**ESTRUCTURA DE DATOS 1**
**Código ST0245**

# Laboratory practice No. 3: Complete the title of the laboratory practice

**Alejandro Mc Ewen**
Universidad Eafit
Medellín, Colombia
amce@eafit.edu.co

**Felipe Henao**
Universidad Eafit
Medellín, Colombia
fhenaog3@eafit.edu.co

## 3) Practice for final project defense presentation

### 3.1

| Exercises | Vectors | LinkedList |
|---|---|---|
| 1.1 | Creating the map<br>O(n+m)<br>n being the places<br>m being the connections<br>Searching the map by ID<br>O(1) | Creating the map<br>O(n+n*m)<br>n being the places<br>m being the connections<br>Searching the map by ID<br>O(n)<br>n being the places |
| 1.2 | Creating the map<br>O(n+m)<br>n being the students<br>m being the classes<br>Search the grades by ID<br>O(1) | Creating the map<br>O(n+n*m)<br>n being the students<br>m being the classes<br>Search the grades by ID<br>O(n) |

**PhD. Mauricio Toro Bermúdez**
**Professor | School of Engineering | Informatics and Systems**

**Email:** mtorobe@eafit.edu.co | Office: Building 19 – 627
**Phone: (+57) (4) 261 95 00** Ext. 9473

| | | |
|---|---|---|
| **1.3** | **O(n)**<br>**n being the size of the list** | **O(n)**<br>**n being the size of the list** |
| **1.4** | **O(n*m)**<br>**n being the number of requests**<br>**m being the maximum number of fridges in a request** | **O(n*m)**<br>**n being the number of requests**<br>**m being the maximum number of fridges in a request** |
| **1.5** | **Add: O(n) n being the size of the vector**<br>**Remove: O(n) n being the size of the vector**<br>**Contains: O(n) n being the size of the vector** | **Add: O(n) n being the size of the LinkedList**<br>**Remove: O(n) n being the size of the LinkedList**<br>**Contains: O(n) n being the size of the LinkedList** |
| **1.6** | **O(n)**<br>**n being the number of people in the queues** | **O(n)**<br>**n being the number of people in the queues** |

**3.2**

**2.1 The algorithm goes through the string and adding characters different from "[" and "]" to the linked list, keeping track of the position in which the character should be added, when the algorithm reaches a "[", it resets the position back to 0 to go back to the start of the linked list, and when it reaches a "]" it changes the position to the size of the linked list to go to the end.**

**2.2 The algorithm keeps track of the stack every block is on and the order of those stacks. So, when we are asked to move a block, the algorithm knows on which stack the block is on, so it takes blocks off and does the command it is instructed with does blocks.**

**3.3/3.4**

| Exercises | Complexity |
|---|---|
| **2.1** | **$O(n^2)$ n being the number of characters in the string** |
| **2.2** | **O(n*m) n being the number blocks and m being the numbers of commands** |
| **2.3** | **$O(n^2)$ n being the size of the string** |
| **2.4** | **O(n) n being the number of characters** |

## *4) Practice for midterms*

**4.1** res += vector[len(vector)-i-1] * pow(2, i) O(n): n being the length of the vector or list

**4.2** c)O(n) : because he goes through the elements of the linked list once

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**4.3.1** iv

**4.3.2** ii

**4.4.1** token

**4.4.2** a

**4.5** a

**4.6** a

**4.7** iii

**4.8** e) O(n) y O(n)

**4.9.1** a

**4.9.2** c

**4.9.3** c

**4.10.1** d

**4.10.2** c

**4.10.3** b

**4.11.1** b

**4.11.2** b

**4.12.1** !s1.empty()

**4.12.2** s1.pop()

**4.12.3** s2.pop()

**4.13.1** iii

**4.13.2** iii

## *5) Recommended reading (optional)*

Mapa conceptual

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

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6. Meeting minutes

***6.2*** History of changes of the code

***6.3*** History of changes of the report

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