Laboratory practice No. 3: ArrayList and LinkedList

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3) Practice for final project defense presentation

3.1

	ArrayList	LinkedList
Ejercicio 1.1	O(n)	O(n^2)

In the access it is more effective to use ArrayList since its complexity is O (1), but it lapses in the other operations. Therefore it is advisable to use other data structures that are more balanced in all their operations.

3.2

Explanation of Exercise 2.1: Given a string of characters that will be stored in a linked list we do not know that two keys are pressed since we are too concentrated writing our text, the objective of the problem is to delete these annoying start and end appearances, since we would show a string with very little consistency as output. This problem is most known as breakphone.

To solve this problem we use LinkedLists, since it is a dynamic data structure and it is getting used to the size of the problem we are solving, since our string does not have a defined length. **3.3 Complexity of exercise 2.1:**

The complexity of this exercise is O (N ^ 2).

Explanation: since the size of the list where the characters of our string are to be saved is n, our list will have to search in the n characters to see if it finds the start or end character, since in a linked list look for a character takes n steps said complexities multiply, so the final result of the complexity of our program is O (N ^ 2).

3.4

Explanation of variables exercise 2.1: input: this string is the one that is passed through the showOutput method, its function is to show itself at the end of the string as originally it should be, this is without the characters [or]

N:
This is the size of our string, the objective of having this whole number is to verify that it is greater than 0 (Different from the empty string) and less than 100,000 since this condition is given by the aforementioned problem.

Test: this Scanner has the objective of passing through the console the word that the user is entering

4) Practice for midterms

4.4) A) lista.size() > 0
B) lista.push(auxiliar.removeFirst());

4.5)

4.5.1)

Line 12: auxiliar1.size() > 0

Line 16: auxiliar2.size() > 0

4.5.2)

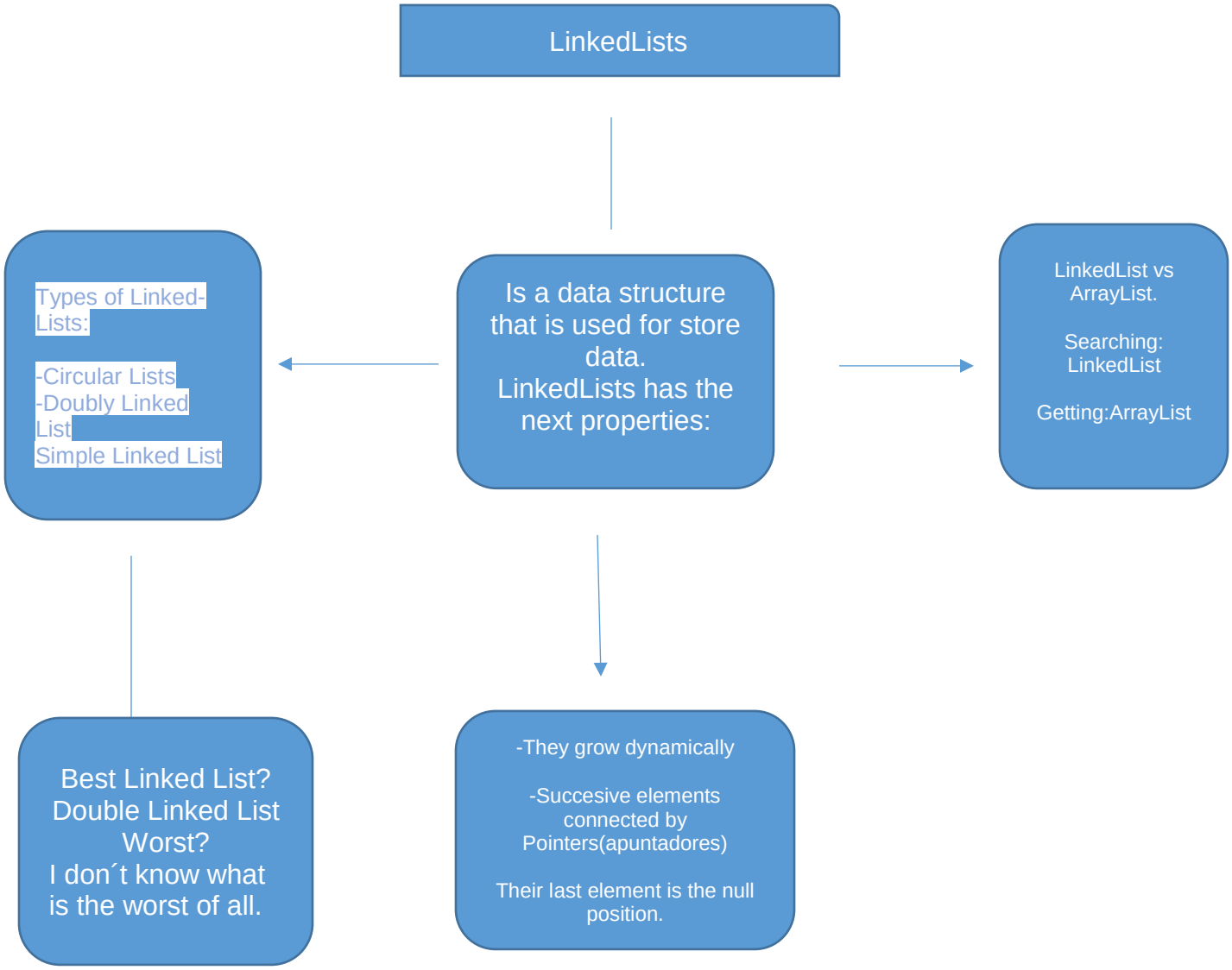
organizar(Queue auxiliar2)

4.6) The complexity of this algorithm is O (n ^ 2) so the answer is C)
4.7) The asymptotic complexity of this algorithm is O (n ^ 3) corresponding to A)
4.8) The complexity of this algorithm is O (n) which corresponds to C) 4.9)
4.9.1) The complexity of this algorithm is O (nlogk) which corresponds to the answer C)
4.9.2) For K = 21 this algorithm prints 12 corresponding to the answer C)
4.9.3) The asymptotic complexity in the worst case to add an element to a queue of n elements is O (1) and the add method always adds the element to the beginning of this. The corresponding answer is C)
4.10)
4.10.1) The complexity of this algorithm is O (logn) that corresponds to the answer A)
4.10.2) The algorithm for x = 8 and n = 20 prints the value of 6 that corresponds to the answer A)
4.10.3) The complexity for this case is O (n) which corresponds to answer B)
4.11)
4.11.1) The complexity for this function is O (max (list) * n ^ 2)
4.11.2) The complexity to insert an element at the beginning of a list of fixes is O (n ^ 2) which corresponds to the answer A)
4.12)
4.12.1) while(s1.hasNext())
4.12.2) s2.push(s1.pop());
4.12.3) s2.pop();

5) Recommended reading (optional)

Mapa conceptual above LinkedLists:

ESTRUCTURA DE DATOS 1 Código ST0245



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