(1)

```
import java.util.Scanner;
class Main
{
public static void main (String args[])
{
System.out.println("Enter the values of a,b,c
                    for the quadratic eq:");
Scanner sc = new Scanner(System.in);
{
double a=sc.nextInt();
double b = sc.nextInt();
double c = sc.nextInt();
double z = b*b-4*a*c;

eqcheck ob = new eq check();
   if (z<0)
{
System.out.println("the roots are complex");
}
   else if (z==0)
{
System.out.println("the roots are real & equal");
   ob.check(a,b,c);
   ob.display();
}
  else
{
System.out.println("the roots are real &
                    distinct");
   ob.check(a,b,c);
   ob.display();
}
}
```

```
}
}
class eqcheck
{
  double a;
  double b;
  double c;
  double x1;
  double x2;
void check (double a, double b; double c)
  {
    this.a=a;
    this.b=b;
    this.c=c;
  double z = Math.pow (b*b-4*a*c, 0.5);
    x1 = (-b+z)/(2*a);
    x2 = (-b+z)/(2*a);
  }
    void display()
{
  System.out.println (x1);
  System.out.println (x2);
    }
    }
```

(2)

```
import java.util.*;
public class student
{
  String usn, name;
  static int credits[];
  static double marks[];
  void input (int n)
{
  Scanner sc = new Scanner (System.in);
System.out.println ("enter usn & name");
    usn = sc.nextInt();
    name = sc.nextLine();
System.out.println ("enter marks along with credits");
    for (int i=0; i<n; i++)
{
  marks[i] = sc.nextDouble();
    credits[i] = sc.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;
    else if (tot >= 80)
      c = 9;
    else if (tot >= 70)
```

```
        c=8;
    else if (tot >=60)
      c=7;
      else if (tot >=50)
      c=6;
      else if (tot >=40)
    c=4;
    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("name of student:" +name);
      System.out.println("usn of student:" +usn);
    System.out.println("marks of student along
              with credits");
      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 sc = new Scanner(System.in);
      Student obj = new Student();
    System.out.println("enter no of course");
      int n=sc.nextInt();
    Credits = new int[n]; marks = new double[n];
    double total = obj.calculate(n);
     obj.display(n, total); } }
```

## Algorithm

① input a, b, c
d = $b^2 - 4ac$
if (d=0)
print ("Two equal roots");
$r_2 = r_1$
else if (d>0)
print ("two distinct real roots");
$r_1 = (-b + sqrt(z))/2a$
$r_2 = (-b - sqrt(z))/2a$
else
print ("complex roots");
exit.

② class Student with students - USN, name array of credits, array of marks, total credits and SGPA is calculated.
It has methods - Accept, calculate & display USN, name, credit & marks are input.
SGPa = sgpa + grade point * credits for each subject.
sgpa = sgpa / total credit to find sgpa of student.
display the details of the student - i.e USN, name, course - marks n credits & SGPA.