LAB PROGRAM - 1

Q Develop a Java Program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$ Read in a, b, c & use the quadratic formula. If the discriminate b^2-4ac is negative, display A message stating there are no real solution.

→
```
import java.util.scanner
class Quadratic {

public static void main (String[] args){
  Scanner s = new Scanner (System.in);
System.out.println ("Enter the value of a\n");
  double root1, root2;
double a = s.nextDouble ();
System.out.println("Enter the value of b\n");

double b = s.nextDouble();

System.out.println("Enter the value of c\n");

double c = s.nextDouble();

double dis = (b*b) - 4(a*c);
```

```
if (dis > 0)
 {
   root 1 = (-b + Math.sqrt(dis)/(2*a));
   root 2 = (-b - Math.sqrt(dis)/(2*a));
System.out.println("Two distinct Real roots exists:
                    root 1 = " + root 1 + " root 2 = " + root 2);
 }
else if (dis == 0)
 {
  root 1 = root 2 = (-b/(2*a));
System.out.println("In Two equal & real roots exits:
                    root 1 = " + root 1 + " root 2 = " + root 2);
}
else {
System.out.println("No real solution exits");
}
}
}
```

O|P

```
Enter the value of a
2
Enter the value of b
5
Enter the value of c
6
No real solution exits
```

Algorithm - 1

Steps ① Input value of a, b, c

② calculate $d = b * b - 4 * a * c$

③ if ($d < 0$)

display no real solution

else if ($d = 0$)

display roots are equal & the value of roots

else

Dipley roots are real & calculate the value of root 1

④ print root 1 & root 2

⑤ End program algorithm

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 & display details & a method to calculate SGPA of a student.

→

```
import java.util.Scanner;
class Student
{
private String USN;
private String name;
private int n;
private double SGPA=0;
private int total credits=0;
private int credits[];
private double marks[];
Scanner s = new Scanner(System.in);

void Details()
{
System.out.println("Enter USN of the student");
USN = s.nextLine();
System.out.println("Enter Name of the student");
name = s.nextLine();
```

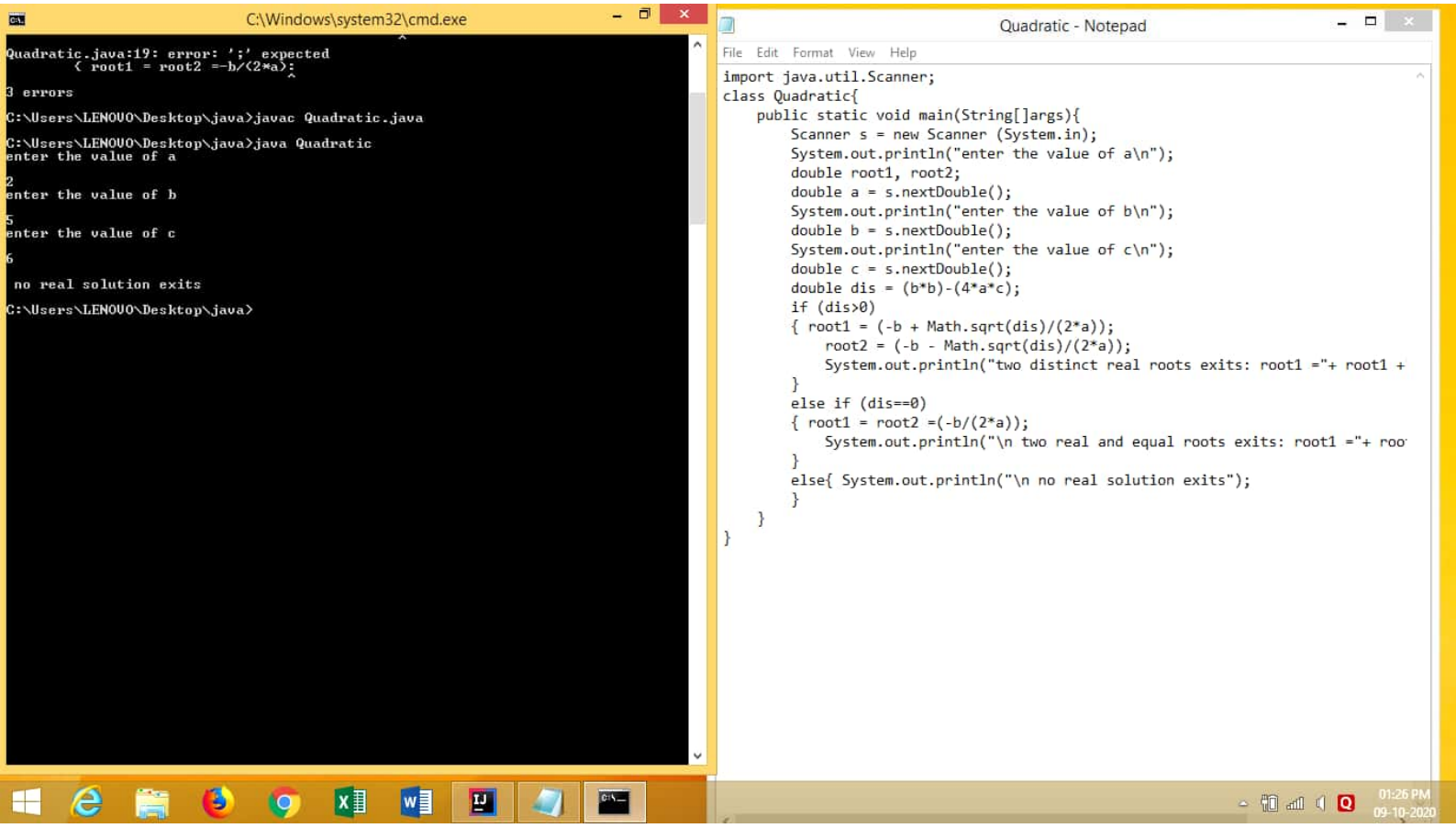
```
System.out.println("Enter no of subjects");
n = S.nextInt();
credits = new int[n];
marks = new double[n];
System.out.println("Enter details of the subject:");
for (int i=0; i<n; i++)
{
System.out.println("Enter credits allotted to subject "
+(i+1));
credits[i] = S.nextInt();

Calculate (credits[i], marks[i], i);
}
}
void Calculate (int credit, double mark, int j) {
totalcredits = totalcredits + credit;
if (mark >=90 && mark <=100)
SGPA = SGPA + (10*credit);
else if (mark >=80 && mark <=89)
SGPA = SGPA + (9*credit);
else if (mark >=60 && mark <=69)
SGPA = SGPA + (7*credit);
else if (mark >=50 && mark <=59)
SGPA = SGPA + (6*credit);
```

```
else
 System.out.println("Failed in Subject" + (j+1));
 }
void Display()
{
System.out.println("Details of Student");
System.out.println("USN:" + USN);
System.out.println("Name:" + name);
System.out.println("SGPA of student" + (SGPA/totalcredits));
  }
 }
class Main
 {
 public static void main(String args[])
 {
 Student s1 = new Student();
   s1.Details();
   s1.Display();
}
}
```

