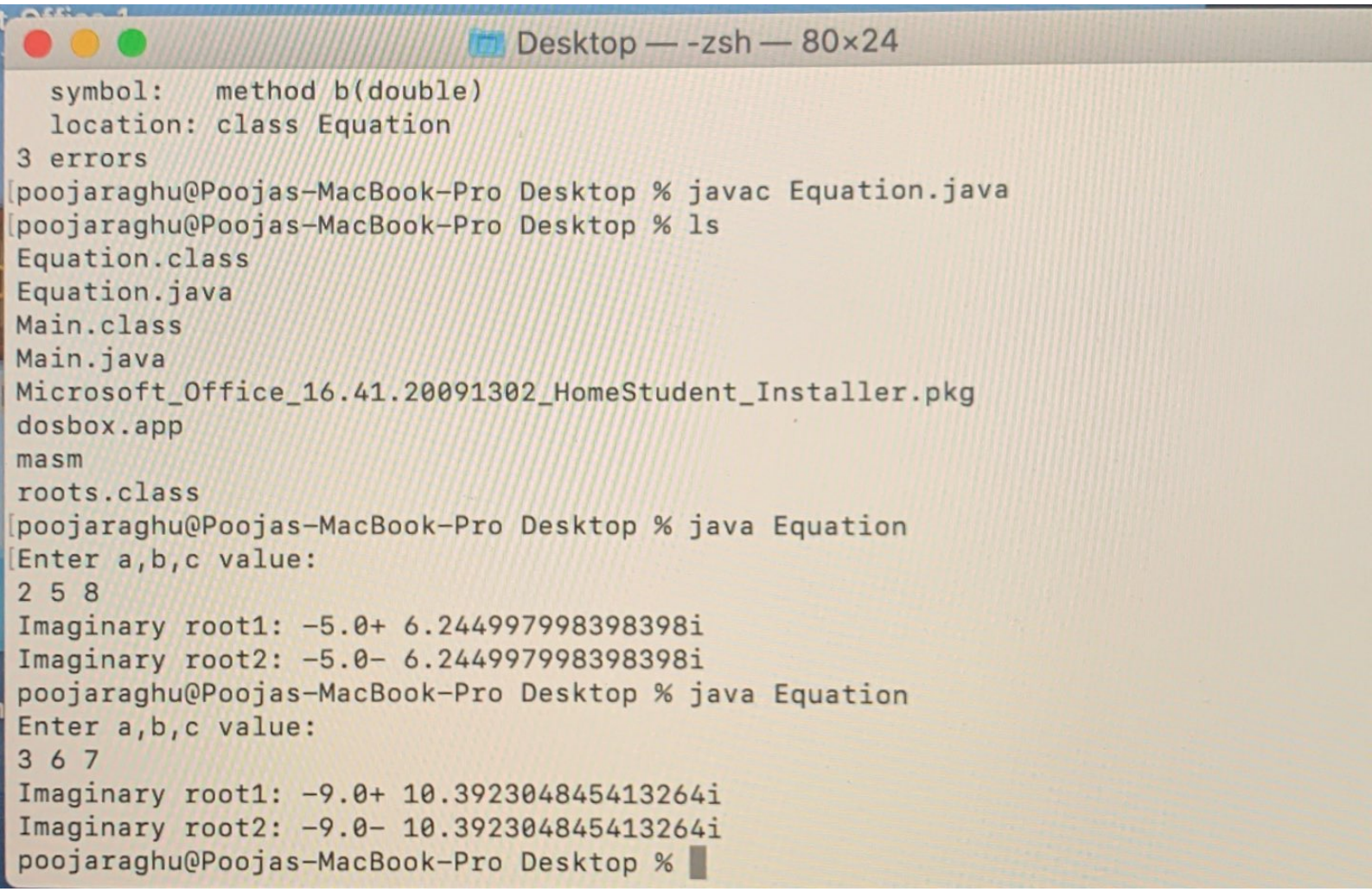
Equation.java — Edited

```
class roots
{
  public static void main(String args[])
{
  int a,b,c,d,f=0;
Scanner scan=new Scanner(System.in);
System.out.println("\nEnter the values of a,b,c:");
a=scan.nextInt();
b=scan.nextInt();
c=scan.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
System.out.println("Roots are imaginary");
if(f==1)
{ float r1=(float)(-b+Math.sqrt(d)/(2*a));
  float r2=(float)(-b+Math.sqrt(d)/(2*a));
  System.out.println("Roots are:"+r1+","+r2);
}
}
}
```



1. Develop a Java program that prints all real solutions 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.

Algorithm:

