```
//Week 3 Quadratic
import java.util.*;
public class Quadratic{

	public static void main(String []args){
	int a,b,c;
	double root1,root2,D;
	System.out.println("Enter a,b,c : ");
	Scanner sc = new Scanner(System.in);
	a=sc.nextInt();
	b=sc.nextInt();
	c=sc.nextInt();
	D=b*b-4*a*c;
	if(D>0)
	{
	   System.out.println("real roots are : \n");
	   root1 = (-b + Math.sqrt(D)) / (2 * a);
	   root2 = (-b - Math.sqrt(D)) / (2 * a);
	   System.out.println("root1 is "+root1+"root 2 is "+root2);

	}
	else if(D<0)
	{
	   System.out.println("Imaginary roots");
	   System.out.println("There are no real solutions");

	}

    }
}
```

classmate
Date
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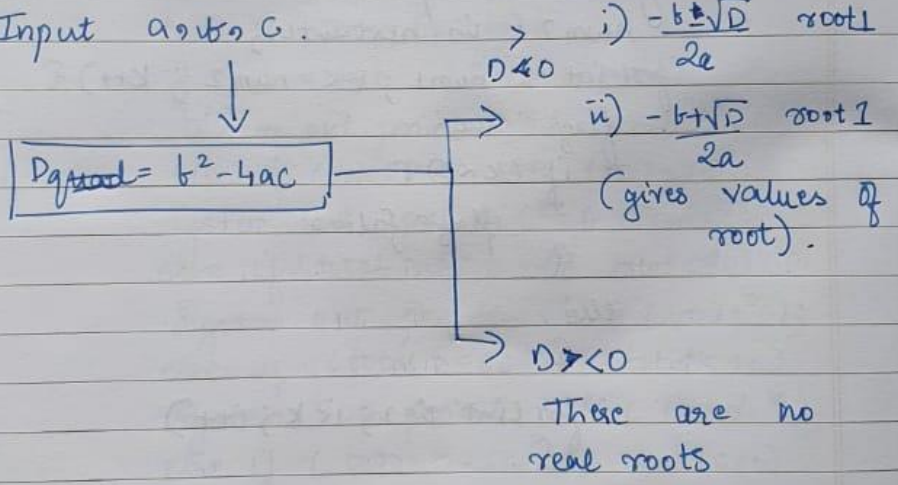
Week 3

1) Develope a Java Program that prints all real solutions to the quadratic eqn $ax^2+bx+c=0$ Read a, b, c and use quadratic formula. If the discriminate b^2-4ac is negative, display a message stating that there is no real roots.

