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Lab Program 1-

Develop a JAVA program that prints all real sol. 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.*;
class Roots {
{ public static void main (String[] args)
  {
    int a,b,c,f=0;
    double D;
    Scanner sc = new Scanner (System.in);
    System.out.println("\n Enter the values of a,b,c:");
     a=sc.nextInt();
     b= sc.nextInt();
     c = sc.nextInt();
     D = (b*b)-(4*a*c);
     if (D==0)
{ System.out.println("Roots are real and equal");
  f=1;
}
  else if(D>0)
{ System.out.println("Roots are real and unequal");
  f=1;
}
  else if (D<0)
{ System.out.println("Roots are imaginary");
}
  if (f==1)
{ double r1 = ((-b+ Math.sqrt(D))/2*a));
  double r2 =((-b-Math.sqrt(D))/2*a));
  System.out.println("Roots are: "+r1+", "+r2);
}
}}
```

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Lab Program - 2

Develop a Java program to create a class student with members USN, name, an array credits & an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

```
import java.util.Scanner;

class Student{
    Scanner sc = new Scanner(System.in);
    String USN;
    String Name;
    int credits[] = new int[5];
    float marks[] = new float[5];
    int point[] = new int[5];
    float SGPA;
    int totalCredits = 0;

void getDetails(){
System.out.println("Enter student USN:");
USN = sc.nextLine();
System.out.println("Enter student Name:");
Name = sc.nextLine();
for(int i=0; i<5; i++){
System.out.println("Enter Credits for Subject "+(i+1)+":");
credits[i] = sc.nextInt();
totalCredits += credits[i];
System.out.println("Enter Marks for Subject "+(i+1)+":");
marks[i] = sc.nextFloat();
    }
}

void showDetaild(){
System.out.println("Student USN: "+ USN);
```

```
System.out.println("Enter student name: " + Name);
for(int i=0; i<5; i++){
 System.out.println("Subject"+(i+1)+" - Credits: " +
                    credits[i] + " - Marks: " + marks[i]);
}
System.out.println("SGPA of "+ Name + " is: " +
                    (float)(SGPA/total credits));
}
void calcSGPA(){
for(int i=0; i<5; i++){
   if(marks[i]>100){
    System.out.println("Error: Marks are above 100");
    return;
   }
    else if(marks[i]>=90)
    {   points[i]=10;
    }
     else if(marks[i]>=80)
     {   points[i]=9;
     }
      else if(marks[i]>=70)
      {   points[i]=8;
      }
       else if(marks[i]>=60)
       {   points[i]=7;
       }
        else if(marks[i]>=50)
        {  points[i]=5
        }
         else if(marks[i]>=40)
         {  points[i]=4
         }
          else
```

```
        {points[i] = 0;
        }
        SGPA += (points[i] * credits[i]);
    }
  }
}

public class Lab2
{
    public static void main(String args[])
    {
        Student stu1 = new Student();
        stu1.getDetails();
        stu1.CalcSGPA();
        stu1.ShowDetails();
    }
}
```