LAB 1 — 9/10/24

1. Java Program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminate b^2-4ac is negative, display a message stating that there are no real solutions.

Prog:

```
import java.util.Scanner;
import java.lang.Math;
class Quadratic {
  int a,b,c;
  double r1, r2, d;
  Scanner s = new Scanner (System.in);
  void getdata()
  {
  System.out.println("Enter a,b,c values:");
  a = s.nextInt();
  b = s.nextInt();
  c = s.nextInt();
  }
  void compute()
  {
  while (a==0)
  {
  System.out.println("The equation is not quadratic,
                      re-enter the a value:");
    a = s.nextInt();
  }
  d = b*b-4*a*c;
  if (d>0){
  r1 = (-b+Math.sqrt(d))/(double)(2*a);
  r2 = (-b-Math.sqrt(d))/(double)(2*a);
```

```
System.out.println("Real & distant roots:\n Root1:"+r1+"\n Root2:"+r2);
}
else if (d==0)
{
r1 = -b/(double)(2*a);
System.out.println("Real and equal roots:\n Root1:"+r1+"\n Root2:"+r2);
}
else
{
r1 = -b/(2*a);
r2 = Math.sqrt(-d)/(2*a);
System.out.println("Roots are imaginary:\n Root1: "+r1+"+i"+r2+
"\n Root2 "+r1+"-i"+r2);
}
}
}

class Quadrun
{
public static void main(String args[])
{
System.out.println("Anu Sai Shruk \n 1BM23CS045");
Quadratic q = new Quadratic();
q.getdata();
q.compute();
}
}
```

Output:

```
Enter a,b,c values:
1 0 1
Real and equal roots:
Root 1: -1.0
Root 2: -1.0
```

Enter a, b, c values:

1 2 3

Roots are imaginary:

Root 1: -1.0 + i 1.414

Root 2: -1.0 - i 1.414.

Enter a, b, c values:

1 -5 6

Real and distant roots:

Root 1: 3.0

Root 2: 2.0.

SHA
7-10-24