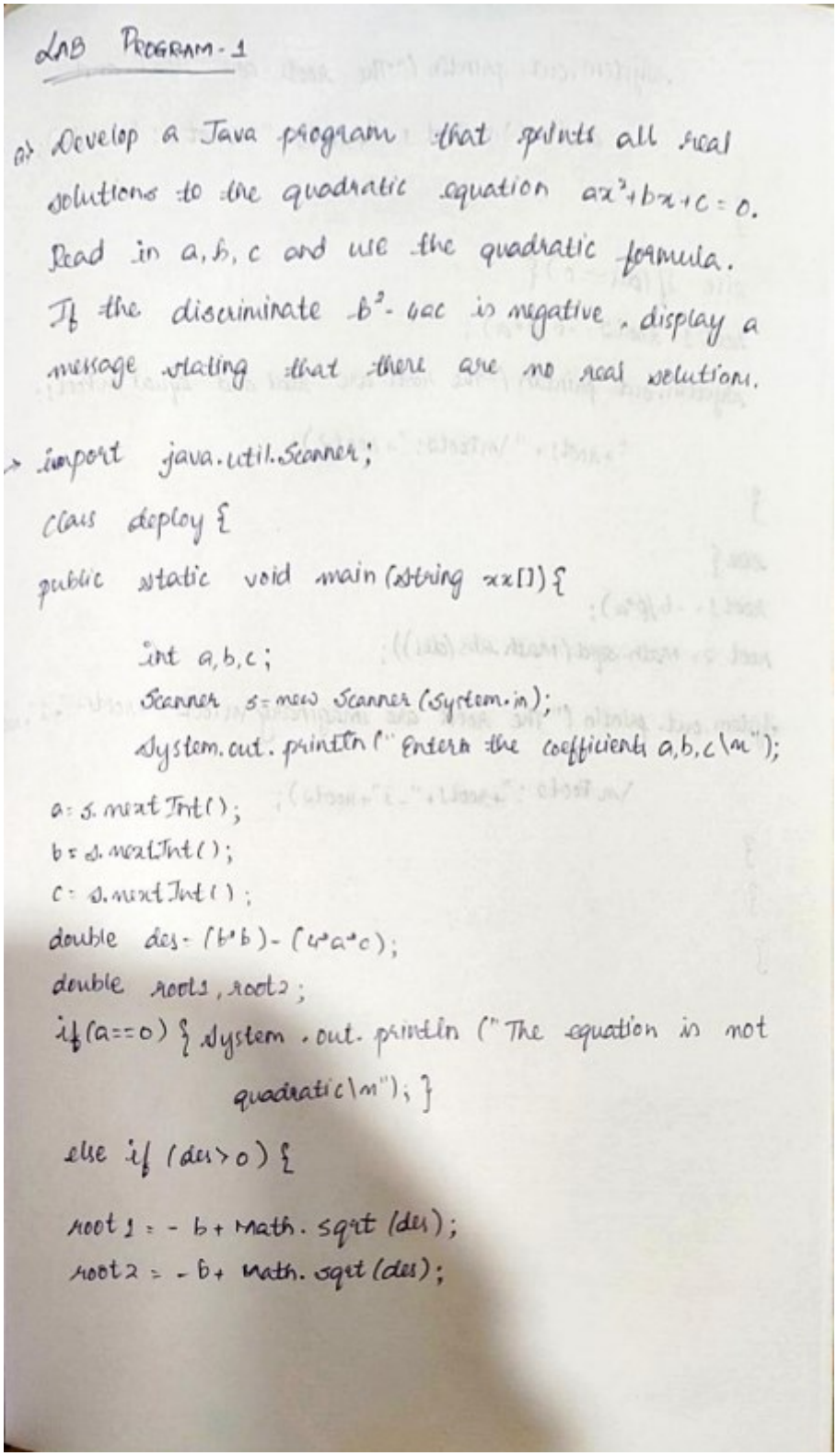
QUESTION:- Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.

