OOP LAB

Week 3

Udeet Mittal

CSE C3

Roll Number 64

1.Design a class which represents a Student. Every student record is made up of the following fields.

1. Registration number (int)
2. Full Name (String)
3. Date of joining (Gregorian calendar)
4. Semester (short)
5. GPA (float)
6. CGPA (float)

Whenever a student joins he will be given a new registration number. Registration number is calculated as follows. If year of joining is 2012 and he is the 80^{th} student to join then his registration number will be 1280.

Write member functions to do the following.

1. Provide parameterized constructor to the class
2. Override toString method to display the student record
3. Create an array of student records to store minimum of 5 records in it. Input the records and display them.
4. Write a method to alphabetically sort the students based on Full name
5. Write a method to list all the student names containing a particular sub string.

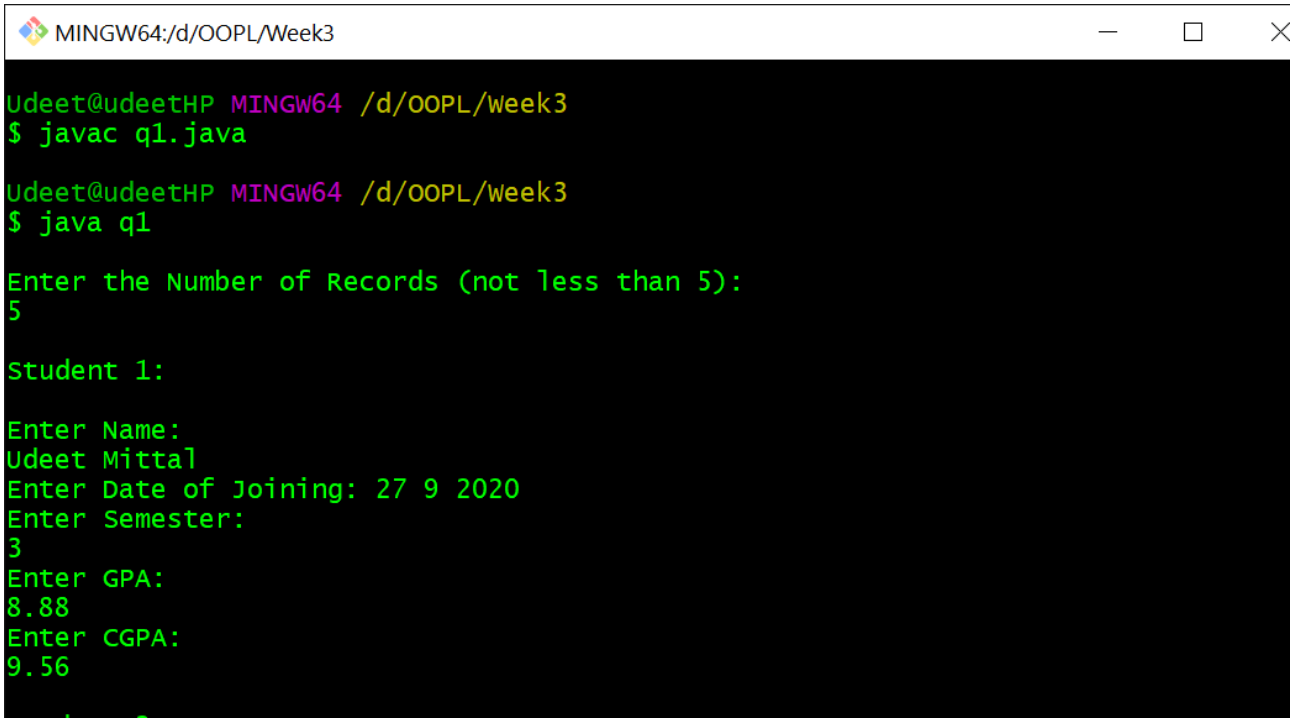
Test all the methods of the class by writing suitable main method.