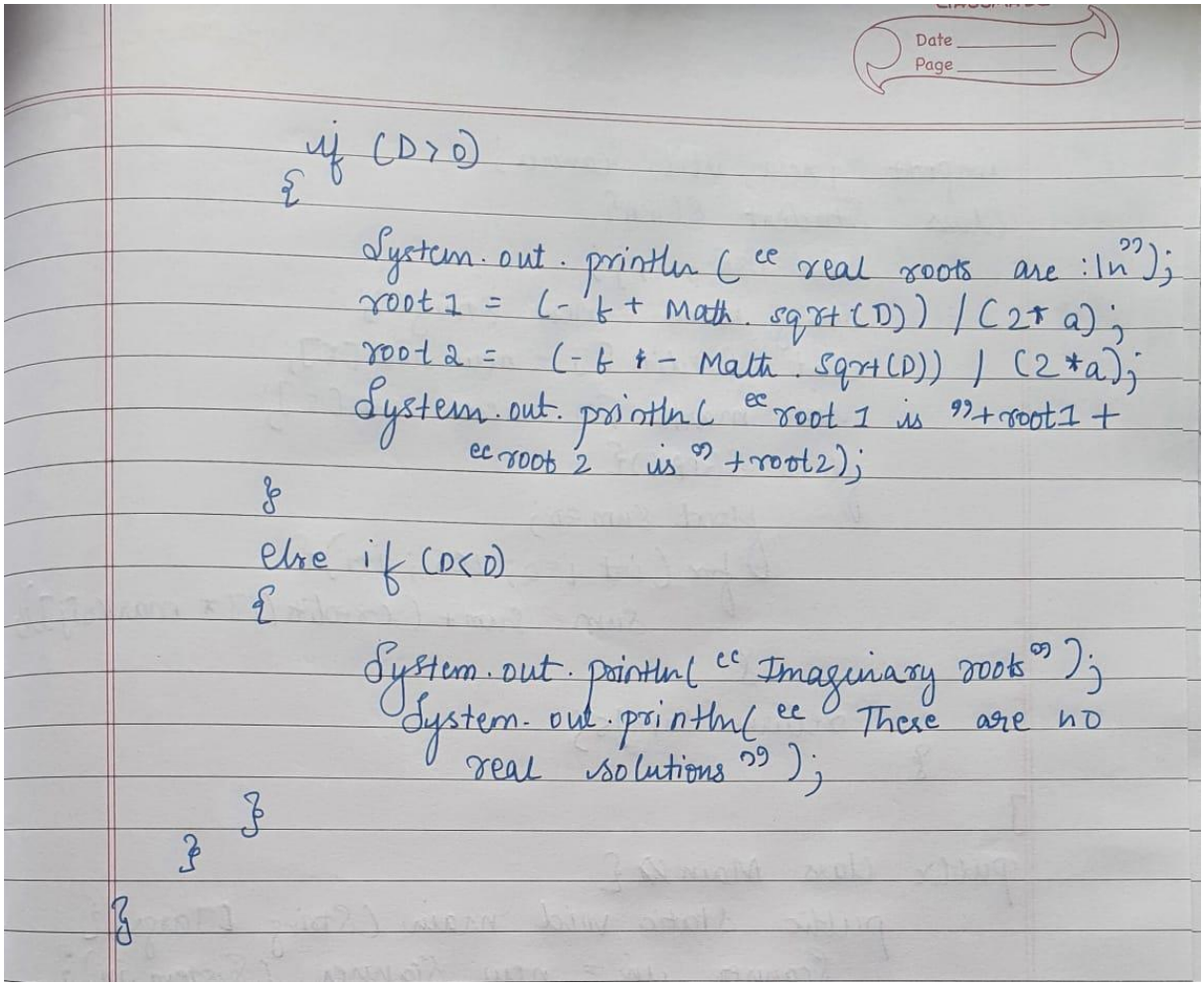
Algorithm

→ a, b, c are variables
Quadratic determinant : b^2-4ac

→ Input a, b, c.




```
import java.util.*;
public class Quadratic{
    public Static void main (String[] args){
     int a, b, c;                    D
     double root1, root2, qtood;
     System.out.println("Enter a, b, c :");
     Scanner sc = new Scanner(System.in);
     int a = sc.nextInt();
     int b = sc.nextInt();
     int c = sc.nextInt();
     D= b*b - 4*a*c;
```



```
if (D>0)
{
    System.out.println("real roots are :\n");
    root1 = (-b + Math.sqrt(D)) / (2*a);
    root2 = (-b - Math.sqrt(D)) / (2*a);
    System.out.println("root 1 is "+root1+
        "root 2 is "+root2);
}
else if (D<0)
{
    System.out.println("Imaginary roots");
    System.out.println("There are no
        real solutions");
}
}
```

OUTPUT:

```
C:\Users\Samarth\Documents\lab programs>javac Quadratic.java

C:\Users\Samarth\Documents\lab programs>java Quadratic
Enter a,b,c :
3 1 1
Imaginary roots
There are no real solutions

C:\Users\Samarth\Documents\lab programs>java Quadratic
Enter a,b,c :
1 3 1
real roots are :

root1 is -0.3819660112501051root 2 is -2.618033988749895
```

```
//week 3 Lab 2 Student SGPA
import java.util.Scanner;
class StudentSGPA{
   int usn,i,j;
   String name=new String();
   int credits[]=new int[5];
   int marks[]=new int[5];
   float SGPA(){
      float sum=0;
      for(int i=0;i<5;i++){
         sum=sum+(credits[i]*marks[j]);
      }
   return sum/5;
   }
}
public class Main{

    public static void main(String []args){
      Scanner in = new Scanner(System.in);
      StudentSGPA Stud1 = new StudentSGPA();
      System.out.println("Enter Details");
      System.out.println("Entee Name : ");
      Stud1.name=in.nextLine();
      System.out.println("Enter USN : ");
      Stud1.usn=in.nextInt();
      System.out.println("Enter the Credits ");
      for(int j=0;j<5;j++){
         System.out.println("subject "+(j+1));
         int cd = in.nextInt();
         Stud1.credits[j]=cd;
      }
```

