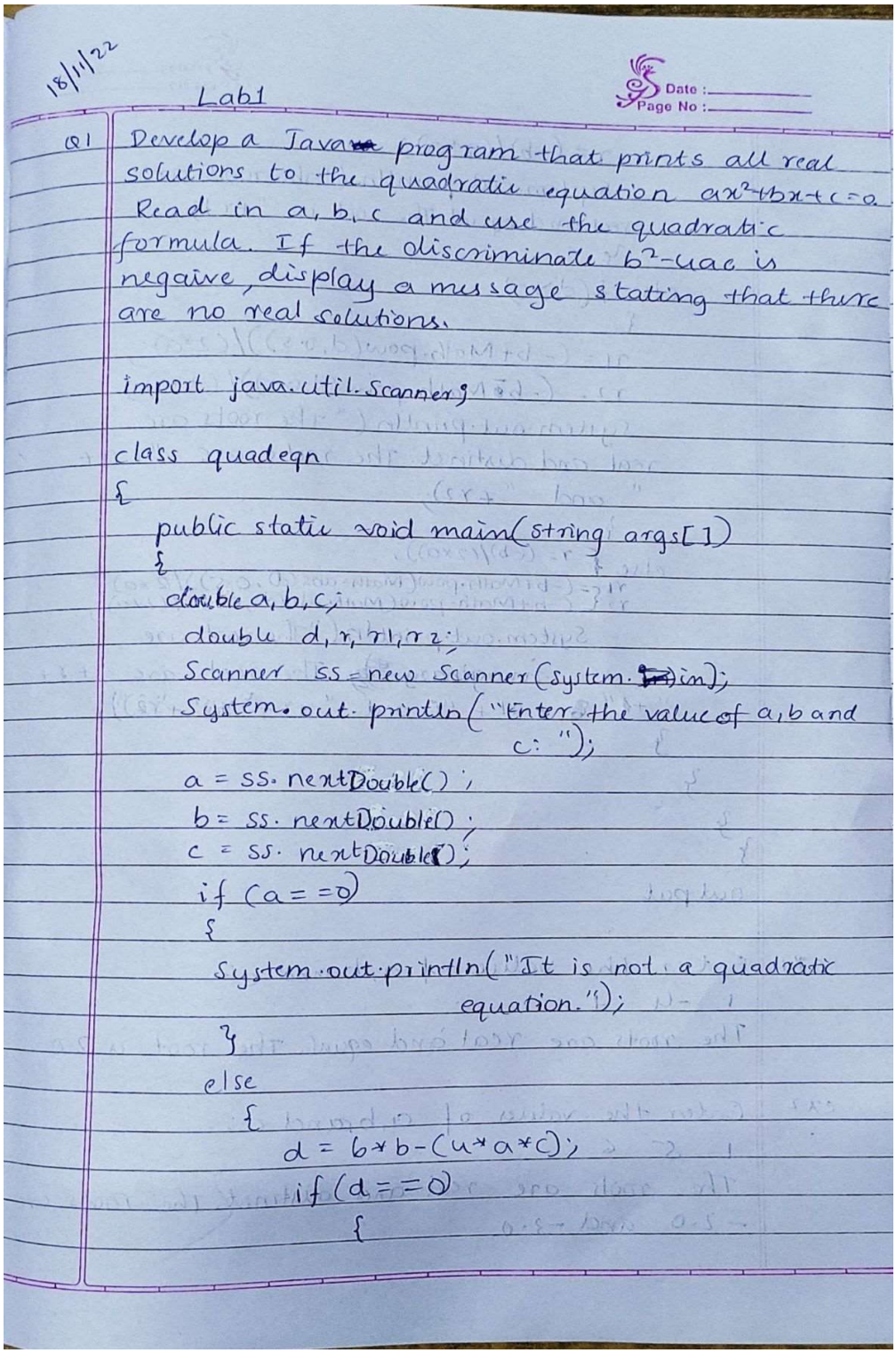
Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2-4ac is negative, display a message stating that there are no real solutions.



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Lab1

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Q1 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 quadeqn
{
   public static void main(String args[])
   {
    double a,b,c;
     double d,r,r1,r2;
     Scanner ss=new Scanner(System.in);
     System.out.println("Enter the value of a,b and
                                    c: ");
     a = ss.nextDouble();
     b = ss.nextDouble();
     c = ss.nextDouble();
     if (a==0)
     {
      System.out.println("It is not a quadratic
                          equation.");
     }
     else
       {
          d = b*b-(4*a*c);
          if (d==0)
             {
```