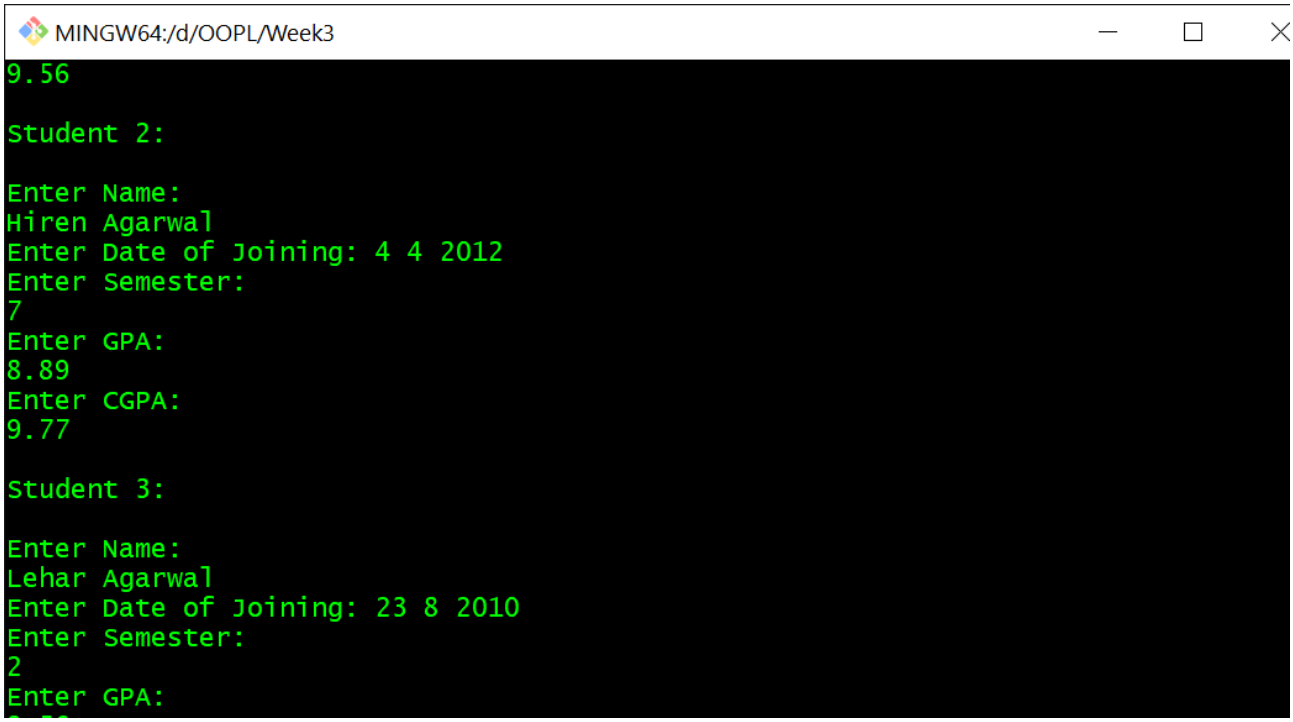
```
import java.util.*;


class Student

{

static int count = 0;

int regno;

String name;

GregorianCalendar doj;

short semester;
```

