

## Laboratory practice No. 3: LinkedList | ArrayList

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### 3) Practice for final project defense presentation

#### 3.1

Exercise	ArrayList	LinkedList
1.1	$O(n)$	$O(n^2)$

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### 3.2

#### ***Explanation Exercise 2.1***

We receive a String per console, which we will analyze and do the following:

We go through the String

In this position where the Character '[' appears, we will assign the value (inicio) the value of true, and the counter the value of 0.

In this position where the Character ']' appears, we will assign the variable (inicio) the value of false.

Later:

When inicio is true, that is, when we must add a segment of the String at the beginning, what we do is add to a LinkedList each Character in its respective position. We must increase the counter to be able to add the word in the corrective order because if we do not, it will be at the beginning but in the opposite order.

When inicio is false, that is, when we must add at the end. We do what we did before but only by adding at the end.

To end. We go through the LinkedList and print every position of it, which causes us to print the text correctly.

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## 3.3

```

public static void teclado(){
    LinkedList<Character>texto = new LinkedList<>();
    int posicion = 0;
    Scanner sc = new Scanner(System.in);
    System.out.println("Ingrese texto");
    String tec = sc.nextLine();
    boolean inicio = false;

    for (int i=0;i<tec.length();i++){
        if(tec.charAt(i)=='['){
            inicio = true;
            posicion = 0;
        } else if (tec.charAt(i)==']'){
            inicio = false;
        }

        if(tec.charAt(i)!='[' && tec.charAt(i)!=']'){
            if(inicio == true){
                texto.add(posicion,tec.charAt(i));
                posicion++;
            } else {
                texto.addLast(tec.charAt(i));
            }
        }
    }

    for(Character t: texto){
        System.out.print(t);
    }
}

```

 $O(n)$ **PhD. Mauricio Toro Bermúdez**

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### 3.4 Variables "n", "m" ... in complexity

The previous variables that were used in the complexity equations or any others are those that directly influence the type of equation depending on the complexity of the algorithm presented.

$n$  = String length

#### 4) Practice for midterms

**4.1 C.** *The two statements have the same asymptotic complexity.*

**4.2 C.**  $O(n)$

#### 4.3

**A.** `q.size() > 1`

**B.** `<=`

**C.** `q.remove()`

**D.** `q.remove()`

#### 4.4

**A.** `lista.size()`

**B.** `lista.addLast(auxiliar.pop())`

#### 4.5

**4.5.1** `auxiliar1.size() > 0`

**4.5.2** `auxiliar2.size() > 0`

**4.5.3** `personas.offer(edad)`

#### 4.6 A. $O(n^3)$

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ESTRUCTURA DE DATOS 1  
Código ST0245

**4.7 C.  $O(n)$**

**4.8**

**4.8.1 A.  $O(k)$**

**4.8.2 C. 12**

**4.8.3 C.  $O(1)$**

**4.9**

**4.9.1 D.  $O(n)$**

**4.9.2 A. 8**

**4.9.3 B.  $O(1)$**

**4.10**

**4.10.1 B.  $O(\max(list) \times n)$**

**4.10.2 B.  $O(n)$**

**4.11**

**4.11.1  $s1.size() \geq 1$**

**4.11.2  $s1.pop()$**

**4.11.3  $s2$**

**4.12**

**4.12.1 IV**

**4.12.2 III**

**4.13.1 I**

**4.13.2 I**

**4.14 IV**

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**6) Team work and gradual progress (optional)**

**6.1 Meeting minutes**

Member	Date	Work
Cristian Giraldo	11/09/2019	<b>Exercises:</b> - 1.1 - 1.1
Daniel Cifuentes	12/09/2019	<b>Exercises:</b> - 2.1
Daniel Cifuentes	13/09/2019	<b>Exercises:</b> - 2.2
Cristian Giraldo	14/09/2019	<b>Exercises:</b> - Continuation of point 2.1
Daniel Cifuentes	14/09/2019	<b>Exercises:</b> - 3.1   - 4... - 3.4
Cristian Giraldo	15/09/2019	<b>Exercises:</b> - 3.2   - 4... - 3.3
Daniel Cifuentes	15/09/2019	<b>Exercises:</b> - Continuation 3.2 - Continuation 3.3 - feedback

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**Código ST0245**

**6.2** History of changes of the code

<b>Member</b>	<b>Code</b>	<b>Done - Incomplete</b>
Cristian Alexis Giraldo	<b>Exercise:</b>  - <b>A. 1.1</b>  - <b>B. 2.1</b>	<b>A. Done   11/09/2019</b>  <b>B. Incomplete   12/09/2019</b>
Daniel Cifuentes	<b>Exercise:</b>  - <b>D. 2.1</b> - <b>E. 2.2</b>	<b>C. Done   14/09/2019</b>  <b>D. Done   15/09/2019</b>

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### 6.3 History of changes of the report

HOY
<div> <div>▶</div> <div> <b>15 de septiembre, 20:57</b> <div>⋮</div> </div> </div> <div> <i>Versión actual</i> <div> <div>●</div> Cristian Giraldo           <div>●</div> Alejandro Cifuentes         </div> </div>
<div> <div>▶</div> <div> <b>15 de septiembre, 18:13</b> </div> </div> <div> <div>●</div> Alejandro Cifuentes         </div>
<div> <div>15 de septiembre, 15:47</div> <div> <div>●</div> Alejandro Cifuentes           <div>Archivo .docx importado - <a href="#">Ver el original</a></div> </div> </div>

- The day 15/09/2019 We join all the parts of the report

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