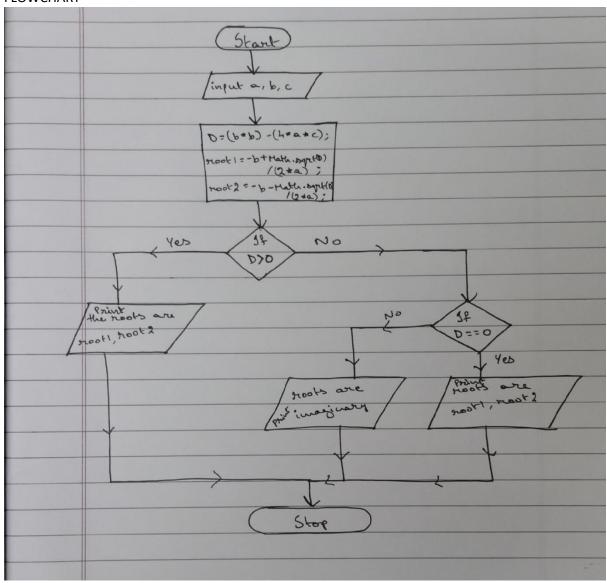
<u>LAB-1</u>
PROGRAM TO FIND THE ROOTS OF A QUADRATIC EQUATION

• FLOWCHART



• HANDWRITTEN PROGRAM

im	Port java. util. Scanner;
	es quadratic
4	
	public static void main (String args[])
•	
	double a, b, c, D, noot, noot 2;
	Sames (Systemens);
	System out print ("Enter the coefficient of & squared
	a = in next Darle () -
	System. out. print ("Enter the coefficient of x:");
	b=in.next.Double();
	Systemant print ("Enter the constant: ");
	Co in next Dauble ();
	D=(b*b)-(4*a*c);
	root 1 = - 6 + Math. sqrt (D) / (2 + a);
	noot 2 = - b - Halle squt (D) / (2 * a);
	شر (۵۶۵)
	System. out. printler ("the roots are -"+ root 1 +" System. out. printler ("they are real & distinct")
	Sullen out and be (" H
	I hay are real & distinct
h G	else if (D==0)
	5
	System out printer ("the roots are -"+ roots""
	System out printly ("they are real & equal");
	clise
	2
	System-out. printle ("the roots are imaginary").
2	y was maginary);
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PROGRAM

```
import java.util.Scanner;
class quadratic
  public static void main(String args[])
          double a,b,c,D,root1,root2;
          Scanner in=new Scanner(System.in);
          System.out.print("Enter the coefficient of x squared: ");
          a=in.nextDouble();
System.out.print("Enter the coefficient of x: ");
          b=in.nextDouble();
System.out.print("Enter the constant: ");
          c=in.nextDouble();
          D=(b*b)-(4*a*c);
          root1=-b+Math.sqrt(D)/(2*a);
          root2=-b-Math.sqrt(D)/(2*a);
          if(D>0)
              System.out.println("the roots are -"+root1+" "+root2);
             System.out.println("they are real and distinct");
          else if(D==0)
             System.out.println("the roots are -"+root1+" "+root2);
             System.out.println("they are real and equal");
          else
             System.out.println("the roots are imaginary");
           }
        }
```

OUTPUT

1. WHEN ROOTS ARE REAL AND DISTINCT

```
C:\bms\sem3\labs\java>java quadratic
Enter the coefficient of x squared: 1
Enter the coefficient of x: 4
Enter the constant: -8
the roots are --0.5358983848622456 -7.464101615137754
they are real and distinct
```

2. WHEN ROOTS ARE REAL AND EQUAL

```
C:\bms\sem3\labs\java>java quadratic
Enter the coefficient of x squared: 1
Enter the coefficient of x: -18
Enter the constant: 81
the roots are -18.0 18.0
they are real and equal
```

3. WHEN ROOTS ARE IMAGINARY

```
C:\bms\sem3\labs\java>java quadratic
Enter the coefficient of x squared: 1
Enter the coefficient of x: 4
Enter the constant: 8
the roots are imaginary
```