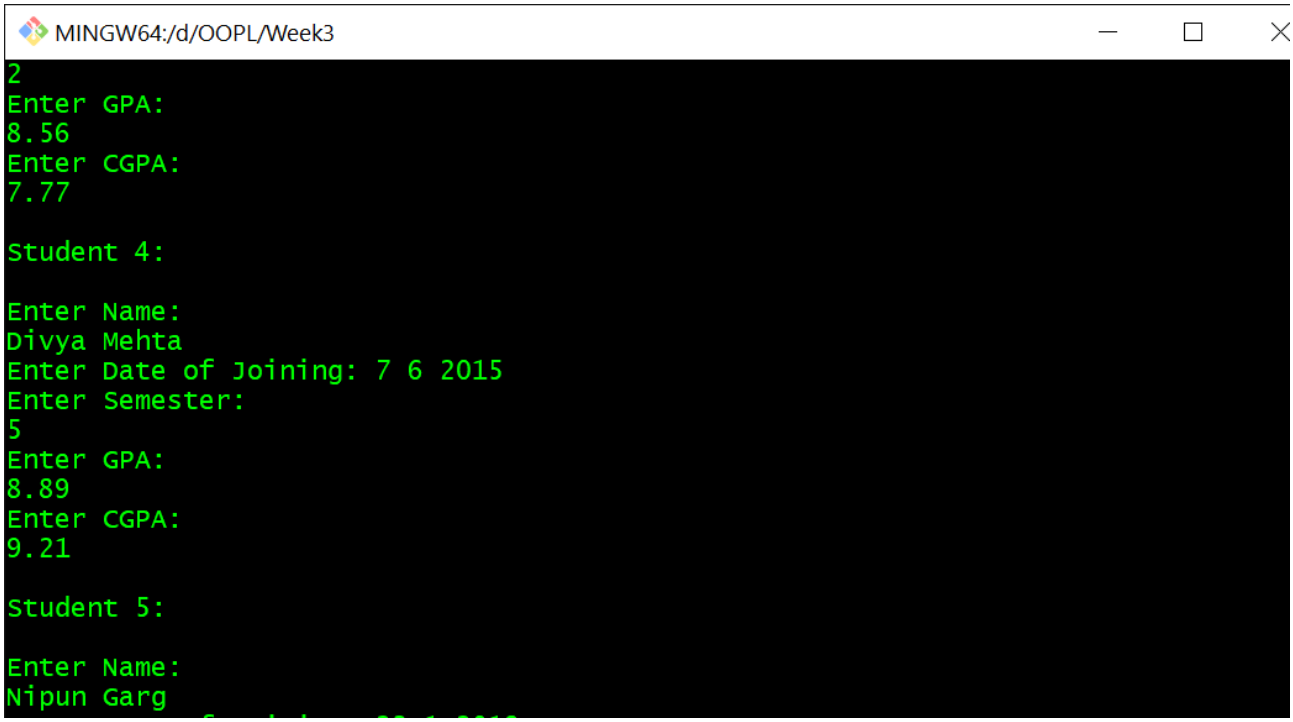
```
float gpa;
float cgpa;

Student(String name, GregorianCalendar doj, short semester, float gpa, float cgpa)
{
count++;
this.name = name;
this.doj = doj;
this.semester = semester;
this.gpa = gpa;
this.cgpa = cgpa;
String reg = (doj.get(Calendar.YEAR) % 100)*10 + "" + count;
regno = Integer.parseInt(reg);

}

public String toSring() {
return ("\nFull Name: " + name + "\nRegistration Number:" + regno + "\nDate of Joining: " +
doj.get(Calendar.DATE) +"/" +

doj.get(Calendar.MONTH) + "/"+ doj.get(Calendar.YEAR) + "\nSemester: " + semester + "\nGPA:
" + gpa + "\nCGPA: " + cgpa);
}

static Student[] createArray(int i)
{
        String name;
Scanner sc = new Scanner(System.in);
Scanner scstring = new Scanner(System.in);
Student[] obj = new Student[i];
for (int j = 0; j < i; j++)
{
```

