

ESTRUCTURA DE DATOS 1
Código ST0245

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

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3) Practice for final project defense presentation

3.1

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

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