OOP LAB 3

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;
GregorianCalendar date_of_joining;
String full_name;
short semester;
float GPA,CGPA;
static Scanner sc=new Scanner(System.in);
```

```
    //1. Providing a parametrized constructor to the class
    Student(int year,int month,int day,String name,short sem,float gpa,float cgpa){
    ++count;
    regno=(year%100)*100+count+1;
    date_of_joining=new GregorianCalendar(year,month,day);
    full_name=name;
    semester=sem;
    GPA=gpa;
    CGPA=cgpa;
    }

    //3.Input of student records
    static void input(Student s[]){
    for(int i=0;i<5;i++){
    System.out.println("Enter the name of student "+(i+1));
    String name=sc.next();
    System.out.println("Enter the dob of student "+(i+1)+" in year/month/day format");
    int year=sc.nextInt();
    int month=sc.nextInt();
    int day=sc.nextInt();
    System.out.println("Enter the current semester of student "+(i+1));
    short sem=sc.nextShort();
    System.out.println("Enter the gpa of student "+(i+1));
    float gpa=sc.nextFloat();
    System.out.println("Enter the cgpa of student "+(i+1));
```

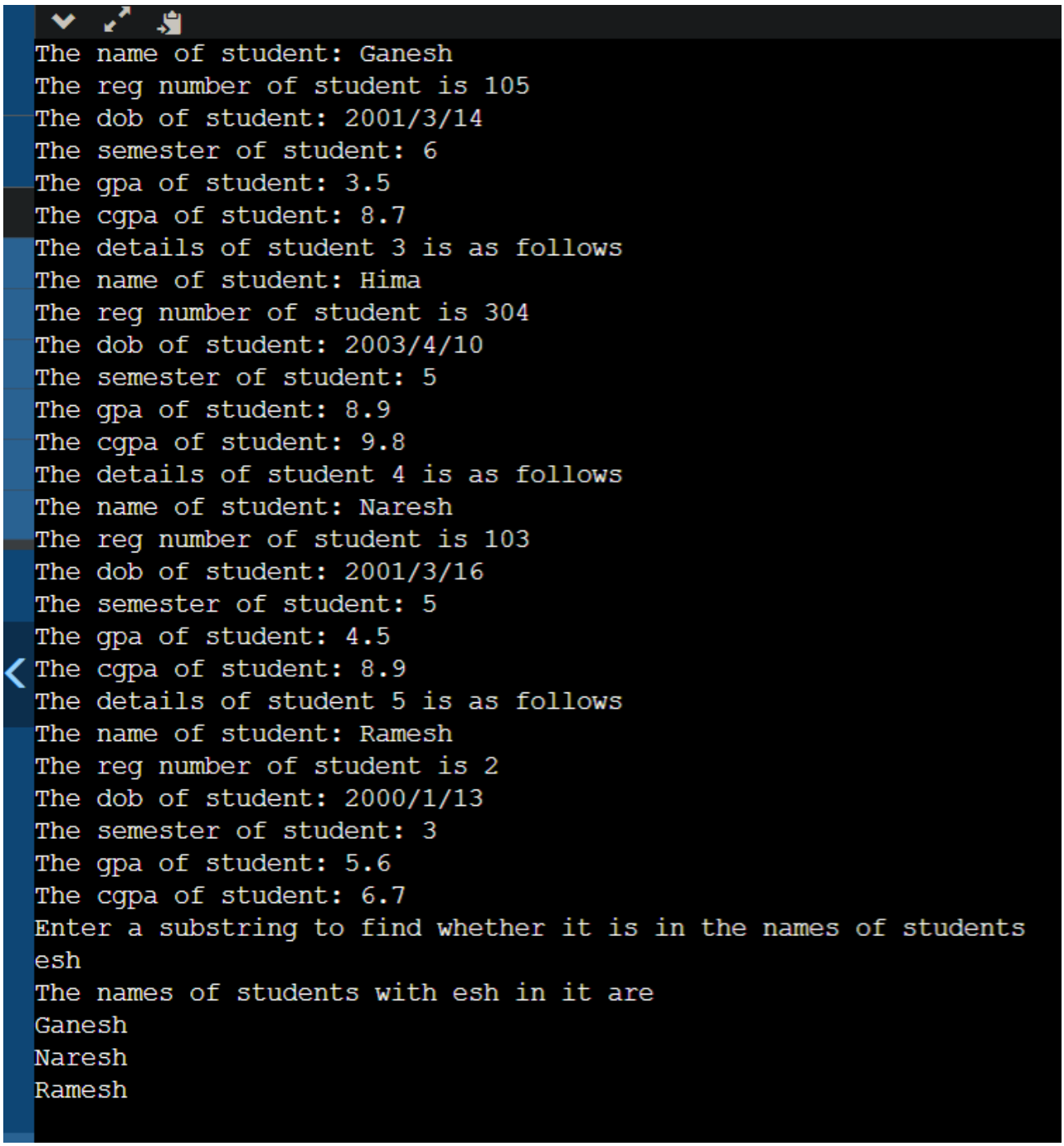
```
    float cgpa=sc.nextFloat();
    s[i]=new Student(year,month,day,name,sem,gpa,cgpa);
    }
    }