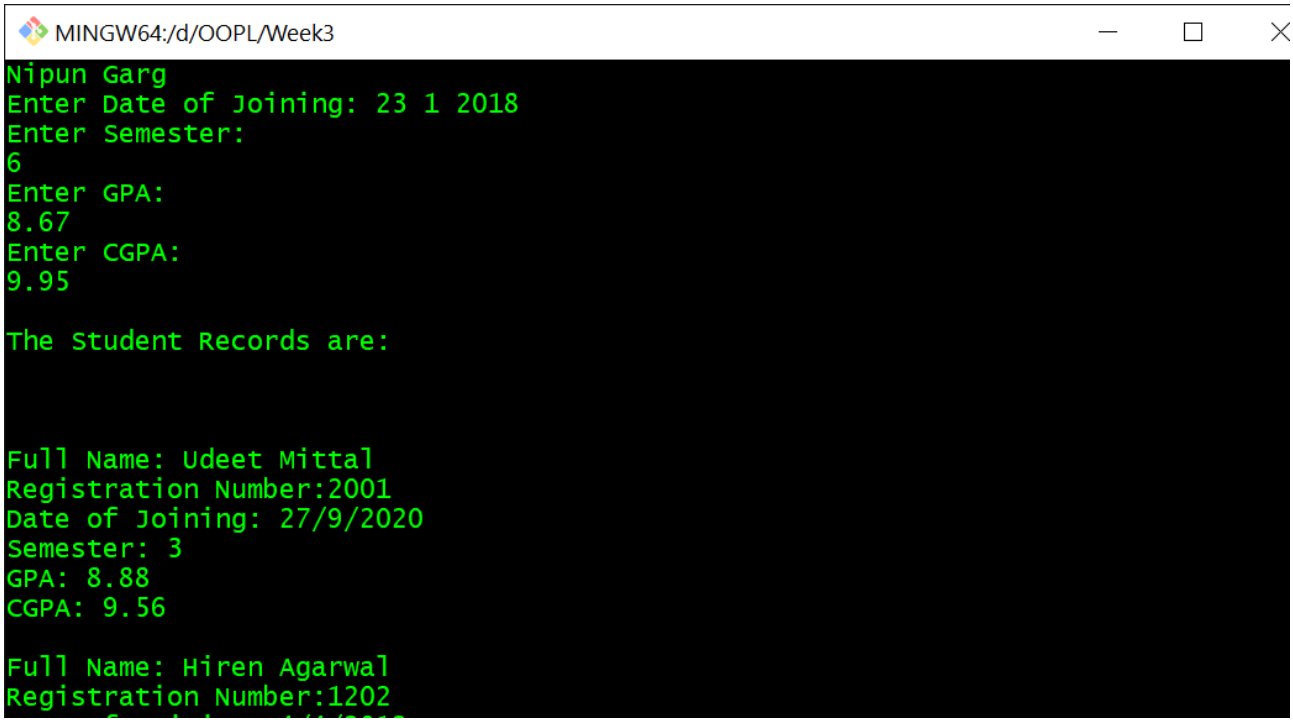
```
System.out.println("\nStudent " + (j + 1) + ":\n");
System.out.println("Enter Name:");
name = scstring.nextLine();
System.out.print("Enter Date of Joining: ");
int day = sc.nextInt();
int month = sc.nextInt();
int year = sc.nextInt();
System.out.println("Enter Semester: ");
short semester = sc.nextShort();
System.out.println("Enter GPA: ");
float gpa = sc.nextFloat();
System.out.println("Enter CGPA: ");
float cgpa = sc.nextFloat();
GregorianCalendar doj=new GregorianCalendar(year,month,day);
obj[j] = new Student(name, doj, semester, gpa, cgpa);
}
System.out.println("\nThe Student Records are:\n\n");
for(int a=0;a<i;a++)
                    System.out.println(obj[a].toSring());
return obj;
}

static void sort(Student obj[], int n) {
Student temp;
for (int i = 0; i < n; i++) {
for (int j = i + 1; j < n; j++) {
if ((obj[i].name).compareTo(obj[j].name) > 0) {
temp = obj[i];
obj[i] = obj[j];
obj[j] = temp;
}
}
```

