & distinct");
            r1 = (-b + Math.sqrt(d)) / (2*a);
            r2 = (-b - Math.sqrt(d)) / (2*a);
            System.out.println ("r1:"+r1+"r2:"+r2);
```

```
else if (d == 0) {
    System.out.println("Roots are real & equal");
    r1 = (-b) / (2 * a);
    System.out.println("r = " + r1);
}
else if (d < 0) {
    System.out.println("Roots are imaginary");
}
}
}
```

Algorithm :-

1. Input the value of a, b, c
2. Calculate $d = b * b - 4 * a * c$
3. If $d > 0$
   display ("Roots are real & distinct")
   & calculate $r1 = (-b + \sqrt{d}) / 2a$
   and $r2 = (-b - \sqrt{d}) / 2a$
   else if $d = 0$
   display ("Roots are real equal")
   & calculate $r1 = -b / 2a$
   else if $d < 0$
   display ("Roots are imaginary")
4. Print r1 and r2
5. End the algorithm

Expected O/P →

Enter the coefficients respectively:

1

2

1

a : 1 b : 2 c : 1

Roots are real & equal

x = -1