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9) Java program to find the roots of the quadratic equations.

```
import java.util.Scanner;

public class quadratic equation {
    public static void main(String [] args) {

        int a, b, c;
        double det, root, root1, root2;
        Scanner myobj = new Scanner (System.in);
        System.out.println(" Enter the value of a, b, c : ");
        a = myobj.nextInt();
        b = myobj.nextInt();
        c = myobj.nextInt();
        det = a* b* c;
        if (det > 0)
          {
            root1 = (-b + Math.sqrt(det) / (2 * a));
            root2 = (-b - Math.sqrt(det) / 2 * a));
            System.out.println("The equation has two real
            roots : " + root1 " and " + root2);
          }
        else if ( det == 0)
          {
            root = -b / (2 * a);
            System.out.println("The quadratic equation has
            one real root : " + root);
          }
        else
          {
```

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```
        root1 = -b / 2 * a;
        root2 = (-det) / (2 * a);
        System.out.println("The equation has complex roots :
        "+root1 " and " +root2;
    }
}
```

output :

Enter the value of a:
1
Enter the value of b:
8
Enter the value of c:
12
roots are : -2.0, -6.0

Enter the value of a:
1
Enter the value of b:
-9
Enter the value of c:
-3
roots are equal and real : 1.0, 1.0

C:\Windows\System32\cmd.e

```
C:\Users\Divya\OneDrive\Desktop\java practice>java Qu
Divyashree K Raju
1BM23CS096
Enter the value of a: 1
Enter the value of b: 8
Enter the value of c: 12
Roots are real and distinct.
Root 1: -2.0
Root 2: -6.0

C:\Users\Divya\OneDrive\Desktop\java practice>java Q
Divyashree K Raju
1BM23CS096
Enter the value of a: -4
Enter the value of b: 12
Enter the value of c: -9
Root is real and repeated.
Root: 1.5

C:\Users\Divya\OneDrive\Desktop\java practice>java
Divyashree K Raju
1BM23CS096
Enter the value of a: 1
Enter the value of b: -3
Enter the value of c: 10
Roots are complex and imaginary.
Root 1: 1.5 + 2.7838218141501081
Root 2: 1.5 - 2.7838218141501081
```

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Enter the value of c:
Roots are imaginary and real (roots ain't possible.

8/10/24

10) 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, name;
    int[] credits, marks;

    void AcceptDetails(){
    Scanner Hello = new Scanner(System.in);

    System.out.print(" Enter the USN : ");
    this.usn = hello.next();
    System.out.print(" enter the name : ");
    this.name = hello.next();

    credits = new int [4];
    marks = new int [4];

    System.out.println(" Enter details of credits and marks in order for 4 subjects : ");
```

```
for(int i=0; i<4 ; i++) {
    System.out.println("Enter credits for subjects "+
    (i+1)+":");

    credits[i] = hello.nextInt();

    System.out.println("Enter the marks for subject "+
    (i+1)+":");

    marks[i] = hello.nextInt();
  }
}

void display(){
    System.out.println(" student Details :");
    System.out.println(" USN : "+usn);
    System.out.println(" Name :"+Name);

    for(int i=0; i<4; i++) {
        System.out.println("subject "+(i+1)+ credits[i]
        + ", marks: " + marks[i]);
    }
}
```

```
double calc() {
    int totalCredits = 0;
    double totalGradePoints = 0;
    for(int i = 0; i < 4; i++) {
        totalCredits += credits[i];
        totalGradePoints += gradePoints[i] * credits[i];
    } return totalGradePoints / totalCredits;
}

int gradePoints(int main);
    if (marks >= 90) return 10;
    else if (marks >= 80) return 9;
    else if (marks >= 70) return 8;
    else if (marks >= 60) return 7;
    else if (marks >= 50) return 6;
    else if (marks >= 40) return 5;
    else return 0;
}

System.out.println("Enter

public class SGPA () {
```

