Laboratory practice No. 5: Graphs

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3) Practice for final project defense presentation

3.1

In numeral 1 we use a data structure that contains an LinkedList to represent the city map. The first LinkedList is a vertex LinkedList and this LinkedList contains all the information of each vertex that is: the id, coordinate in x, coordinate in and name.

The second LinkedList is the one that contains the arcs. Each arc has 2 ids and each corresponding to a vertex, the distance between the vertices, and a name that represents the name of the street.

We implement a class where there are several methods that return with the vertices that are related and another that relates the distance between two vertices

3.2

In this implementation, we will have a relationship in which each node is directly related to its adjacent node. What generates **O(n2).**

On the other hand we have an entire matrix that occupies 90,000,000,000 * 8 = 720,000,000,000 bytes which equals **720 gigabytes**.

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3.3

We implement 2 arraylists: one that will save vertices and another that will save arcs. In this way the positions of the vertex arraylist do not represent the id of each vertex. Here, each vertex take any position in the arraylist and to see its id or other information, you access the attributes of the vertex.

In the arc arraylist, the position in which a certain arc is not it says nothing about this. To see the information of the arc you must access the attributes of this.

3.4

For this algorithm we implemented a graph, since in the problem we were plated with dense graphics, so we used an easier way of organization to perform the methods that were requested

3.5

The complexity of algorithm 2.1 is O (n2).

3.6

The variable n represents the number of vertices.

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4) Practice for midterms

4.1

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

4.2

0 -> [3, 4]

1 -> [0, 2, 5]

2 -> [1, 4, 6]

3 -> [7]

4 -> [2]

5 -> [ ]

6 -> [2]

7 -> [ ]

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4.3 O(n2)

4.4

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

5) Recommended reading (optional)

Mapa conceptual

6) Team work and gradual progress (optional)

6.1 Meeting minutes

Member	***Date***	***Work***
Daniel Cifuentes	20/10/2019	Exercise 1.1 | 2.1 Incomplete
Cristian Giraldo	20/10/2019	Exercise 2.1 Complete
Daniel Cifuentes	21/10/2019	Exercise 3 Incomplete
Cristian Giraldo	21/10/2019	Exercise 3 Complete
Daniel Cifuentes	22/10/2019	Exercise 4 Complete

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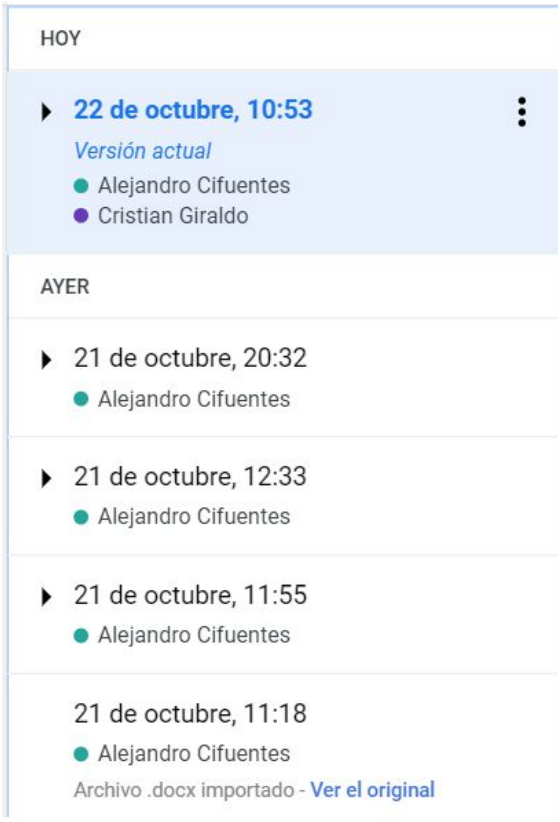
6.3 History of changes of the report



All parties were assembled on 22/10/2019.

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