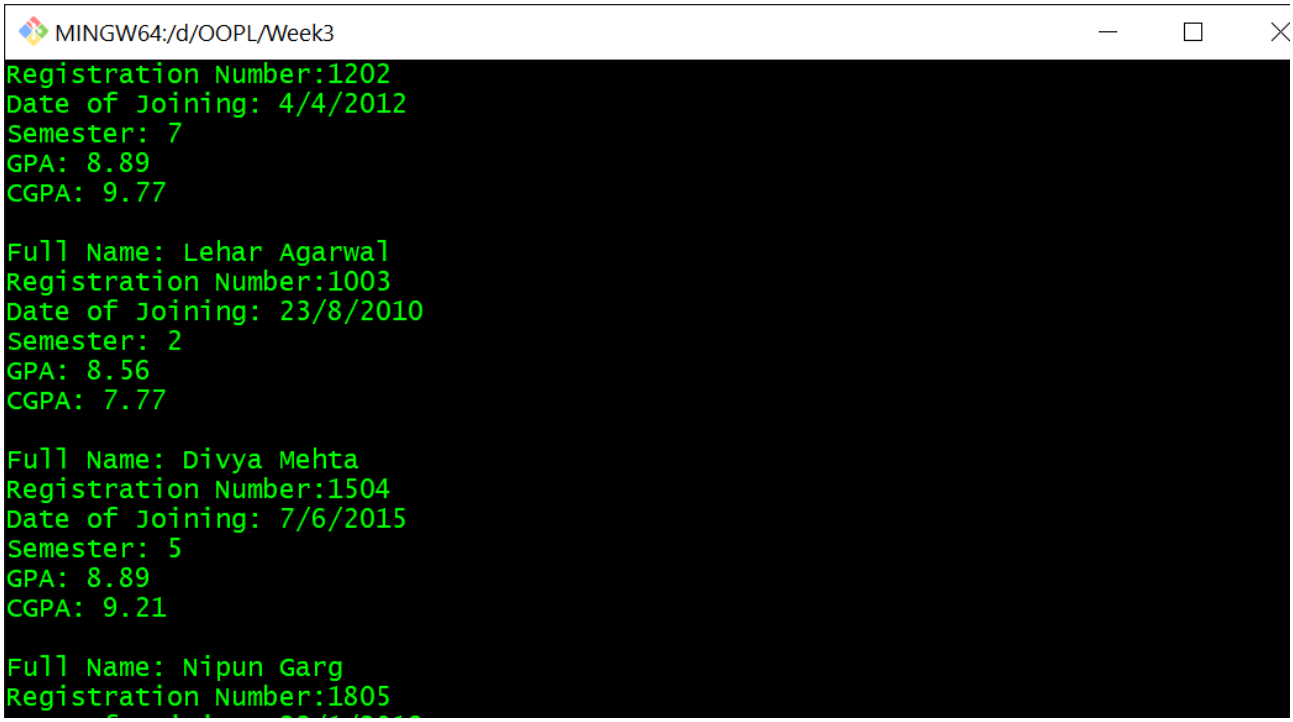
```
}
System.out.println("The Sorted Records are:\n\n ");
for (int i = 0; i < n; i++) {
System.out.println(obj[i].toSring());
}
}
static void listSubstr(Student obj[], int n) {
Scanner sc = new Scanner(System.in);
System.out.println("Enter the substring to be searched:\n ");
String substr = sc.nextLine();
System.out.println("\nThe Student Names containing " + substr + " is:\n ");
for (int i = 0; i < n; i++) {
if (obj[i].name.contains(substr)) {
System.out.println(obj[i].name + "\n");
                    }
          }
          }
}

class q1
{
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
System.out.println("\nEnter the Number of Records (not less than 5):");
int n = sc.nextInt();
Student[] obj;
obj = Student.createArray(n);
Student.sort(obj, n);
Student.listSubstr(obj, n);
}
}
```