Code:-



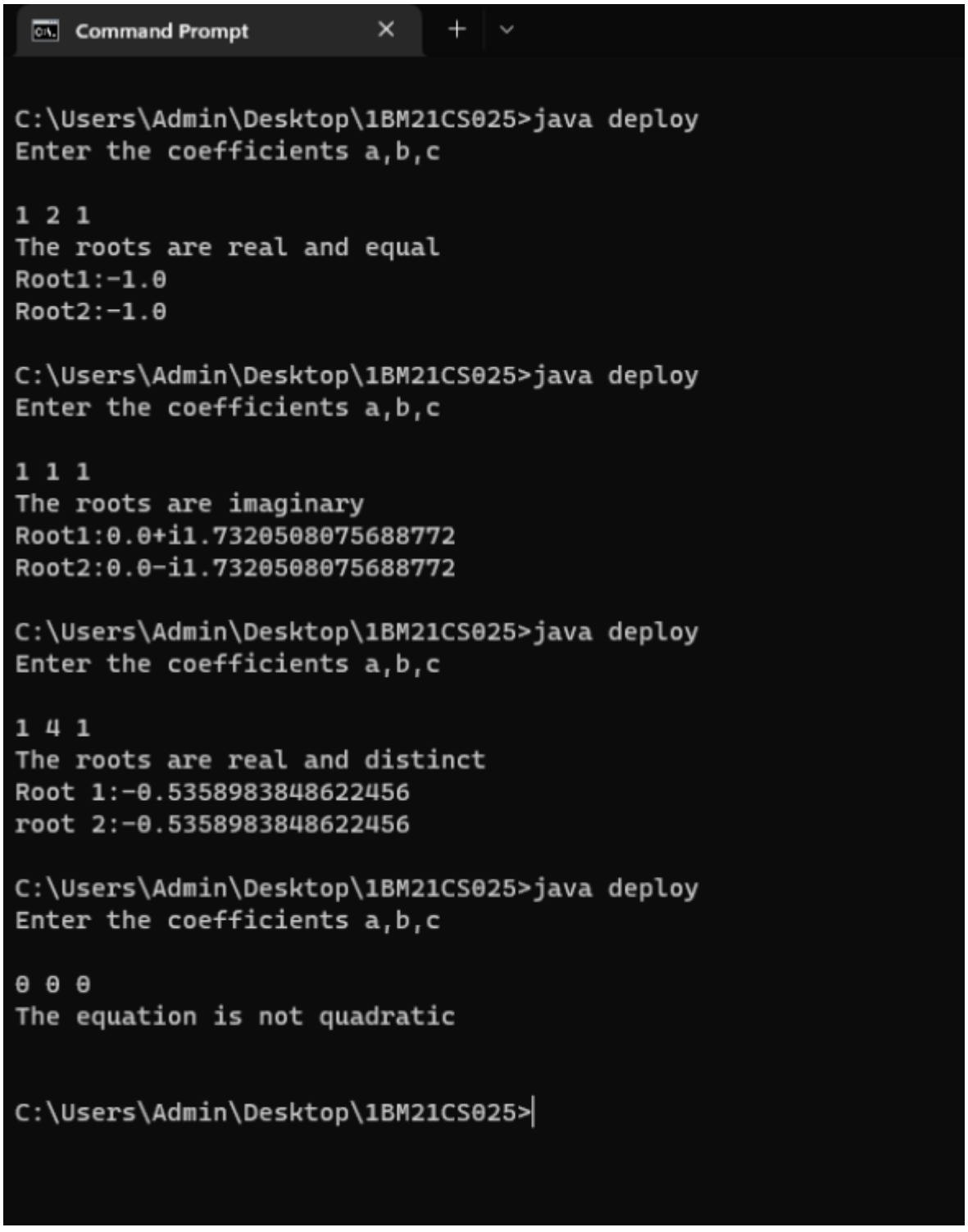
LAB PROGRAM-1

a) Develop a 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.

```
import java.util.Scanner;
class deploy {
public static void main (String xx[]) {
        int a,b,c;
        Scanner s= new Scanner (System.in);
        System.out.println(" Enter the coefficients a,b,c\n");
a: s.nextInt();
b= s.nextInt();
c: s.nextInt();
double des= (b*b)-(4*a*c);
double root1, root2;
if(a==0) { System.out.println("The equation is not
            quadratic\n"); }
else if (des>0) {
root1 = -b+ Math.sqrt(des);
root2 = -b+ Math.sqrt(des);
```

```
System.out.println("The roots are real and
        distinct\n Root 1 : "+root1+ "\nroot 2 : "+root2);
}
else if(des==0){
root1=root2=-b/(2*a);
System.out.println("The roots are real and equal\nRoot1:
        "+root1+ "\nRoot2: "+root2);
}
else{
root1=-b/(2*a);
root 2= Math.sqrt(Math.abs(des));
System.out.println("The roots are imaginary\n Root1 : "+root1+ "+i "+root
        \n Root2 : "+root1+ "-i"+root2);
}
}
}
```

Output:-


Command Prompt
C:\Users\Admin\Desktop\1BM21CS025>java deploy
Enter the coefficients a,b,c
1 2 1
The roots are real and equal
Root1:-1.0
Root2:-1.0
C:\Users\Admin\Desktop\1BM21CS025>java deploy
Enter the coefficients a,b,c
1 1 1
The roots are imaginary
Root1:0.0+i1.7320508075688772
Root2:0.0-i1.7320508075688772
C:\Users\Admin\Desktop\1BM21CS025>java deploy
Enter the coefficients a,b,c
1 4 1
The roots are real and distinct
Root 1:-0.5358983848622456
root 2:-0.5358983848622456
C:\Users\Admin\Desktop\1BM21CS025>java deploy
Enter the coefficients a,b,c
0 0 0
The equation is not quadratic
C:\Users\Admin\Desktop\1BM21CS025>