O/P
Enter USN of the student
123
Enter Name of the student
Rev
Enter no of subjects
3
Enter details of the subjects:
Enter credits allotted to subject 1
4
Enter marks in the subject 1
88
Enter credits allotted to subject 2
5
Enter marks in the subject 2
99
Enter credits allotted to subject 3
4
Enter marks in subject 3
65
Details of the Student
USN: 123
Name: Rev
SGPA of Studen 8.769230769230770

Algorithm - 2

① In class Student declare instance variables
② Write a method to ~~display~~ intialize details of the student
③ In that method call another method to Calculate SGPA
④ Write a method to display the details of student
⑤ In Main class create object of Student class
⑥ Call the methods of Student method



Main - Notepad

File Edit Format View Help

```
import java.util.Scanner;
class Student
{
    private String USN;
    private String name;
    private int n;
    private double SGPA = 0;
    private int totalCredits = 0;
    private int credits[];
    private double marks[];
    Scanner ss = new Scanner(System.in);

    void Details()
    {
        System.out.println("Enter USN of the student");
        USN = ss.nextLine();
        System.out.println("Enter Name of the student");
        name = ss.nextLine();
        System.out.println("Enter no of subjects");
        n = ss.nextInt();
        credits = new int[n];
        marks = new double[n];
        System.out.println("*Enter details of the subjects:*");
        for(int i=0;i<n;i++)
        {
            System.out.println("Enter credits allotted to the subject "+(i+1));
            credits[i] = ss.nextInt();
            System.out.println("Enter marks in the subject "+(i+1));
            marks[i] = ss.nextInt();
            Calculate(credits[i],marks[i],i);
        }
    }
    void Calculate(int credit,double mark,int j)
    {
        totalCredits = totalCredits + credit;
        if(mark>=90&&mark<=100)
```

Main - Notepad

File Edit Format View Help

```
        totalCredits = totalCredits + credit;
        if(mark>=90&&mark<=100)
            SGPA = SGPA + (10*credit);
        else if(mark>=80 && mark<=89)
            SGPA = SGPA + (9*credit);
        else if(mark>=70&&mark<=79)
            SGPA = SGPA + (8*credit);
        else if(mark>=60&&mark<=69)
            SGPA = SGPA + (7*credit);
        else if(mark>=50 && mark<=59)
            SGPA = SGPA + (6*credit);
        else if(mark>=40&&mark<=49)
            SGPA = SGPA + (5*credit);
        else
            System.out.println("Failed in Subject "+(j+1));
    }
    void Display()
    {
        System.out.println("Details of the Student");
        System.out.println("USN: "+USN);
        System.out.println("Name :"+name);
        System.out.println("SGPA of Student "+(SGPA/totalCredits));
    }
}
class Main
{
    public static void main(String args[])
    {
        Student s1 = new Student();
        s1.Details();
        s1.Display();
    }
}
```