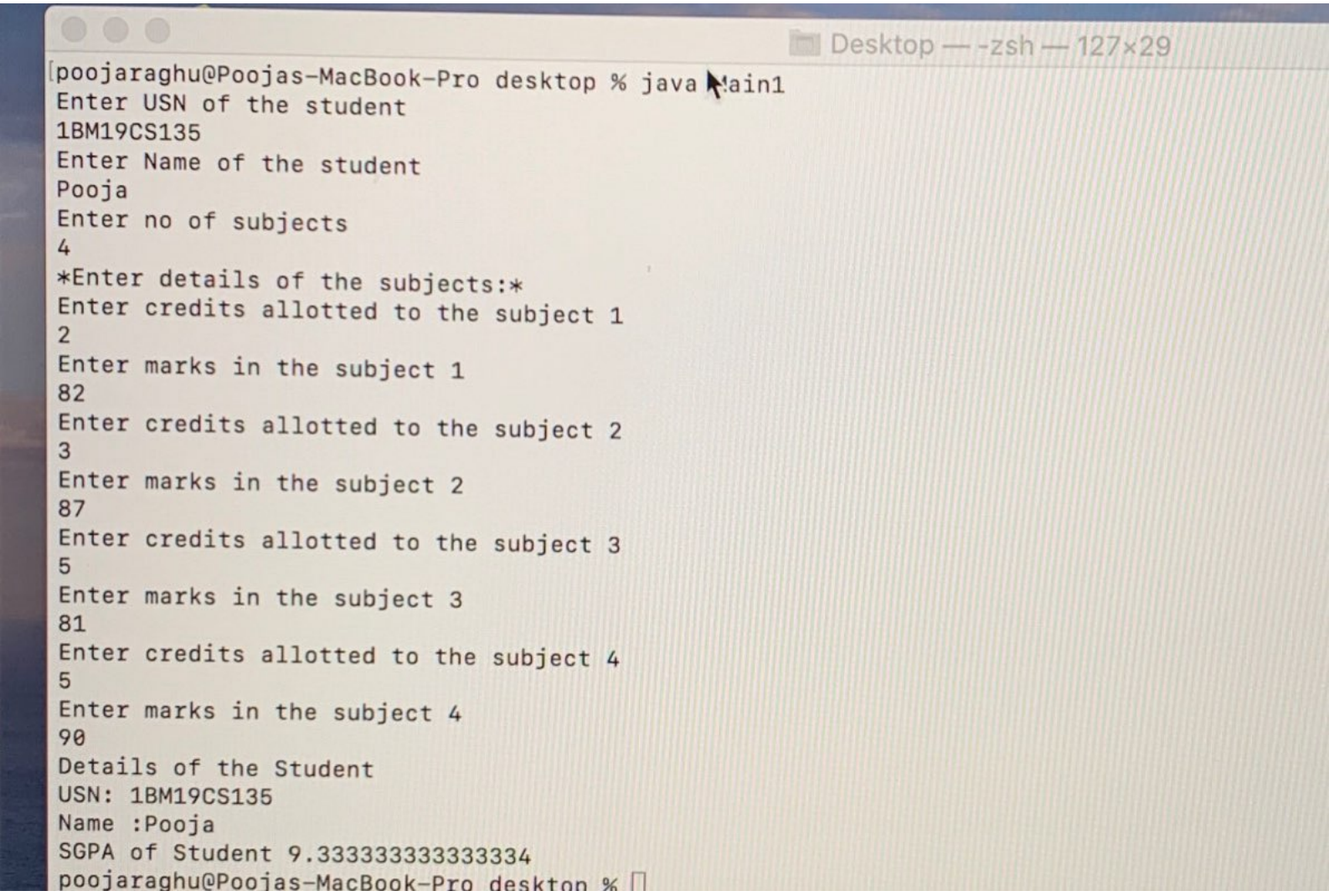
Steps: 1) Input the value of a, b, c.
2) Calculate d = b*b - 4*a*c
3) If (d<0)
Display that there are no real solutions.
else if (d==0)
display that Roots are equal. Calculate r1 = r2 = (-b/2*a)
else
Display roots are real and calculate r1 = -b+d/2*a)
and r2 = -b-d/(2*a)
4) print r1 and r2
5) End program algorithm.

```
import java.util.*;
class roots
{
public static void main(String args[])
{
int a,b,c,d,f=0;
Scanner scan= new Scanner(System.in);
System.out.println("\n Enter the values of a,b, c:");
a= scan.nextInt();
b= scan.nextInt();
c= scan.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
System.out.println("Roots are imaginary");
if (f==1)
{
float r1 = (float)(-b+Math.sqrt(d)/(2*a));
float r2 = (float)(-b+Math.sqrt(d)/(2*a));
System.out.println("Roots are: "+r1+", "+r2);
}
}
}
```

```
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)
                        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 Main1
{
        public static void main(String args[])
        {
                Student s1 = new Student();
                s1.Details();
                s1.Display();
        }
}
```



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 student.

```
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)
 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();
}}
```