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```
public static void main(String[] args) {
    Student student = new Student();
    student.acceptDetails();
    System.out.println("Student Details:");
    student.display();
    System.out.println("SGPA:" + student.calc());
}
```

08.10.24

output:

enter usn : 1bm23cs096
enter name : divya
enter details for credits and marks in order for 4 subjects :
enter credits for subject 1 : 2
enter marks for subject 1 : 90
enter credits for subject 2 : 2
enter marks for subject 2 : 80
enter credits for subject 3 : 3
enter marks for subject 3 : 99
enter credits for subject 4 :
enter marks for subject 4 : 89

Student details :
usn : 1bm23cs096
name : Divya
subject 1 credits : 2, marks : 90
subject 2 credits : 2, marks : 80

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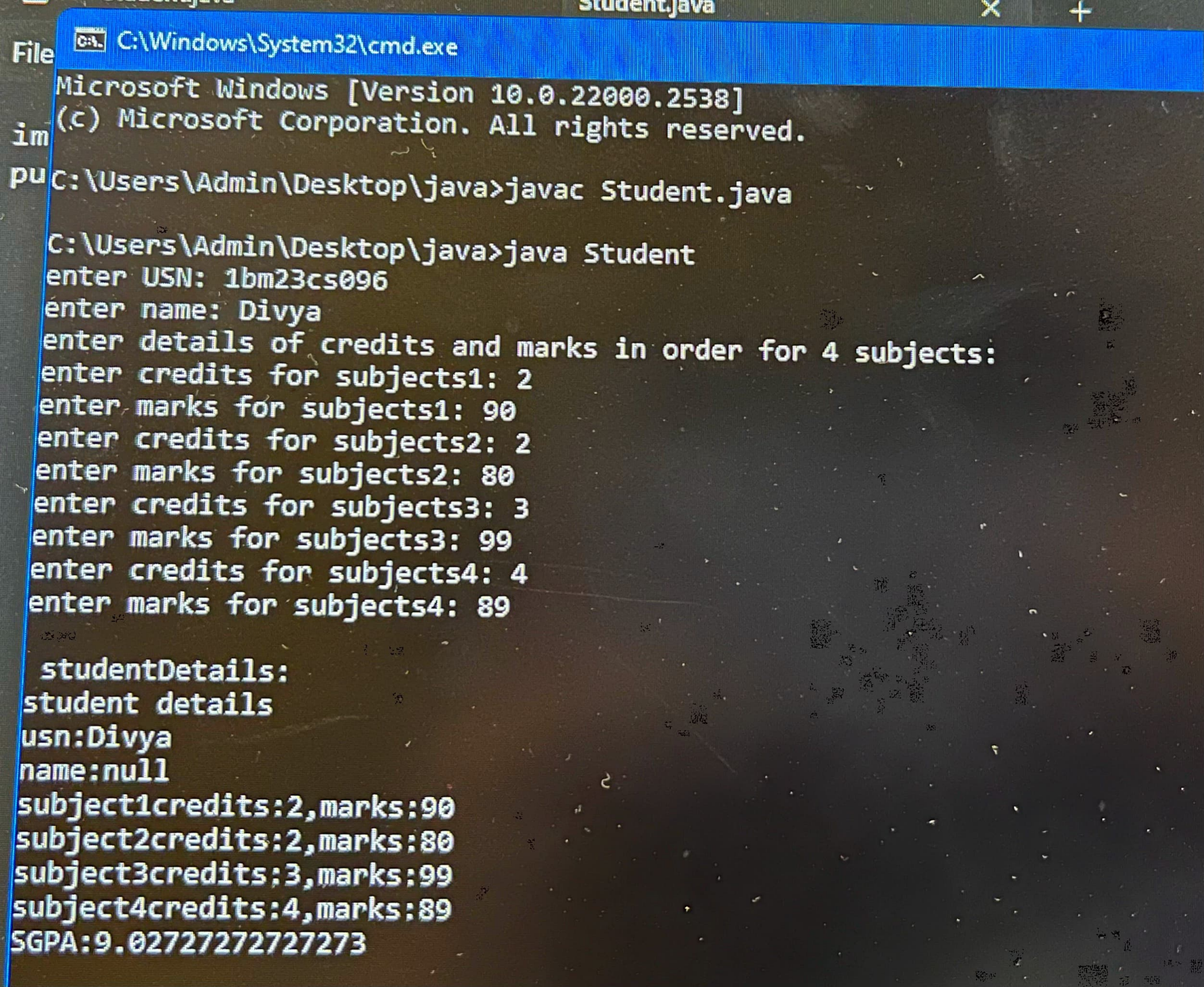
Subject 3 credits: 3, marks : 99

Subject 4 credits : 4, marks : 89.

SGPA : 9.0


Student.java
File
im
pu
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22000.2538]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin\Desktop\java>javac Student.java
C:\Users\Admin\Desktop\java>java Student
enter USN: 1bm23cs096
enter name: Divya
enter details of credits and marks in order for 4 subjects:
enter credits for subjects1: 2
enter marks for subjects1: 90
enter credits for subjects2: 2
enter marks for subjects2: 80
enter credits for subjects3: 3
enter marks for subjects3: 99
enter credits for subjects4: 4
enter marks for subjects4: 89
studentDetails:
student details
usn:Divya
name:null
subject1credits:2,marks:90
subject2credits:2,marks:80
subject3credits:3,marks:99
subject4credits:4,marks:89
SGPA:9.02727272727273

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Subject 3 credits: 3, marks : 99
Subject 4 credits: 4, marks : 89.
SGPA : 9.0

15/10/24.

11) Create a class Book which contains four members : name, author, price, num_pages. Include a constructor to set the values of the members. Include methods to set and get the details of the objects. Include a tostring() method that could display the complete details of the book. Develop a Java program to create a book objects.

