

Laboratory practice No. 5: Graphs

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3) Practice for final project defense presentation

- 3.1 First, the nodes are stored with its coordinates and name in an ArrayList in order to be easily accessed, and the graph is composed by a hash table of hash tables connected to "pairs"; this pairs contain the weight or distance between the nodes, and the name of it. We used hash tables because for the big amounts of data, a matrix or adjacency lists would be a little bit inefficient, so we decided to implement hash tables to access easily to every intersection without having to create a complete adjacency list.
- 3.2 If we decided to use an adjacency matrix, it would have needed n^2 memory in order to save every intersection between the nodes. for 300000 nodes, that would be 90000000000.
- 3.3 we used the identifiers as Strings for the hash table
- 3.4 The data structure used is the graphs. The implementation is to color a node of a color "1" and ask if the one on the side can be painted with the color "2" without any adjacent colors.
- 3.5 - 3.6 The complexity of the exercise is $O(n * m)$ where "n" is the number of nodes in the graph and m is the number of arcs between the nodes.

4) Practice for midterms

4.1)

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

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ESTRUCTURA DE DATOS 1
Código ST0245

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	0	1	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	1	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 -> []

4.3) b) O(ncuadrado)

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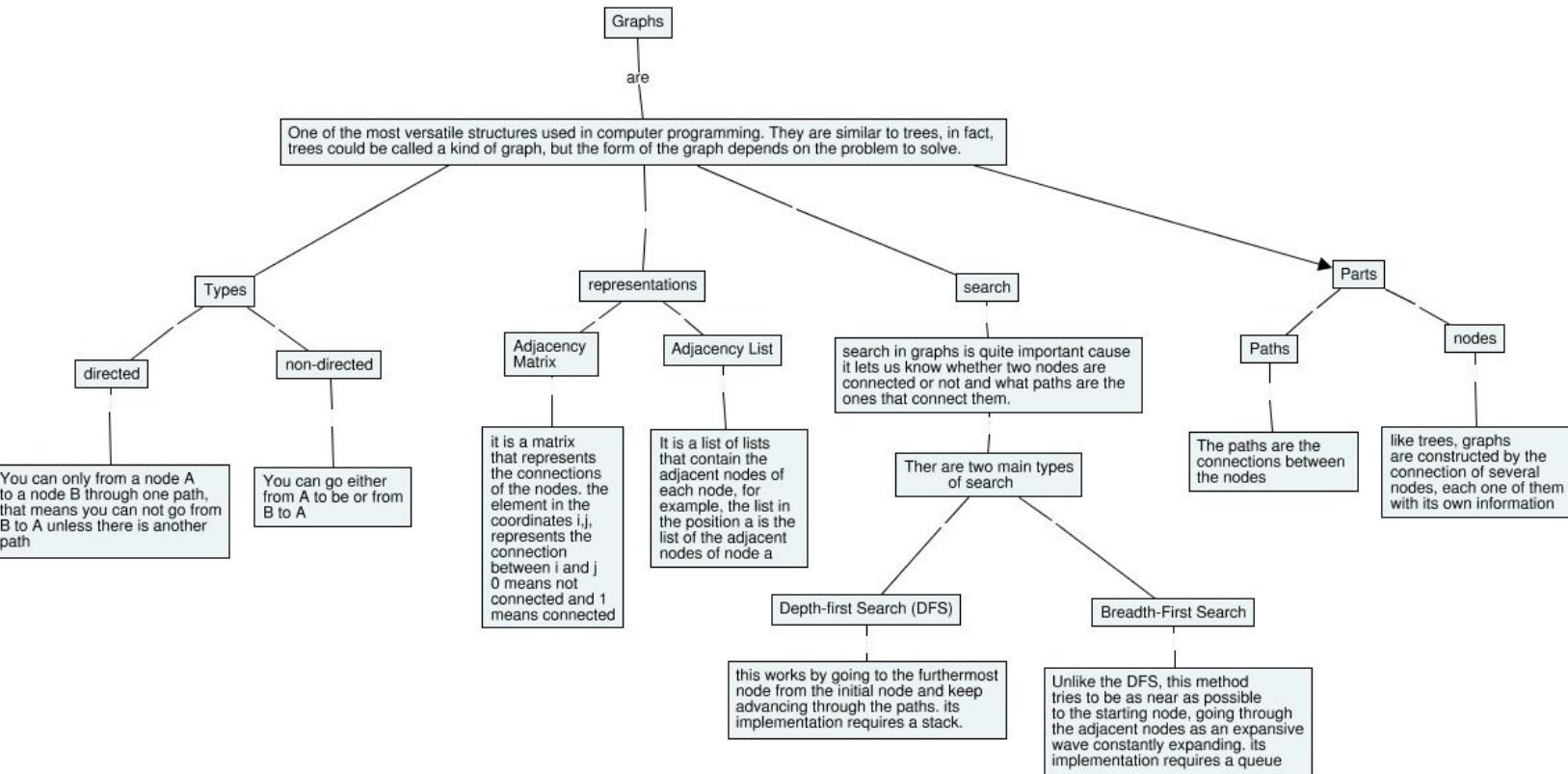
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4.4) ii) 1,4,5,0,2,3

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

5) Recommended reading (optional)



6) Team work and gradual progress (optional)

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