```
            r = (-b)/(2*a);
            System.out.println("The roots are
            real and equal. The root is "+r);
            }
        else if(d>0)
            {
            r1 = (-b+Math.pow(d,0.5))/(2*a);
            r2 = (-b-Math.pow(d,0.5))/(2*a);
            System.out.println("The roots are
            real and distinct. The roots are "+r1+
            " and "+r2);
            }
        else { r = (-b)/(2*a));
            r1 = (-b+Math.pow(Math.abs(d),0.5))/(2*a);
            r2 = (-b+Math.pow(Math.abs(d),0.5))/(2*a);
                System.out.println("The roots are
                    imaginary. The roots are "+r+
            "+"+"i"+r1+"i and "+r+"-"+"i");
            }
        }
    }
}
```

Output

ex1 Enter the values of a, b and c:
1 -4 4
The roots are real and equal. The root is 2.0

ex2 Enter the values of a, b and c:
1 5 6
The roots are real and distinct. The roots are -2.0 and -3.0.

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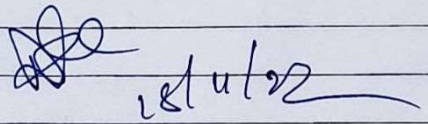
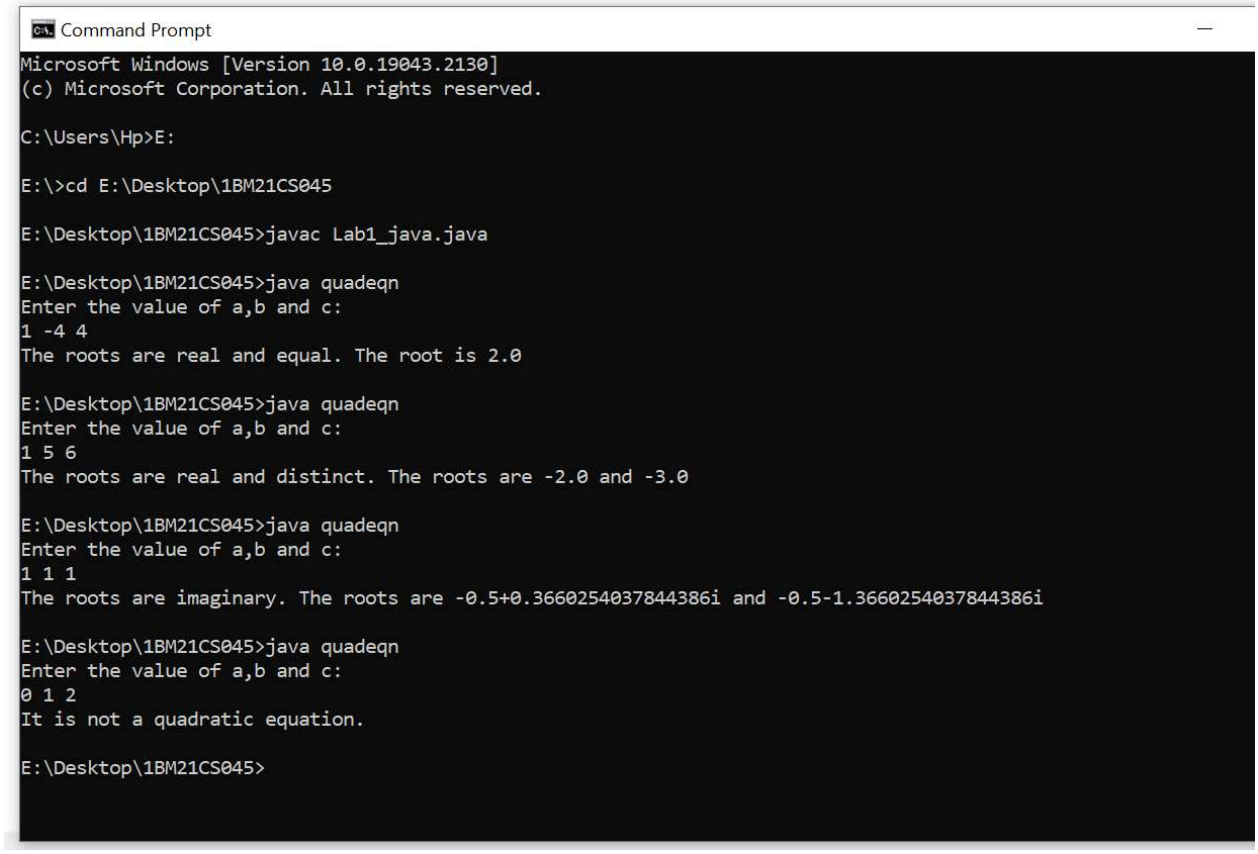
(23 Enter the value of a, b, and c:
1 1 1
The roots are imaginary. The roots are
-0.5+0.36602540378443864i and -0.5-1.36602540378443864i

(24 Enter the value of a, b, and c:
0 1 2
~~Fake~~ It is not a quadratic equation.



Output:


Command Prompt
Microsoft Windows [Version 10.0.19043.2130]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Hp>E:
E:\>cd E:\Desktop\1BM21CS045
E:\Desktop\1BM21CS045>javac Lab1_java.java
E:\Desktop\1BM21CS045>java quadeqn
Enter the value of a,b and c:
1 -4 4
The roots are real and equal. The root is 2.0
E:\Desktop\1BM21CS045>java quadeqn
Enter the value of a,b and c:
1 5 6
The roots are real and distinct. The roots are -2.0 and -3.0
E:\Desktop\1BM21CS045>java quadeqn
Enter the value of a,b and c:
1 1 1
The roots are imaginary. The roots are -0.5+0.36602540378443864i and -0.5-1.36602540378443864i
E:\Desktop\1BM21CS045>java quadeqn
Enter the value of a,b and c:
0 1 2
It is not a quadratic equation.
E:\Desktop\1BM21CS045>