ESTRUCTURA DE DATOS 1
Código ST0245

Laboratory practice No. 5: Graphs.

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3) Practice for final project defense presentation

3.1 In order to get a solution for the exercise from numeral 1 we used adjacency lists because they only keep the information of those graphs that are really connected instead of using adjacency matrices that would have connected all the graphs, with this way of implementing graphs memory is being optimized, and also adjacency lists allows us to remove or insert elements efficiently.

3.2 If we represent the exercise of numeral 1 with adjacency lists as we did, or with any of the other data structures the algorithm would use an approximate space of 30-50 Mb of memory, but if we should have decide to implement the algorithm using adjacency matrices that algorithm should have consumed around 400-500 Gb of memory and also it would costs a time O(n2).

3.3 In our case with the adjacency lists we created an array list in which for each position of this (that indicated a vertex) it was assigned a linked list with the vertex-value pairs of each of the graphs attached to it.

3.4 The data structure used to solve this problem is a non-directed graph represented through a matrix; additionally, an Array List was used for showing the colors with which a node is marked.

3.5 $O(n) + O(n) + O(mn^2) + O(n) = O(mn^2)$

3.6 n = number of nodes contained in the graph.
m = number of graphs to be made

4) Practice for midterms

	0	1	2	3	4	5	6	7
0				1	1			
1	1		1			1		

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4.1

2					1		1	
3								1
4			1					
5								
6			1					
7								

4.2
0 -> [3,4]
1 -> [0,2,5]
2 -> [4,6]
3 -> [7]
4 -> [2]
5 -> []
6 -> [2]
7 -> []

4.3 b) $O(n^2)$

4.4

4.4.1 ii) 1, 4, 5, 0, 2, 3

4.4.2 i) 1, 4, 5, 0, 2, 3

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