```
import java.util.Scanner;
class Book;
{
    private String name;
    private String Author;
    private double price;
    private int num_pages;

    public book (String name ,String author ;double price ,
      num_pages) ;
    }
    this.name = name ;
    this.author = author;
    this.price = price ;
    this.num_pages = num_pages;
```

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~~public static void main~~

~~public void main string getter~~

```
public String getName();
{
    return Name;
}
public String getAuthor();
{
    return Author;
}

public double getPrice();
{
    return price;
}

public int getnum_page();
{
    return num_pages;
}

public void setname(String name);
{
    this.name = name;
}

public void setAuthor(String author)
{
```

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```
        this.author = author;
    }

    public void setPrice(double price)
    {
        this.price = price;
    }

    public void setNumPages(int numPages)
    {
        this.numPages = numPages;
    }

    public String toString()
    {
        return "Book Details :\n" + "Name : " + name + "\n" +
        "Author : " + author + "\n" + "Price : " + price + "\n" + "Num Of Pages : "
        + numPages + "\n";
    }
}

public class Main
{
    public static void main(String[] args)
    {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter the number of Books : ");
```

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```
int n = scanner.nextInt();
Scanner.nextLine();
Book[] books = new Book[n];
for(int i=0; i<n; i++)
{
    System.out.println("Book details");
    System.out.println("Book Name:");
    system = scanner.nextLine();
    System.out.println("Author's name");
    String author = scanner.nextLine();
    System.out.println("Enter the Price:");
    double price = scanner.nextLine();
    system.out.println("Enter the no. of pages:");
    Int num.Pages = scanner.nextLine();

Book[n] = new Book(name, author, price, no. of pages)

    System.out.println("Details of all Books:");
    for(int i=0; i<n; i++)
    {
    }
    for(Book book : Books)
    {
        System.out.println(Books.toString());
    }
}
```

15.10 proceed

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output:

Enter the number of books : 2
Enter the details for book 1:
Enter book name : Harry Potter
Enter author name : JK Rowling
Enter price : 400
Enter number of pages : 400

Enter the details for book 2
Enter the book name : Grandma stories
Enter the author name : sudha murthy
Enter price : 400
Enter number of pages : 300

Details of all books :

Divyashree - 1BM23CS096
Book Name : Harry Potter
Author : jk Rowling
Price : 400
Number of pages : 400

Book name : Grandma stories
Author : sudha murthy
Price : 400
Number of pages : 300.

Output seen

C:\Windows\System32\cmd.e

```
C:\Users\STUDENT\Desktop>java Main
Enter the number of books: 2

Enter details for book 1:
Enter book name: harry potter
Enter author name: jk rowling
Enter price: 400
Enter number of pages: 400

Enter details for book 2:
Enter book name: grandma stories
Enter author name: sudha murthy
Enter price: 500
Enter number of pages: 300

Details of all books:
----------------------
Divyashree- 1BM23CS096
 Book Name: harry potter
Author: jk rowling
Price: 400.0
Number of Pages: 400
----------------------
Divyashree- 1BM23CS096
 Book Name: grandma stories
Author: sudha murthy
Price: 500.0
Number of Pages: 300

C:\Users\STUDENT\Desktop>
```