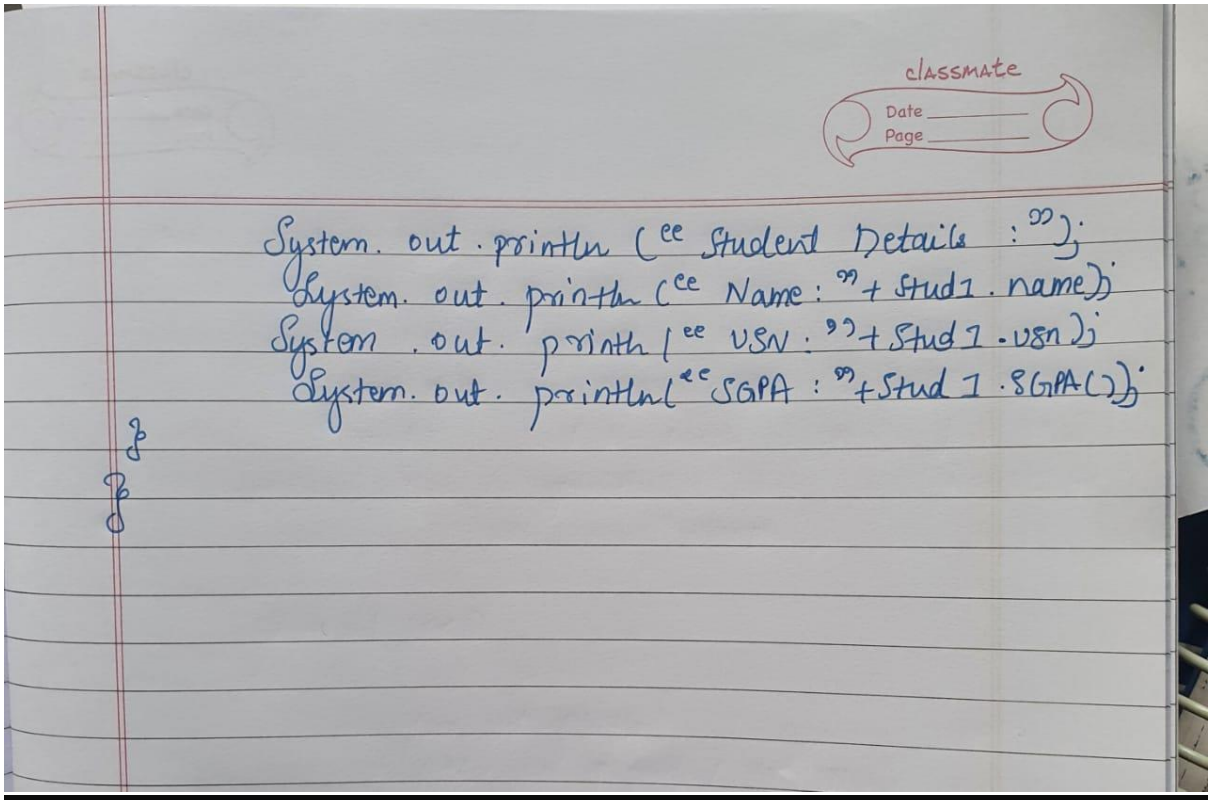
```
        System.out.println("Enter the marks ");
        for(int j=0;j<5;j++){
            System.out.println("subject "+(j+1));
            int mk = in.nextInt();
            Stud1.marks[j]=mk;
        }
        System.out.println("Student Details :");
        System.out.println("Name :"+Stud1.name);
        System.out.println("USN :"+Stud1.usn);
        System.out.println("SGPA :"+Stud1.SGPA());

    }
}
```

2) Develop a Java program to create a class Student with members usn, name, an array Credits and an array marks. Include methods to accept & display details and a method Calculate SGPA.

Algorithm.

i) Declare all Student details Variables.
ii) Create a function to Calculate SGPA
iii) Enter all the Student details
iv) Calculate the SGPA.
v) Print all the Student Details.
vi) exit.

```
import java.util.Scanner;
Class Student &GPA{
    int USN, i, j;
    String name = new String();
    int Credits[] = new int[5];
    int marks[] = new int[5];
    float SGPA(){
        float sum=0;
        for(int i=0; i<5; i++){
            sum = sum + (Credits[i] * marks[j]);
        }
    return sum/5;
    }
}
Public Class Main&& {
    public static void main(String []args){
    Scanner in = new Scanner(System.in);
    Student&GPA Stud1 = new Student&GPA();
    System.out.println("Enter Details");
    System.out.println("Enter USN :");
    Stud1.usn = in.nextInt();
    System.out.println("Enter name:");
    Stu1.name = in.nextLine();
    System.out.println("Enter the Credits");
    for(int j=0; j<5;j++){
        System.out.println("Enter Subject" + (j+1));
        int cd = in.nextInt();
        Stud1.Credits[j] = cd;
    }
    System.out.Println("Enter the marks");
    for(int j=0;j<5;j++){
        System.out.println("Subject" + (j+1));
        int mk = in.nextInt();
        Stud1.marks[j] = mk;
    }
```



```
System.out.println("Student Details :");
System.out.println("Name :"+Stud1.name);
System.out.println("USN :"+Stud1.usn);
System.out.println("SGPA :"+Stud1.SGPA());
}
}
```

```
C:\Users\Samarth\Documents\lab programs>java Main
Enter Details
Entee Name :
SAM
Enter USN :
141
Enter the Credits
subject 1
3
subject 2
4
subject 3
3
subject 4
2
subject 5
4
Enter the marks
subject 1
76
subject 2
89
subject 3
67
subject 4
97
subject 5
56
Student Details :
Name :SAM
USN :141
SGPA :243.2

C:\Users\Samarth\Documents\lab programs>
```