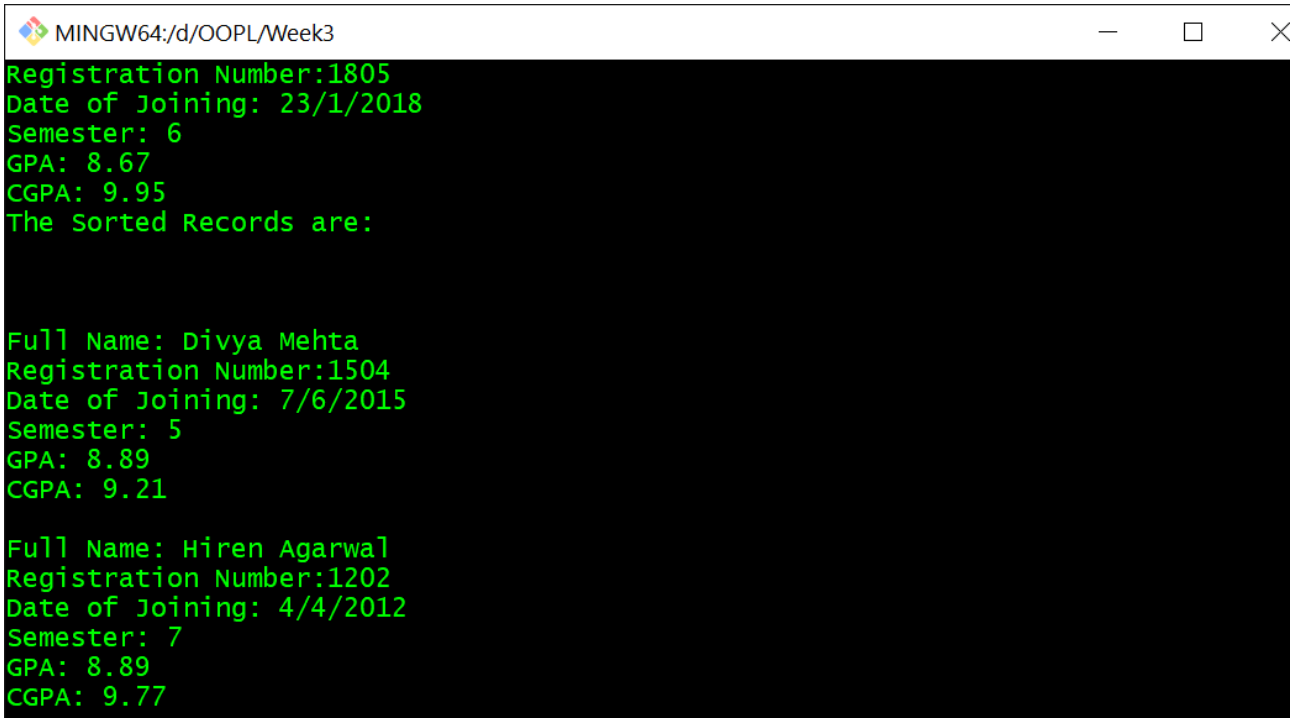

MINGW64:/d/OOPL/Week3
Udeet@udeetHP MINGW64 /d/OOPL/Week3
$ javac q1.java
Udeet@udeetHP MINGW64 /d/OOPL/Week3
$ java q1
Enter the Number of Records (not less than 5):
5
Student 1:
Enter Name:
Udeet Mittal
Enter Date of Joining: 27 9 2020
Enter Semester:
3
Enter GPA:
8.88
Enter CGPA:
9.56

