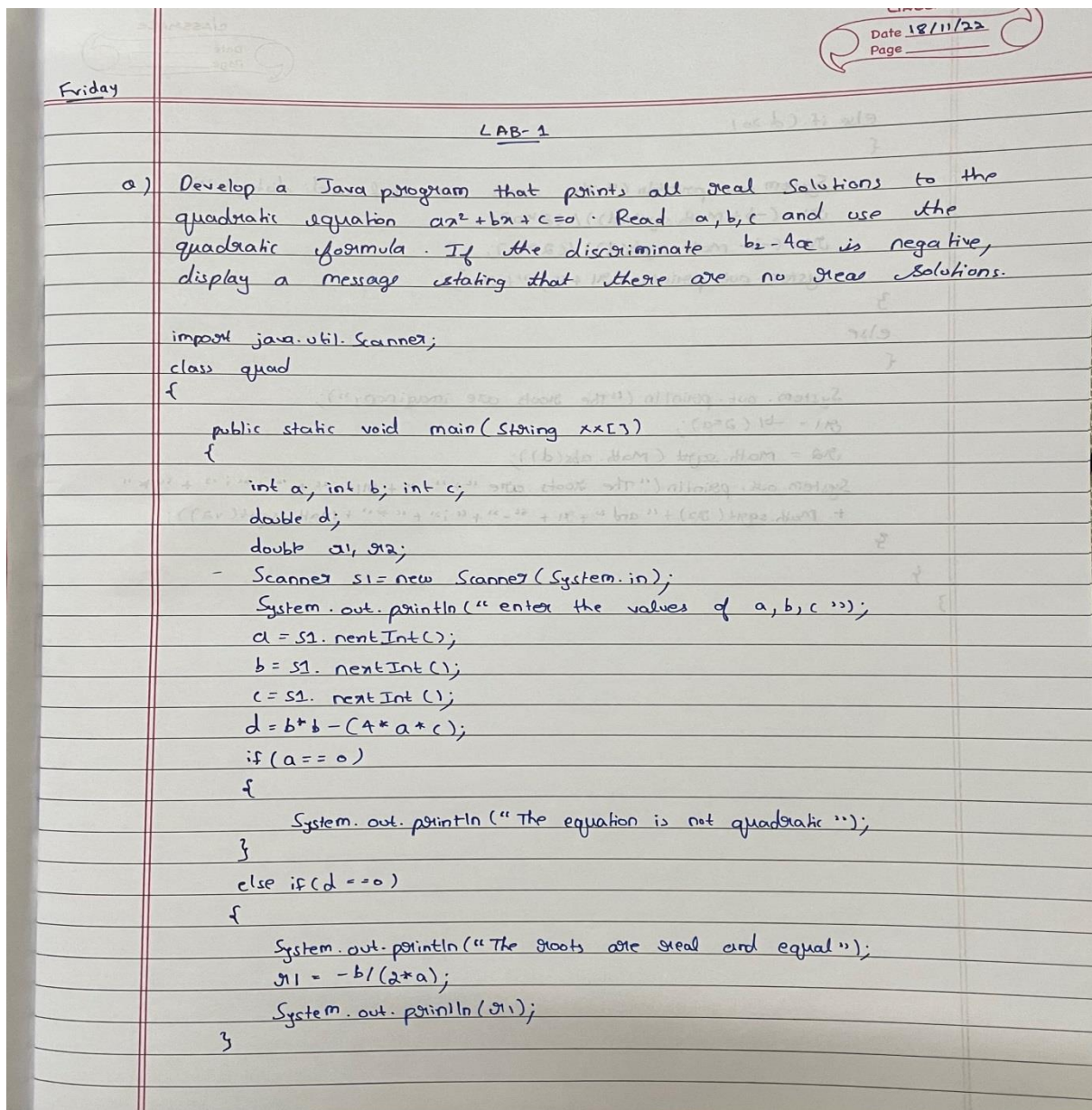


Lab Program 1:

