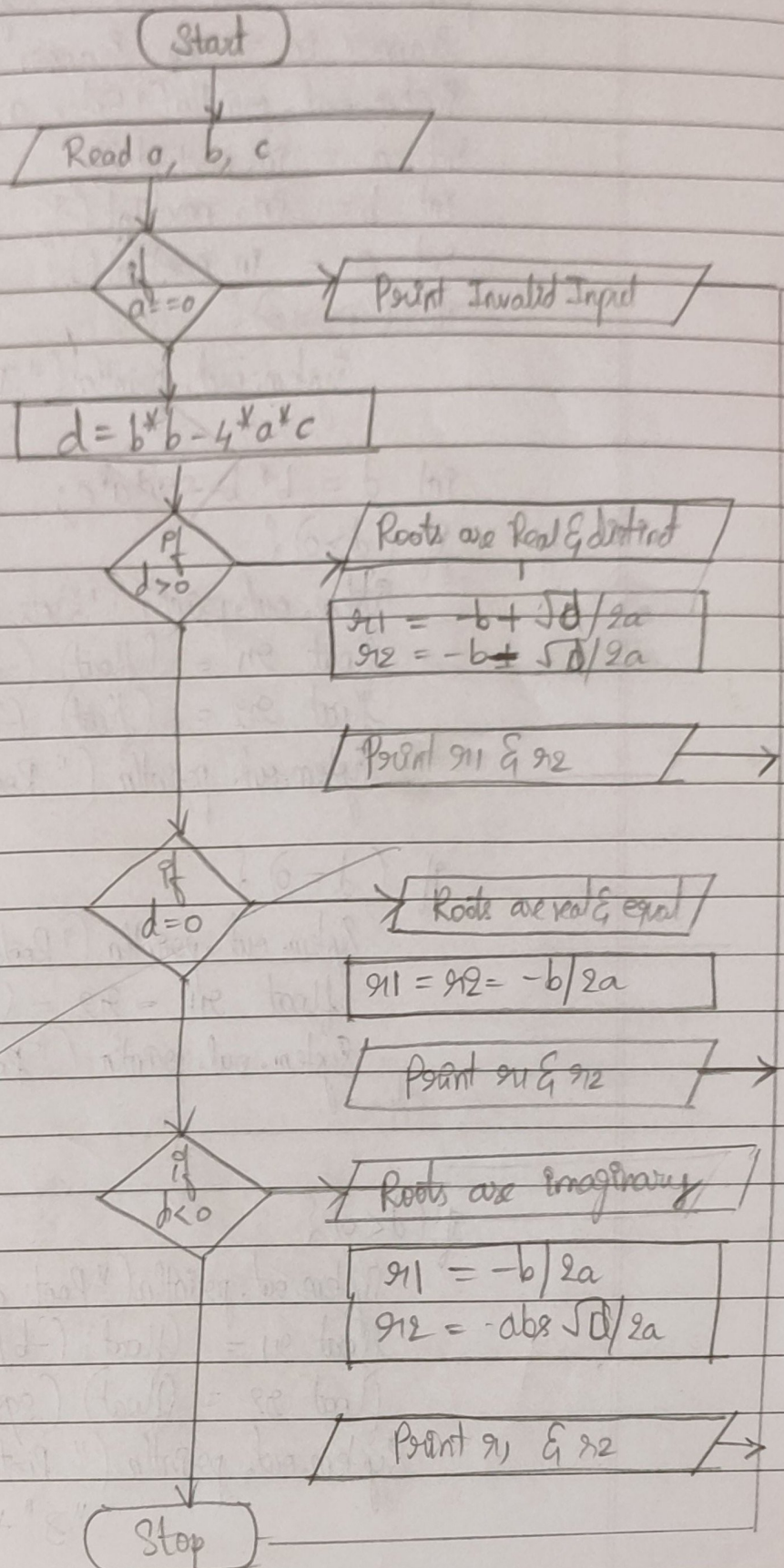


- 8) Develop a Java program that prints all real solutions to quadratic equation  $ax^2 + bx + c = 0$ .  
Read in  $a, b, c$  and use the quadratic formula. If the discriminant  $b^2 - 4ac$  is negative, display a message stating that there are no real solutions.





Empoed Java. UH/ Scanner;

import java.lang.Math; sqrt;  
import static java.lang.Math.\*;

Empire static java. lang. Math. abs;

```
public class QE {
```

```
public static void main (String[] args) {
```

Scanner Pn = New Scanner (System.in);

```
System.out.println("Enter a, b & c:");
```

```
int a = ph.nextInt();
```

```
int b = in.nextInt();
```

Print c = in.nextInt();

$$g(a=0)$$

System.out.println("Invalid Input for a");

$$\text{int } d = b * b - 4 * a * c;$$
$$g(d > 0) \{$$

System. out.println ("Roots are real & distinct");

$$\text{float } g_1 = (\text{float}) (-b + \sqrt{b^2 - 4ac}) / 2a;$$
$$\text{float } g2 = (\text{float}) (-b - \sqrt{b^2 - 4ac}) / 2a;$$

System. ord. psentln (Roots are  $+1914$  &  $+1919$ );

if  $(d=0)$

System. out. prntln ("Roots are real & equal").

$$\text{float } g11 = g12 = (\text{float}) (-b / g * a)$$

System. out. partn ("Roots are" + 91 "3" + 92)

$$g(d < 0) \{$$

```
System.out.println("Roots are imaginary");
```

$$\text{float } g1 = (\text{float}) (-b / 2 * a);$$
$$\text{float } x2 = (\text{float}) (\text{sqrt}(x1) / 2^4 a);$$

System. eq. parentn (roots are  $x_1 + i + x_2 + i$   $x_3 + x_1 + i - x_4 + x_2$ )



op1: Enter a, b, c

0

2

3

~~Invalid input for a~~

op2: Enter a, b, c

2

7

1

Roots are real and distinct

Roots are  $-0.5968758$  &  $-13.403124$

op3: Enter a, b, c

2

4

2

Roots are real and equal

Roots are  $-4.0$  &  $-4.0$

op4: Enter a, b, c

1

2

3

Roots are Imaginary

Roots are  $-1.0 + i1.414$  &  $-1.0 - i1.414$

22/12/23

```
C:\Users\bmsce\Desktop\1BM22CS001>java QE
```

```
Enter a,b,c
```

```
0
```

```
2
```

```
3
```

```
Aakanksha V R 1BM22CS001
```

```
Invalid input for a
```

```
C:\Users\bmsce\Desktop\1BM22CS001>java QE
```

```
Enter a,b,c
```

```
2
```

```
7
```

```
1
```

```
Aakanksha V R 1BM22CS001
```

```
Roots are real and distinct
```

```
Roots are -0.5968758 & -13.403124
```

```
C:\Users\bmsce\Desktop\1BM22CS001>java QE
```

```
Enter a,b,c
```

```
1
```

```
2
```

```
3
```

```
Aakanksha V R 1BM22CS001
```

```
Roots are imaginary
```

```
Roots are  $-1.0 + i1.4142135$  &  $-1.0 - i1.4142135$ 
```

```
C:\Users\bmsce\Desktop\1BM22CS001>java QE
```

```
Enter a,b,c
```

```
2
```

```
4
```

```
2
```

```
Aakanksha V R 1BM22CS001
```

```
Roots are real and equal
```

```
Roots are -4.0 & -4.0
```