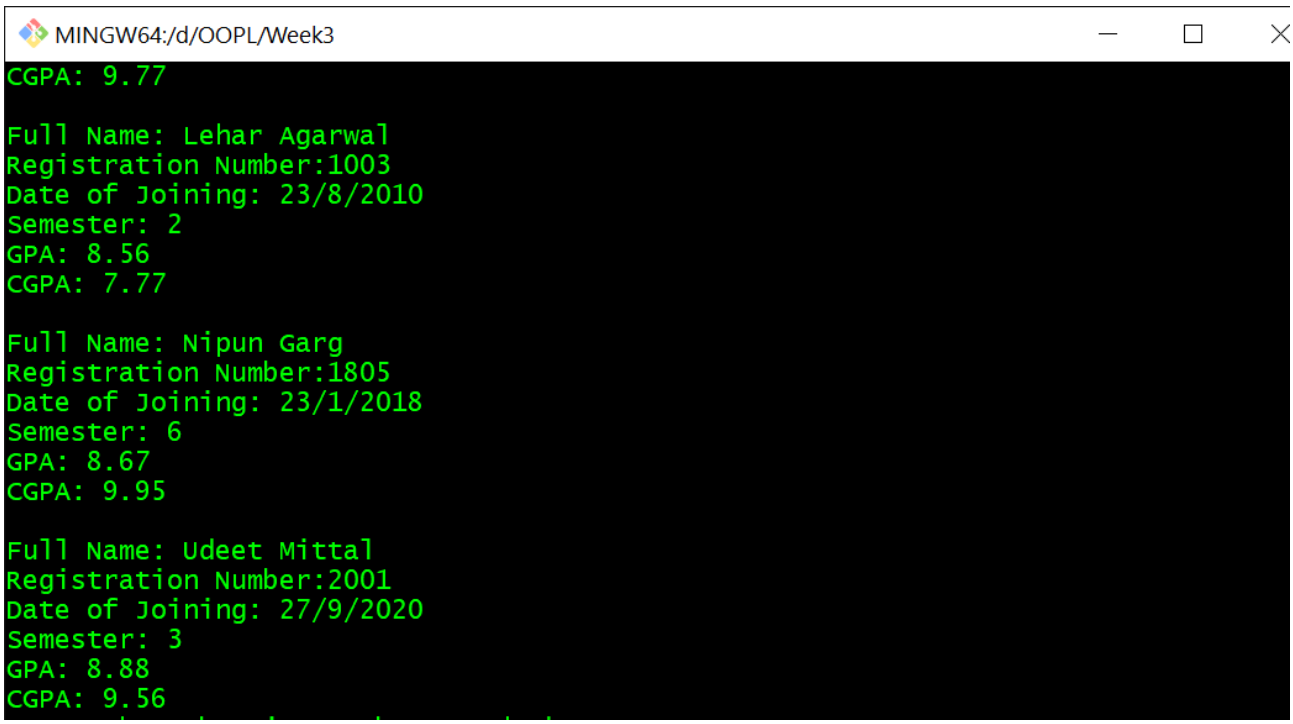

MINGW64:/d/OOPL/Week3
9.56
Student 2:
Enter Name:
Hiren Agarwal
Enter Date of Joining: 4 4 2012
Enter Semester:
7
Enter GPA:
8.89
Enter CGPA:
9.77
Student 3:
Enter Name:
Lehar Agarwal
Enter Date of Joining: 23 8 2010
Enter Semester:
2
Enter GPA:

