Laboratory practice No. 3: LinkedList and ArrayList

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3) Exercise complexities

	ArrayList	LinkedList
1.1 (list_mult)	**O(n)**	**O(n^2)**
1.2 (smart_insert)	**O(n)**	**O(n^2)**
1.3 (balance)	**O(n)**	**O(n^2)**
1.4 (get_order)	**O(m*n)**	**O(n^3)**

3.3)

For the solution of the problem, a list was implemented, the variables "(int) index", "(boolean) start" and a list were initialized; we proceed to traverse the string entered, and in case of finding a character "[" the variable "start" will be True and false if we find the character "]", then we will go to a condition in which if the character in the index n of the string is not "[" or "]" then the status of the variable "start" is evaluated. If it is True, the character is inserted in the current index of the list, and if it is false, the character is added at the end of the list and in both cases we proceed to increase the variable "index" which represents the aforementioned current index of the list, after having traversed the entire string, we go through the list of characters already ordered and a new string is created with the characters of the list and this in turn is returned by the function.

3.4)

The clomplexity for de function is O(n)

```
start = True                #C1
index = 0                   #C2
lstr  = []                  #C3
nstr  = ""                  #C4
for char in str:            #C5*n
   if char == '[':          #C6*n-1
      start = True          #C7*n-1
```

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```
        index = 0                   #C8*n-1
        continue                    #C9*n-1
    elif char == ']':
        start = False
        continue
    elif char != '[' and char != ']':
        if start:
            lstr.insert(index , char)
            index += 1
        else:
            lstr.append(char)
for letter in lstr:                 #T(n)= (C...)n + (C...)n + C
    nstr += letter                  #O(n)
return nstr
```

3.5)

(string) str: is the entered string.
(Boolean) start: determines if the characters will be entered in the current index or at the end of the list.
(int) index: Counter that represents the current index of the list.
(list) lstr: list where the characters of the string entered will be stored according to the status of the variable "start".
(String) nstr: string that will be generated with the characters stored in the "lstr" list and then returned.

4) Practice for midterms

1. *c*
2. *c*
3.
   a) q.size() > 1
   b) <=
   c) q.remove()
   d) q.remove();
4.
   a) lista.size()
   b) lista.add(auxiliar.pop())
5.
   a) auxiliar1.size() > 0 , auxiliar2.size() > 0
   b) personas.offer(edad)
6. c

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