Gebze Technical University

Computer Engineering

CSE222-2020-SPRING

Homework-3_part1 Report
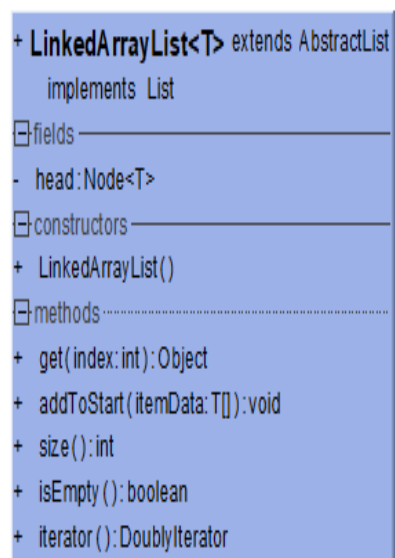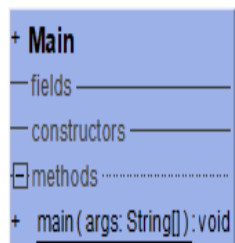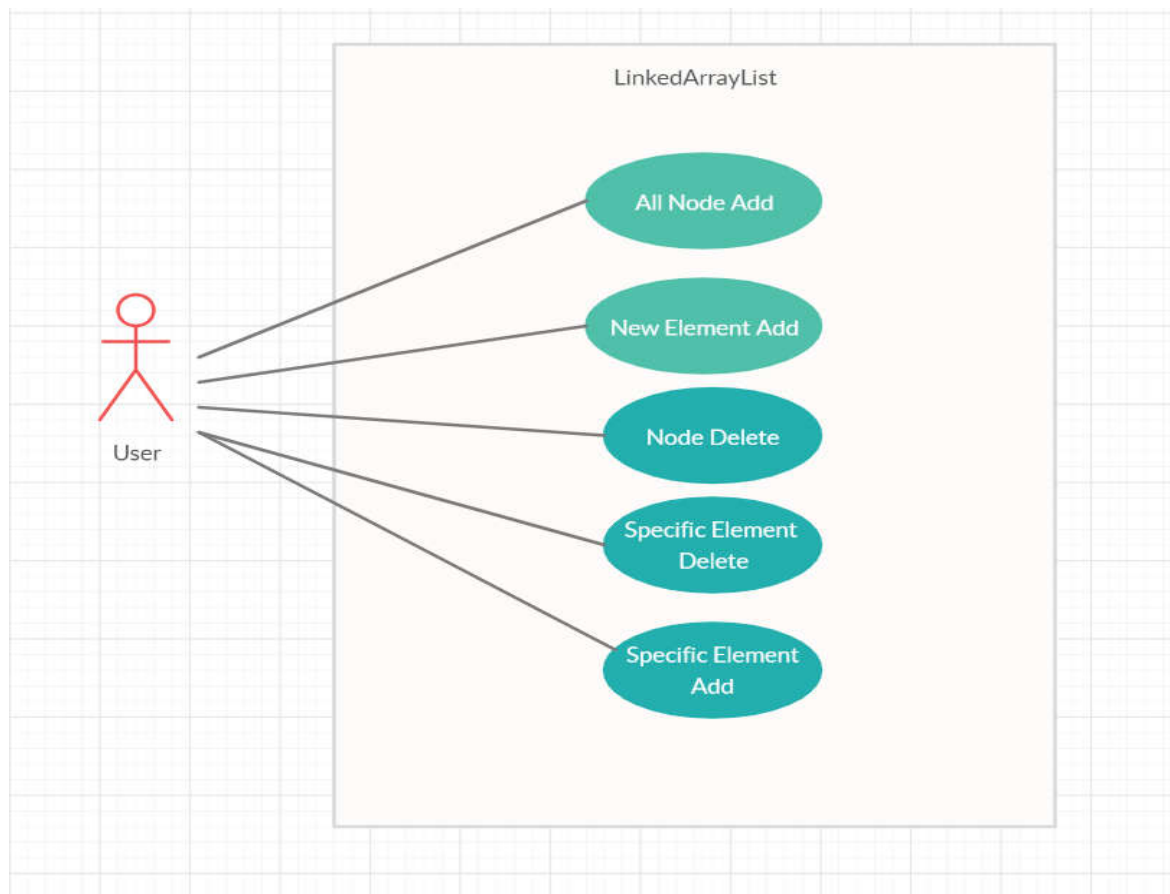
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1)Problem Solutions Approach

Firstly, LinkedArrayList is defined as a double linkedlist class. This class extend AbstaractList and implement List interface. Hides a private node class in it. Private Node class has a lot of method for special work. It performs operations such as adding elements to the array, rotating the size of the array, and deleting elements from the array. Later a node was added to keep the start address in LinkedArrayList. List Interfaces and AbstractList class methods in the are overridden in LinkedArrayList. In this way, thanks to the linked list array, it can be used like an arraylist.

2) Class Diagram

Main

+ Main

— fields ——————

— constructors ——————

⊟ methods ······················

+ <u>main (args : String[]) : void</u>

LinkedArrayList

+ LinkedArrayList\<T> extends AbstractList

    implements List

⊟ fields ——————

- head : Node\<T>

⊟ constructors ——————

+ LinkedArrayList ( )

⊟ methods ···

+ get (index : int) : Object

+ addToStart (itemData : T[]) : void

+ size ( ) : int

+ isEmpty ( ) : boolean

+ iterator ( ) : DoublyIterator

3)Use Case Diagram

4)Test Case

a) LinkedArrayList may add new node in linked list.

```java
String[] array={"GTU","ITU","KTU","BOGAZICI","ISTANBUL"};
String[] array1={"SAKARYA","INONU"};
  String[] array2={"ERCIYES","HACETTEPE"};

LinkedArrayList<String> list=new LinkedArrayList<~>();
LinkedArrayList.DoublyIterator i=list.iterator();

    try {
        i.insertHere(array);
        i.insertHere(array2);
        i.insertHere(array1);
        System.out.println("***All Nodes Add***");
        i.outputList();
        System.out.println("********************");
```

```
***All Nodes Add***
GTU
ITU
KTU
BOGAZICI
ISTANBUL
ERCIYES
HACETTEPE
SAKARYA
INONU
. . . . . . . . . . . . . . . . . .
```

b) New element added to a specific location of the array.

```java
i.addindex( index: 5, newData: "EKLENDI!!!");
i.outputList();
System.out.println("***New Element Add Index=5***");
```

```
GTU
ITU
KTU
BOGAZICI
ISTANBUL
EKLENDI!!!
ERCIYES
HACETTEPE
SAKARYA
INONU
***New Element Add Index=5***
```

c) Node in a specific location in LinkedArrayList deleted.

```java
i.delete( index: 0);
i.outputList();
System.out.println("***Node 0 Delete****");
System out println("*********************");
```

```
*********************
EKLENDI!!!
ERCIYES
HACETTEPE
SAKARYA
INONU
***Node 0 Delete****
```

d) The element at a specific location in the Linked ArrayList has been deleted.

```java
System.out.println("**********************");
i.sil( tar: "SAKARYA");
i.outputList();
System.out.println("Specific Element Delete in arrays=SAKARYA");
System.out.println("**************END********************");
```

```
***********************
EKLENDI!!!
ERCIYES
HACETTEPE
INONU
Specific Element Delete in arrays=SAKARYA
**************END********************
```