## Ques#01- student records

```java
public class student {
    private String name;
    private String regNo;
    private String CNIC;
    private String Class1;
    private double Cgpa;

    // constructor
    public student(String name ,String regNo,String CNIC ,String Class,double Cgpa)
    {
        this.name = name;
        this.regNo= regNo;
        this.CNIC = CNIC;
        this.Class1 = Class;
        this.Cgpa = Cgpa;
    }

    // getters and setters
    public String getName() {
        return name;
    }

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

    public String getregNo() {
        return regNo;
    }

    public void setregNo(String regNo) {
        this.regNo = regNo;
    }

    public String getCNIC() {
        return CNIC;
    }

    public void setCNIC(String CNIC) {
        this.CNIC = CNIC;
    }

    public double getCGPa() {
        return Cgpa;
    }

    public void setCGPa(float Cgpa) {
```

```java
        this.Cgpa = Cgpa;
    }

    public String getClasss() {
        return Class1;
    }

    public void setClass(String Class) {
        this.Class1 = Class;
    }

    public String toString() {
        return "Name: " + name + "  REG NO: " + regNo + " CNIC: " + CNIC + "
Cgpa: " + Cgpa + " Class: " + Class1;
    }

}
```

```java
public class studentnode {

    private student student;

    private studentnode prev;
    private studentnode next;

    public studentnode(student student) {
        this.student = student;
        this.prev = null;
        this.next = null;
    }

    public student getStudent() {
        return student;
    }

    public void setStudent(student student) {
        this.student = student;
    }

    public studentnode getPrev() {
        return prev;
    }

    public void setPrev(studentnode prev) {
        this.prev = prev;
    }

    public studentnode getNext() {
        return next;
    }

    public void setNext(studentnode next) {
```

```java
        this.next = next;
    }

}
```

# Ques#02- functions

```java
public class linkedList {

    private studentnode head;

    public linkedList() {
        head = null;
    }
//.............................................insertion.........................
..................
    public void insertAtStart(student student) {
        studentnode newNode = new studentnode(student);
        if (head == null) {
            head = newNode;
        } else {
            newNode.setNext(head);
            head = newNode;
        }
    }

//.............................................deletion.........................
.................

    public void deleterKey(student key) {
        if (head == null) {
            return;
        }
        studentnode current = head;
        while (current != null && !current.getStudent().equals(key)) {
            current = current.getNext();
        }
        if (current == null || current.getNext() == null) {
            return;
        }
        current.setNext(current.getNext().getNext());
    }

    // method for searching for a student based on reg no in the list
```

```java
    public int searchStudent(student s) {
        studentnode current = head;
        while (current != null) {
            if (current.getStudent() == s) {
                return 1;
            }
            current = current.getNext();
        }
        return 0;
    }

    public void display() {
        if (head == null) {
            System.out.println("The patient list is empty.");
        } else {
            studentnode current = head;
            while (current != null) {
                System.out.print(current.getStudent().toString());
                System.out.println();
                System.out.println("                                              ↓
");
                current = current.getNext();
            }
        }
    }
}
```

## Main method

```java
import java.util.Scanner;

// Press Shift twice to open the Search Everywhere dialog and type `show
whitespaces`,
// then press Enter. You can now see whitespace characters in your code.
public class Main {
    public static void main(String[] args) {

        // create a new student list
        linkedList studentlist = new linkedList();

        // create some student objects
        // public student(String name ,String regNo,String CNIC ,String
Class,float Cgpa)
```

```java
        student student1 = new student("John", "fa21-019", "12345-903287",
"BSE-A", 3.8);
        student student2 = new student("aliya", "fa21-020", "12875-923287",
"BCS-A", 3.2);
        student student3 = new student("sana", "fa21-032", "78321-9234287",
"BSE-B", 2.9);
        student student4 = new student("bilal", "fa21-109", "78354-994217",
"BCS-A", 2.8);
        student student5 = new student("shamsa", "fa21-001", "09123-984287",
"BSE-A", 3.33);


        System.out.println("----------------singly list after insertion----
--------------");
        studentlist.insertAtStart(student5);
        studentlist.insertAtStart(student4);
        studentlist.insertAtStart(student3);
        studentlist.insertAtStart(student2);
        studentlist.insertAtStart(student1);
        studentlist.display();
        System.out.println("---------------------------------------------
-----------------");

        System.out.println();

        System.out.println("----------------singly list after deletion
after key-----------------");


        studentlist.deleterKey(student1);
        studentlist.display();
        System.out.println("---------------------------------------------
-----------------");


        System.out.println(studentlist.searchStudent(student3));
        System.out.println("---------------------------------------------
-----------------");
    }
}
```

## output

"C:\Users\Laiba Binta Tahir\.jdks\openjdk-20.0.1\bin\java.exe" -
javaagent:E:\workplace\intelJ\lib\idea_rt.jar=62209:E:\workplace\intelJ\bin -Dfile.encoding=UTF-8 -
Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath "C:\Users\Laiba Binta
Tahir\IdeaProjects\lab_mid\out\production\lab_mid" Main

------------------singly list after insertion------------------

Name: John  REG NO: fa21-019 CNIC: 12345-903287 Cgpa: 3.8 Class: BSE-A

↓

Name: aliya  REG NO: fa21-020 CNIC: 12875-923287 Cgpa: 3.2 Class: BCS-A

↓

Name: sana  REG NO: fa21-032 CNIC: 78321-9234287 Cgpa: 2.9 Class: BSE-B

↓

Name: bilal  REG NO: fa21-109 CNIC: 78354-994217 Cgpa: 2.8 Class: BCS-A

↓

Name: shamsa  REG NO: fa21-001 CNIC: 09123-984287 Cgpa: 3.33 Class: BSE-A

↓

-----------------------------------------------------------------

------------------singly list after deletion after key------------------

Name: John  REG NO: fa21-019 CNIC: 12345-903287 Cgpa: 3.8 Class: BSE-A

↓

Name: sana  REG NO: fa21-032 CNIC: 78321-9234287 Cgpa: 2.9 Class: BSE-B

↓

Name: bilal  REG NO: fa21-109 CNIC: 78354-994217 Cgpa: 2.8 Class: BCS-A

↓

Name: shamsa  REG NO: fa21-001 CNIC: 09123-984287 Cgpa: 3.33 Class: BSE-A

↓

-----------------------------------------------------------------

1

-----------------------------------------------------------------

Note : 1 here means student found