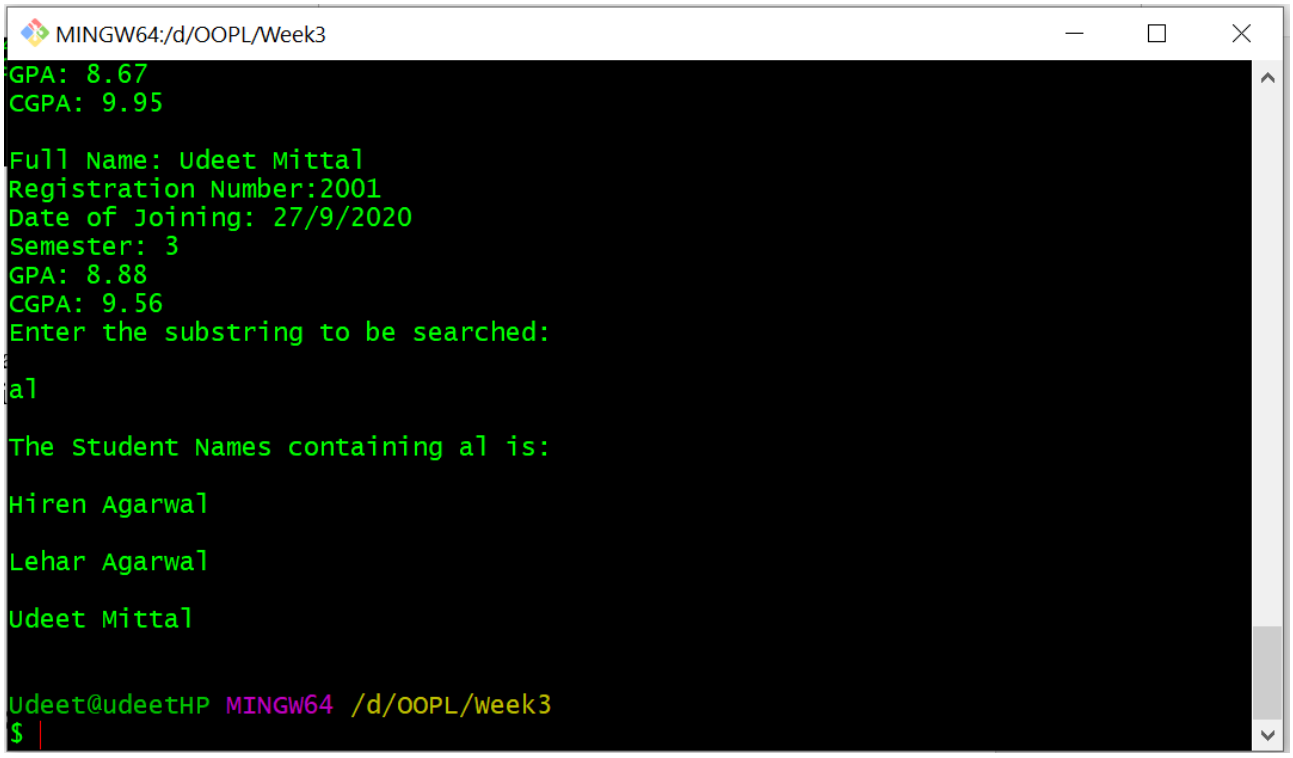

MINGW64:/d/OOPL/Week3
2
Enter GPA:
8.56
Enter CGPA:
7.77
Student 4:
Enter Name:
Divya Mehta
Enter Date of Joining: 7 6 2015
Enter Semester:
5
Enter GPA:
8.89
Enter CGPA:
9.21
Student 5:
Enter Name:
Nipun Garg


MINGW64:/d/OOPL/Week3
Nipun Garg
Enter Date of Joining: 23 1 2018
Enter Semester:
6
Enter GPA:
8.67
Enter CGPA:
9.95
The Student Records are:
Full Name: Udeet Mittal
Registration Number:2001
Date of Joining: 27/9/2020
Semester: 3
GPA: 8.88
CGPA: 9.56
Full Name: Hiren Agarwal
Registration Number:1202


MINGW64:/d/OOPL/Week3
Registration Number:1202
Date of Joining: 4/4/2012
Semester: 7
GPA: 8.89
CGPA: 9.77
Full Name: Lehar Agarwal
Registration Number:1003
Date of Joining: 23/8/2010
Semester: 2
GPA: 8.56
CGPA: 7.77
Full Name: Divya Mehta
Registration Number:1504
Date of Joining: 7/6/2015
Semester: 5
GPA: 8.89
CGPA: 9.21
Full Name: Nipun Garg
Registration Number:1805


MINGW64:/d/OOPL/Week3
Registration Number:1805
Date of Joining: 23/1/2018
Semester: 6
GPA: 8.67
CGPA: 9.95
The Sorted Records are:
Full Name: Divya Mehta
Registration Number:1504
Date of Joining: 7/6/2015
Semester: 5
GPA: 8.89
CGPA: 9.21
Full Name: Hiren Agarwal
Registration Number:1202
Date of Joining: 4/4/2012
Semester: 7
GPA: 8.89
CGPA: 9.77





2.Write and execute a Java program to convert strings containing numbers into comma-punctuated numbers, with a comma every third digit from the right.

import java.util.*;

class q2

```
{
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
System.out.println("\nEnter a Number:\n");
String num = sc.nextLine();
int cnt= 0;
String x = "";
for (int i = num.length() - 1; i >= 0; i--)
{
        char ch = num.charAt(i);
        x = ch + x;
        cnt++;
        if (cnt % 3 == 0 && cnt != num.length())
        {
                x = "," + x;
        }
}
System.out.println("\nThe Comma Separated Number is:\n" + x);
        }
}
```