Develop a java program that prints all the real solutions to the quadratic equation ax^2+bx+c

Algorithm:

int a, b, c, d, r1, r2
input a, b, c
d = b*b - 4*a*c
if (d < 0)
PRINT: No real solutions for the given equation
else
r1 = (-b + √d) / 2a
r2 = (-b - √d) / 2a
PRINT: Solution of equation are r1 & r2.

Program:

```
import java.util.*;
Class Roots {
Public static void main (String args[]){
double a,b,c,d,x1,x2;
Scanner in = new scanner(System.in);
System.out.println("Enter the coefficients of x^2,x, constant :");
  a=in.next double();
  b=in.next double();
  c=in.next double();
  d= b*b-4*a*c;
  if (d>0){
  x1 = (-b+Math.sqrt(d))/2*a;
  x2 = (-b-Math.sqrt(d))/2*a;
  System.out.println("Roots are real and distinct");
    System.out.println("Root 1 :"+x1+" Root 2: "+x2);
  }
  else if (d==0){
  x1= x2= -b/2*a;
  System.out.println("Root are real and equal :");
  System.out.println("Roots are "+x1+" and "+x2);
  }
  else if (d<0){
   System.out.println("There are no real solutions");
  }
  }
  }
```

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Output

Enter the coefficients of x^2, x and constant term : 1 2 1

Roots are real and equal

Roots are -1 and -1

Develop a java program to create a class student with members usn, name, an array of credits and an array of marks. Include a method to calculate SGPA of a student.

Algorithm:

```
Class Student {
int usn ;
String name
int credits [5] , m [5]
Void inputs () {
input usn, name, credits, m ;
}
int calculate {
int x=0;
for (int i = 0 to 4)
x += credits [i] * m [i]
return x
}
Void main () {
Student std = new Student ();
std.input ();
int total = std. calculate
int s=0
for (i=0 to 4)
s+ = credits [i]
double sgpa = total / s
print : SGPA is sgpa.
```

Program:

```
import java.util.*;
class student
{
String usn, name;
static int credits[];
static double marks[];
void input(int n){
Scanner in = new Scanner(System.in);
System.out.println("Enter usn and name of the student:");
usn = in.nextLine();
usn = in.nextLine();
System.out.println("Enter marks along with credits:");
for(i=0; i<n; i++){
marks[i] = in.nextDouble();
credits[i] = in.nextInt();
System.out.println();
}
}
double calculate(int n)
{
int c, cred=0;
double tot, total=0.0;
for(int i=0; i<n; i++)
{
tot = marks[i];
if(tot >= 90)
c=10;
```

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```
else if (tot >= 80)
    c=9;
else if (tot >=70)
    c=8;
else if (tot >= 60)
else if (tot >= c=7;
 else if (tot >=50)
    c=6;
 else if (tot >=40)
    c=5;
 else
    c=0;
 total = total + (c * credits [i]);
 cred = cred + Credits [i];
 }
 total = total / cred;
 return (total);
 }
 Void display (int n, double total)
 {
 System.out.println ("marks of students along credits of course");
 for (int i=0; i<n; i++)
 {
  System.out.println (marks [i]+ " "+ credits [i]);
 }
 System.out.println ("SGPA of student : "+total);
 }
```

```
public static void main(String args[])
{
Scanner in = new Scanner(System.in);
Student obj = new Student();
System.out.println("enter no of courses:");
int n = in.nextInt();
credits = new int[n];
marks = new double[n];
obj.input(n);
double total = obj.calculate(n);
obj.display(n,total);
}
}
```

Output :

Enter no of course

3

Enter usn and name : 123 A

Enter marks ~~using~~ along with credits

95 4
93 4
90 4

Name of Student : A

USN of student : 123

marks of student along with credits :

95 4
93 4
90 4

~~Sgpa of~~

SGPA of Student = 10.0