}

02/10/20

LAB-3

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① Write a java program to find roots of quadratic equation.

```
import java.util.scanner;
import static java.lang.math.*;
class quadratic
{
  public static void main(String args[])
    {
      quadratic obj = new quadratic();
      Scanner sc = new Scanner(System.in);
System.out.println("Enter the value of a::");
  float a = sc.nextFloat();
System.out.println("Enter the value of b::");
  float b = sc.nextFloat();
System.out.println("Enter the value of c::");
  float c = sc.nextFloat();
        if(a==0)
      {
```

```
System.out.println ("Invalid");
    return;
}
float d = b*b - 4*a*c;
float sqrt_val = (float)math.sqrt (abs(d));
float root1 = (-b+sqrt_val) / (2*a);
float root2 = (-b+sqrt_val) / (2*a);
if (d==0)
{
System.out.println ("Roots are real and equal :: "+root1);
}
else of (d>0)
{
System.out.println ("Roots are real and different \n");
System.out.println (root1 + "\n" + root2);
}
else
{
System.out.println("Roots are corplex \n");
System.out.print(-b/(2*a)+"+i" + sqrt_val/(2*a) +
                "\n" + -b/(2*a)+"-i" + sqrt_val/(2*a));
}
}
}
```

* ALGORITHM :-

Step 1 : START

Step 2 : Input the value of a, b, c.

Step 3 : Calculate d = b*b - 4*a*c

Step 4 : If (d<0) Display "Roots are imaginary", calculate r1 = (-b+sqrt-val)/2a and r2 = (-b -sqrt-val)/2a . else if (d=0) Display "Roots are Equal" then calculate r1 = r2 = (-b/2a).

Step 5 : print r1 and r2.

Step 6 : END.

→ Expected Output ←

Enter the value of a :: 3

Enter the value of b :: 2

Enter the value of c :: 2

Roots are complex

-0.33333334 +i0.745356

-0.33333334 -i0.745356

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LAB-4

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Develop a JAVA program to create a class student with members usn, name, an array credits and 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
{
  String USN;
  String name;
  int n;
double SGPA = 0;
  int Credits = 0;
Scanner in = new Scanner(System.in);

 void Details()
{
System.out.println("Enter the USN of the student");
   USN = in.nextLine();
System.out.println("Enter the name of the student");
   name = in.nextLine();
System.out.println("Enter number of subjects");
    n = in.nextInt();
 int credits = new int[n];
double marks = new double[n];
System.out.println("Enter details of the subjects:");
   for(int i=0; i<n; i++)
{
```

```
System.out.println("Enter credits alloted to subjects" + (i+1));
    credits[i] = in.nextInt();
System.out.println("Enter marks in subject " + (i+1));
    marks[i] = in.nextInt();
    Calculate (credits[i], marks[i], i);
}
}
    void Calculate (int credit, double mark, int j)
    {
     Credits = Credits + 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 student");
    System.out.println("Name :" + name);
    System.out.println("USN :" + USN);
    System.out.println("SGPA of student" + (SGPA / Credits));
}
}
```

```
public class sgpa
{
  public static void main (String args[])
  {
    Student s1 = new student();
    s1.Details();
    s1.Display();
  }
}
```

* Output :-

```
Enter the USN the student
1BM19CS138
Enter the Name of student
praveen
Enter no of subjects
2
Enter the details of the subjects:
Enter credits allotted to subject 1
4
Enter marks in the subject 1
78
Enter credit alloted to subject 2
4
Enter marks in subject 2
87
Details of student
Name : praveen
USN : 1BM19CS138
SGPA of student 8.5
```