

Laboratory practice No. 1 Graph Implementation

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3) Practice for final project defense presentation

3.1 The program works as follows: it is read from an input file, the string is separated into three data that are ID, X coordinate and Y coordinate. It is subsequently stored in a HashMap. The algorithm verifies whether it is a vertex or an arc and, depending on the type, stores them.

3.2 To start an adjacency matrix occupies $O(V^2)$, so if we have 300,000 vertices and each vertex occupies 1 byte. occupy a total of 90 gigabyte

3.3 We had no problems in storing the identifiers, because we assigned them the key in the Hash map

3.4 Our algorithm tries to solve the proposed problem by means of an adjacency matrix, since it is much easier to represent the graph in that way, then the program basically takes care of a cycle through the entire matrix and verifying where there is or no presence of adjacent nodes of the same color, where each color data is stored in an array and then makes the comparison, the size of the matrix is defined by the data that we should have previously entered.

3.5 The complexity of the algorithm is $O(V * E)$

3.6 The variable V means the number of vertex and the variable E the number of edges

ESTRUCTURA DE DATOS 2
Código ST0247

4) Practice for midterms

4.1

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

4.2

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

4.3 (B) $O(n^2)$

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