    //2.Overriding the toString() method of java and displaying the student records
    public String toString(){
    return ("The name of student: "+full_name+"\nThe dob of student: "+
    date_of_joining.get(Calendar.YEAR)+"/"+
    date_of_joining.get(Calendar.MONTH)
+"/"+date_of_joining.get(Calendar.DATE)+
    "\nThe semester of student: "+semester+"\nThe gpa of student: "+GPA+
    "\nThe cgpa of student: "+CGPA);
    }

    // 4.Sorting the names alphabetically
    static void sort(Student s[]){
    for(int i=0;i<4;i++)
    for(int j=i+1;j<5;j++)
    if(s[i].full_name.compareTo(s[j].full_name)>0){
    Student temp=s[i];
    s[i]=s[j];
    s[j]=temp;
    }
    }
```

```
    //5. List all the names with a particular substring
    static void substring(Student s[]){
    System.out.println("Enter a substring to find whether it is in the names of students");
    String substr=sc.next();
    System.out.println("The names of students with "+substr+" in it are ");
    for(int i=0;i<5;i++)
    if(s[i].full_name.contains(substr))
    System.out.println(s[i].full_name);
    }
    }


    public class Main
    {
    public static void main(String[] args) {
    Student s[]=new Student[5];

    //3.Input of students' data
    Student.input(s);

    // 4. Sort the students based on names
    Student.sort(s);

    //3.Display of student records in a sorted fashion
```

```
    System.out.println("The data of 5 students is displayed as below");
    for(int i=0;i<5;i++){
    System.out.println("The details of student "+(i+1)+" is as follows");
    System.out.println(s[i].toString());
    }

    //5. Display the names of students with a particular substring
    Student.substring(s);
    }
    }
```

```
Enter the name of student 1
Ramesh
Enter the dob of student 1 in year/month/day format
2000 1 13
Enter the current semester of student 1
3
Enter the gpa of student 1
5.6
Enter the cgpa of student 1
6.7
Enter the name of student 2
Naresh
Enter the dob of student 2 in year/month/day format
2001 3 16
Enter the current semester of student 2
5
Enter the gpa of student 2
4.5
Enter the cgpa of student 2
8.9
Enter the name of student 3
Hima
Enter the dob of student 3 in year/month/day format
2003 4 10
Enter the current semester of student 3
5
Enter the gpa of student 3
8.9
Enter the cgpa of student 3
9.8
Enter the name of student 4
Ganesh
Enter the dob of student 4 in year/month/day format
2001 3 14
Enter the current semester of student 4
6
Enter the gpa of student 4
```

```
Enter the current semester of student 4
6
Enter the gpa of student 4
3.5
Enter the cgpa of student 4
8.7
Enter the name of student 5
Dev
Enter the dob of student 5 in year/month/day format
2001 10 3
Enter the current semester of student 5
3
Enter the gpa of student 5
7.8
Enter the cgpa of student 5
9.0
The data of 5 students is displayed as below
The details of student 1 is as follows
The name of student: Dev
The reg number of student is 106
The dob of student: 2001/10/3
The semester of student: 3
The gpa of student: 7.8
The cgpa of student: 9.0
The details of student 2 is as follows
The name of student: Ganesh
The reg number of student is 105
The dob of student: 2001/3/14
The semester of student: 6
The gpa of student: 3.5
The cgpa of student: 8.7
The details of student 3 is as follows
The name of student: Hima
The reg number of student is 304
The dob of student: 2003/4/10
The semester of student: 5
The gpa of student: 8.9
```



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.

e.g., Input String : “1234567” Output String : “1,234,567”

```
import java.util.Scanner;
public class l3e2
{
public static void main(String[] args) {
Scanner sc=new Scanner(System.in);
System.out.println("Enter a string");
String t=sc.nextLine();
StringBuffer s=new StringBuffer(t);        //making use of the StringBuffer class’s insert
System.out.println("Input string: "+t);    //method as strings are immutable
int l=s.length();
for(int i=l%3;i<l;i+=4)
s.insert(i,',');                                          //inserting the commas from the
System.out.println("The output string: "+s);     //left exculding the remainder
}
}
```