(3) 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 there are no real solution

(4) Write a Java program to create a class Student with members USN, name, marks (6 subjects). Include methods to accept student details and marks. Also include a method to calculate the percentage and display appropriate details.

(5) Create a class Book which contains four members: name, author, price, num_pages. Include a constructor to set the values for members. Include methods to set and get the details of the objects. Include a toString() method that could display the complete details of Book.

SURYA Gold

Date Page

```
import java.util.Scanner;

class root{
    double a,b,c,r1,r2,r,i;
    void input(){
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the 1st coefficient");
        a = sc.nextInt();
        System.out.println("Enter the 2nd coefficient");
        b = sc.nextInt();
        System.out.println("Enter the 3rd coefficient");
        c = sc.nextInt();
    }
    void calc(){
        double d = b*b-4*a*c;
        if(d>0){
            r1 = (-b+Math.sqrt(d))/(2*a);
            r2 = (-b-Math.sqrt(d))/(2*a);
            System.out.println("The roots are real
                and distinct = "+r1+
                " "+"and "+r2);
        }
        else if(d==0){
            r = -b/(2*a);
            r = Math.sqrt(-d)/(2*a);
            System.out.println("The roots are
                and distinct :"+r+" "+
                "+i "+"and "+r+" -i");
```

```
else {
        x = -b / (c() * a);
        System.out.println("The roots are
            real and equal - " + x);
        }
    }
}

class Quad {
    public static void main (String args[]) {
    vars v = new vars();
    v.input();
    v.calc();
    }
}
```

Output

```
Enter 1st Co-eff : 1
Enter 2nd Co-eff : 2
Enter 3rd Co-eff : 1

roots are real and equal : -1.0
```

4)

```
import java.util.Scanner;

class Student
{
    String name, usn;
    int[] marks = new int[6];
    Scanner sc = new Scanner(System.in);

    void acceptdetails(){
      System.out.println("Enter the name");
      name = sc.next();
      System.out.println("Enter the usn");
      usn = sc.next();
      System.out.println("Enter 6 marks");
      for(int i=0; i<6; i++){
          marks[i] = sc.nextInt();
      }
    }

    void calculate(){
        int sum=0;
        double percentage;
        for(int i=0; i<6; i++){
            sum = sum + marks[i];
        }
        percentage = sum/6;
        return percentage;
    }
```

```
void display(){
    System.out.println("The name is" + name);
    System.out.println("The usn is" + usn);
    System.out.println("The percentage is" +
                        calculate() + "%.");
}

public static void main(String args[]){

    Scanner scan = new Scanner(System.in);
    System.out.println("Enter no of student");
    int stu = scan.nextInt();
    Student[] students = new Student[stu];
    for(int i=0; i<6; i++){
        students[i] = new Student();
        System.out.println("Enter details of the
                student");
        students[i].acceptdetails();
    }
    System.out.println("student details are");
    for(i=0; i<stu; i++){
        System.out.println("Details of student"+(i+1)+
                "are");
        students[i].display();
    }
}
```

SURYA Gold

Date Page

O/P

Enter no of students: 3
Enter details of Student 1:
Enter the name: Aditya
Enter the USN: 1BM22CS111
Enter 6 marks: 45 66 90 85 71 99

Enter details of student 2:
Enter details of student 2:
Enter the name: Rochan
Enter the USN: 1BM22CS001
Enter 6 marks: 48 60 98 100 99

~~Enter~~ Enter details of student 3:
Enter the name: Rahul
Enter the USN: 1BM22FS010
Enter 6 marks: 50 60 70 80 90 95

Student Details are:

Name of students: Aditya
USN of student1: 1BM22CS067
The percentage is 85.03%.

Name of student2: Rochan
USN of student 2: 1BM22CS001
The percentage is 90.45%.

Name of student 3: Rahul
USN of student 3: 1BM22CS010
The percentage is 85.36%.

(4)

```
import java.util.Scanner;

class Books{
    String name;
    String author;
     int price; int numPages;

    Books(){};

    Books(String name, String author, int price,
          int numPages)
    {
        this.name = name;
        this.author = author;
        this.price = price;
        this.numPages = numPages;
    }
    public String toString()
    {
        String name, author, price, numPages;
        name = name;
        author = author;
        price = this.price;
        numPages = this.numPages;

        return name + author + price + numPages;
}
```

```
class Main{
    public static void main(String args[]){
      Scanner s= new Scanner(System.in);
        int n;

        String name;
        String author;
        int price;
        int numPages;

    System.out.println("Enter the num of books");
      n= s.nextInt();

      Books b[];
      b= new Books[n];
    for(int i=0; i<n ; i++)
    {

    System.out.println(" i+1);
    System.out.println("Enter name of book");
      name= s.next();
    System.out.print("Enter author");
    author = s.next();
    System.out.print("Enter price");
      price = s.nextInt();
    System.out.print("Enter no of pages");
      numPages = s.nextInt();
    b[i]= new Books(name, author, price,
                    numPages);

}
```

```
        for(int i=0; i<n; i++)
            System.out.println(" " + i+1 + b[i]);
    }
}
```

Output:

Enter the number of book : 2

Book 1.
Enter the name of the book : Jungle Book
Enter the author of book : Kipling
Enter price of book : 1000
Enter the no of pages of book : 500

Book 2:
Enter the name of book : Atomic Habits
Enter the auth of book : James Clear
Enter price of book : 400
Enter the no of pages of book : 200

Book 1:
Book name: Jungle Book
author: Kipling
Price : 1000
no of Pages: 500

Book 2:
Book name : Atomic Habits
author : James Clear
Price : 400
no of Pages: 200