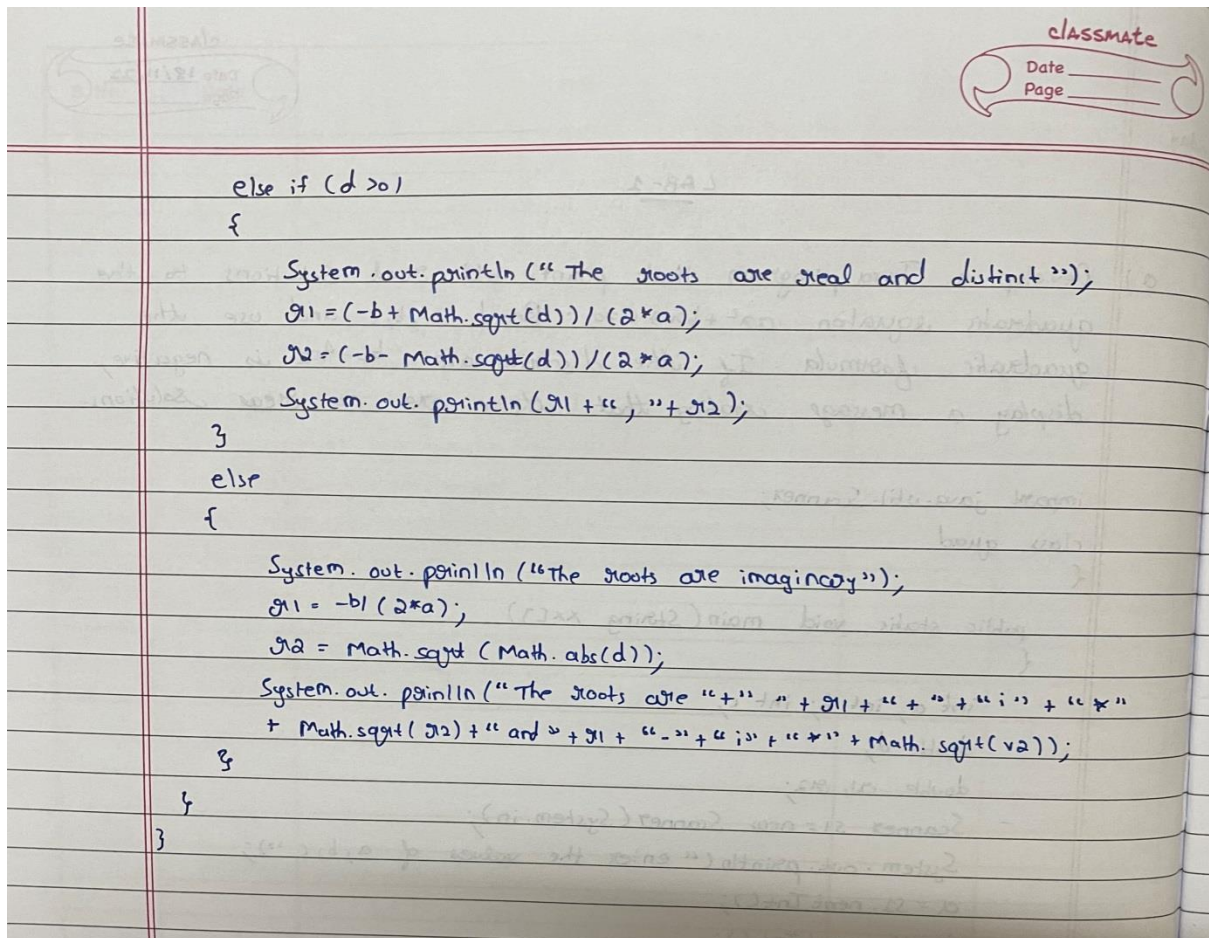
Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.

CODE SNIPPET:



The image shows a handwritten code snippet on a piece of lined paper. At the top right, there is a date stamp 'Date 18/11/22' and a page number 'Page'. The code is written in Java and is intended to solve quadratic equations. It starts with an import statement for Scanner, followed by a class definition 'quad'. Inside the class, there is a main method that takes an array of strings as input. The method uses a Scanner to read three integers: a, b, and c. It then calculates the discriminant 'd' as $b^2 - 4ac$. If 'a' is zero, it prints 'The equation is not quadratic'. If 'd' is less than or equal to zero, it prints 'The roots are real and equal' and calculates the root 'r1' as $-b / (2*a)$. The code is written in a clear, legible hand.

```
import java.util.Scanner;
class quad
{
    public static void main(String x[])
    {
        int a, int b; int c;
        double d;
        double r1, r2;
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the values of a, b, c");
        a = s1.nextInt();
        b = s1.nextInt();
        c = s1.nextInt();
        d = b*b - (4*a*c);
        if (a == 0)
        {
            System.out.println("The equation is not quadratic");
        }
        else if (d <= 0)
        {
            System.out.println("The roots are real and equal");
            r1 = -b / (2*a);
            System.out.println(r1);
        }
    }
}
```



OUTPUT:

```
C:\Users\bmsce\Desktop\1BM21CS022>javac quad.java
C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
0 2 3
the equation is not quadratic

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
3 -18 27
the roots are real and equal
3.0

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
1 -1 -6
the roots are real and distinct
3.0, -2.0

C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
1 -2 5
the roots are imaginary
the roots are 1.0+i*2.0and1.0-i*2.0
```