Lab Data

*MyArrayList.java | TestArrayList.java

```java
import java.util.Scanner;
public class MyArrayList {
    private String[] list;
    private int count = 0;
    private int size;

    public void shiftLeft(int index) {
        //for delete
        int i = 0;
        for (i = index; i < count-1; i++) {
            list[i] = list[i+1];
        }
        list[i] = null;
    }
    public void shiftRight(int index) {
        //for insert
        for (int i = count-1; i >= index; i--) {
            list[i+1] = list[i];
        }
    }

    public void createList() {
        System.out.println("Please Enter list size : ");
        Scanner sc = new Scanner(System.in);
        size = sc.nextInt();
        list = new String[size];
        System.out.println("List Created!!");
    }
    public void insertFront(String data) {
        if (isFull()) {
            System.out.println("List is full.");
        }else if(isEmpty()){
            list[0] = data;
            count++;
        }else {
            shiftRight(0);
            list[0] = data;
            count++;
        }
    }
    public void insertBefore(String data, String before) {
        if(!isFull()) {
            int beforeIndex =-1;
```

```java
    public boolean isFull() {
        if (count == size) {
            return true;
        } else {
            return false;
        }
    }

}
```

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```java
            for(int i=0;i<list.length;i++) {
                if(before.equals(list[i])) {
                    beforeIndex = i;
                    break;
                }
            }


            if(beforeIndex !=-1) {
                String[] temp = new String[list.length-beforeIndex];
            int index=0;
            for(int i=beforeIndex;i< list.length;i++) {
                temp[index] = list[i];
                index++;
            }


                list[beforeIndex] = data;
                index = 0;
                for(int i=beforeIndex+1;i<list.length;i++) {
                    list[i] = temp[index];
                    index++;

                }
                count++;
                System.out.println("Successfully insert "+ data+ " before "+ before+"!");

            }else {
                System.out.println("Before not found");
            }
        }else {
            System.out.println("list is full");
        }
    }
    public void insertLast(String data) {
        if(isFull()) {
            System.out.println("List is full.");
        }else {
            list[count] = data;
            count++;
        }
    }
```

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```java
    public void delete(String data) {
        int deleteIndex = -1;
        for(int i=0 ;i< list.length;i++) {
            if(list[i].equals(data)) {
                deleteIndex = i;
                break;
            }
        }
        if(deleteIndex!=-1) {
            String[] temp = new String[size];
            System.arraycopy(list, 0, temp, 0, size);
            int index = 0;
            list = new String[size];
            for(int i=0;i<temp.length;i++) {
                if(i == deleteIndex) {
                    continue;
                }else {
                    list[index] = temp[i];
                    index++;
                }
            }
            System.out.println("Successfully delete! "+ data);
            count--;
        }else {
            System.out.println("Delete node not found");
        }
    }
    public void traverse() {
        System.out.println("Traverse data : ");
        for (int i = 0; i < count; i++) {
            System.out.print(list[i]+" ");
        }
        System.out.println("");
    }
    public boolean isEmpty() {
        if (count == 0) {
            return true;
        } else {
            return false;
        }

    }
```

*TestArrayList.java

```java
import java.util.Scanner;
public class TestArrayList {
    private MyArrayList mylist;
    Scanner sc1;

    public void printMenu(){
        System.out.println("------------------------------");
        System.out.println("List Menu");
        System.out.println("------------------------------");
        System.out.println("1. Create List\n" +
                "2. Insert At Front\n" +
                "3. Insert Before Node\n" +
                "4. Insert At Last\n" +
                "5. Delete Node\n" +
                "6. Traverse\n" +
                "7. Quit");
        System.out.println("==============================");
    }
    public void showMenu() {
        while (true) {
            printMenu();
            Scanner sc = new Scanner(System.in);
            System.out.print("Please enter menu number : ");
            int menu = sc.nextInt();
            switch (menu) {
            case 1:
                System.out.print("Create List");
                mylist = new MyArrayList();
                mylist.createList();
                break;
            case 2:
                System.out.print("Insert At Front:");
                sc1 = new Scanner(System.in);
                System.out.println("Enter data : ");
                mylist.insertFront(sc1.nextLine());
                break;
            case 3:
                System.out.print("Insert Before Node:");
                mylist.insertBefore((sc1.next()), sc1.next());
                break;
            case 4:
                System.out.print("Insert At Last:");
                System.out.print("Enter data : ");
                mylist.insertLast(sc1.nextLine());
                break;
            case 5:
                System.out.print("Delete Node:");
                mylist.delete((sc1.next()));
                break;
            case 6:
                System.out.print("Traverse:");
                mylist.traverse();
                break;
            case 7:
                System.out.println("done");
                sc1.close();
                return;
            default:
            }
        }
    }
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        TestArrayList tal = new TestArrayList();
        tal.showMenu();
    }
}
```