LAB – 3 -Strings

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.

CODE :

```
import java.util.*;
class Student {    // creation of the class student
  static int count = 0;
  int Reg_No;
  String FullName;
  GregorianCalendar doj = new GregorianCalendar();
  short Sem;
  float GPA, CGPA;
  int cnt;
  Student() {     // zero argument constructor
    Reg_No = 0;
```

```
    FullName = "";
    Sem = 0;
    GPA = 0;
    CGPA = 0;
    doj = new GregorianCalendar(2000, 1, 1);
    count++;
    cnt = count;
  }
  Student(int year, int month, int date, String name, short semester, float gpa,
float cgpa) {  // parameterized constructor
    FullName = name;
    Sem = semester;
    GPA = gpa;
    CGPA = cgpa;
    doj = new GregorianCalendar(year, month, date);
    cnt = ++count;
    int yr = doj.get(Calendar.YEAR) % 100;
    Reg_No = yr * 100 + cnt;
  }
  public String toString() { //Overriding the toString() method of java and
displaying the student records
    System.out.println(" Registration number: " + Reg_No);
    return (" The name of student: " + FullName + "\n The dob of student: " +
doj.get(Calendar.YEAR) + "/" +
          doj.get(Calendar.MONTH) + "/" + doj.get(Calendar.DATE) + "\n The
semester of student: " + Sem +
          "\n The gpa of student: " + GPA + "\n The cgpa of student: " + CGPA);
  }
  static void Sort(Student std[], int n) {    // Sort the student report
alphabetically
    String[] arr = new String[n];
    for (int i = 0; i < n; i++)
      arr[i] = std[i].FullName;
```

```
    for (int a = 0; a < n - 1; a++) {
      for (int b = a + 1; b < n; b++) {
        if ((arr[a].compareToIgnoreCase(arr[b])) > 0) {
          Student t = std[a];
          std[a] = std[b];
          std[b] = t;
        }
      }
    }
  }
  static void particularSubString(Student std[], int n, String substrg) {
    int idx;
    String[] arr = new String[n];
    for (int i = 0; i < n; i++)
      arr[i] = std[i].FullName;
    for (int i = 0; i < n; i++) {
      idx = arr[i].indexOf(substrg);
      if (idx > 0)
        System.out.println(arr[i]);
    }
  }
}
public class stdreport {
  public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    Student stud[] = new Student[20];
    int i, date, month, year, n;
    String Name, substrg;
    short sem;
    float gpa, cgpa;
    System.out.print(" Number of students: ");
```

```
    n = sc.nextInt();
    for (i = 0; i < n; i++) {    // Entry for student record
      System.out.println(" Enter details for student " + (i + 1) + ":");
      System.out.print(" Enter Name: ");
      Name = sc.next();
      System.out.print(" Enter semester: ");
      sem = sc.nextShort();
      System.out.print(" Enter GPA: ");
      gpa = sc.nextFloat();
      System.out.print(" Enter CGPA: ");
      cgpa = sc.nextFloat();
      System.out.print(" Enter date of joining: ");
      date = sc.nextInt();
      System.out.print(" Month of joining: ");
      month = sc.nextInt();
      System.out.print(" Year of joining: ");
      year = sc.nextInt();
      System.out.println();
      stud[i] = new Student(year, month, date, Name, sem, gpa, cgpa);
    }
    Student.Sort(stud, n);
    for (i = 0; i < n; i++)
      System.out.println(stud[i].toString());
    System.out.print(" Enter the substring to be serached: ");
    substrg = sc.next();
    Student.particularSubString(stud, n, substrg);
  }
}
```

OUTPUT :

```
student@V310Z-000:~/Desktop/200905130/Lab_3$ javac stdreport.java
student@V310Z-000:~/Desktop/200905130/Lab_3$ java stdreport
 Number of students: 5
 Enter details for student 1:
 Enter Name: namrutha
 Enter semester: 7
 Enter GPA: 9
 Enter CGPA: 9.08
 Enter date of joining: 20
 Month of joining: 5
 Year of joining: 2018

 Enter details for student 2:
 Enter Name: manoj
 Enter semester: 3
 Enter GPA: 9.5
 Enter CGPA: 9.57
 Enter date of joining: 13
 Month of joining: 10
 Year of joining: 2020
```

```
Enter details for student 3:
Enter Name: bhushan
Enter semester: 4
Enter GPA: 7.5
Enter CGPA: 7
Enter date of joining: 15
Month of joining: 2
Year of joining: 2020

Enter details for student 4:
Enter Name: anusha
Enter semester: 3
Enter GPA: 8.6
Enter CGPA: 9.5
Enter date of joining: 17
Month of joining: 8
Year of joining: 2020

Enter details for student 5:
Enter Name: anirudha
Enter semester: 2
Enter GPA: 8.8
Enter CGPA: 8.5
Enter date of joining: 10
Month of joining: 1
Year of joining: 2021
```

```
 Registration number: 2105
 The name of student: anirudha
 The dob of student: 2021/1/10
 The semester of student: 2
 The gpa of student: 8.8
 The cgpa of student: 8.5
 Registration number: 2004
 The name of student: anusha
 The dob of student: 2020/8/17
 The semester of student: 3
 The gpa of student: 8.6
 The cgpa of student: 9.5
 Registration number: 2003
 The name of student: bhushan
 The dob of student: 2020/2/15
 The semester of student: 4
 The gpa of student: 7.5
 The cgpa of student: 7.0
 Registration number: 2002
 The name of student: manoj
 The dob of student: 2020/10/13
 The semester of student: 3
 The gpa of student: 9.5
 The cgpa of student: 9.57
 Registration number: 1801
 The name of student: namrutha
 The dob of student: 2018/5/20
 The semester of student: 7
 The gpa of student: 9.0
 The cgpa of student: 9.08
 Enter the substring to be serached: sh
anusha
bhushan
```

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.

CODE :

```
import java.util.Scanner;
public class comma {
   // Function to insert string
   public static String insertString(String originalString,String
stringToBeInserted,int index) {
      // Create a new string
      String newString = originalString.substring(0, index )
                  + stringToBeInserted
                  + originalString.substring(index );
      // return the modified String
      return newString;
   }
   // Driver code
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter a string: ");
      String originalString = sc.nextLine(); //reads string.
      String stringToBeInserted = ",";
      int n_c, index, length;
      length = originalString.length();
      n_c = (length - 1) / 3;
      if (length % 3 == 0)
         index = 3;
      else
         index = length % 3;

      for (; index < length; index += 4) {
         originalString = insertString(originalString,stringToBeInserted,index);
      }
      System.out.println("String with comma-puntuations : " + originalString);
   }
}
```

OUTPUT :

```
student@V310Z-000:~/Desktop/200905130/Lab_3$ javac comma.java
student@V310Z-000:~/Desktop/200905130/Lab_3$ java comma
Enter a string: 25261308
String with comma-puntuations : 25,261,308
student@V310Z-000:~/Desktop/200905130/Lab_3$ java comma
Enter a string: 123456
String with comma-puntuations : 123,456
```

****