Laboratory practice No. 1: Complete the title of the laboratory practice

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3) Practice for final project defense presentation

3.1 Our code has three clases:

Graph: Creates the object graph, and manages tha adjacency matrix and the vertex (add vertices, add edges). Is abble to modify them and show them.
Vertex:Creates every vertex of the graph and store the princippal information as atributes (label, x-coordinate, y-coordinate, position on the list).
Main: Open the file to be read and interpretered. The information taken to this file will be separated and stored in the corresponding class.

3.2 If we represents the map of Medellin with adjacency matrix, would consume a memory of 90000000000 bits, because adjacency matrix memory is O(V*V).

3.3 This problem coulb be resolved with an instruction code that says the data begins in line 1 and not 0.

3.4 The structure used to store and treat the data in the code were lists. The code has inputs that are the number of nodes, edges and the connections between these nodes, these connections are stored in a list called connections. Then we begin to "classify" the nodes in "color1" and "color2" (lists that represent the two available colors), looking for each node to appear only once in these lists and among the nodes of the same list (for example, between the nodes stored in color1) there are no connections. If a connection is found between the nodes of the same list, the graph will be NOT BICOLORABLE.

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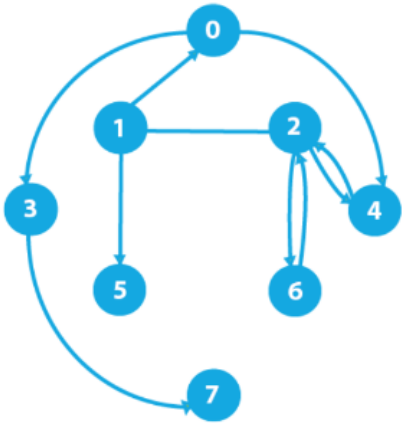
3.5 Complexity $O(n^2)$
3.6 "n" is the number of vertices of the graph. "arcs" is the number of arcs in the graph. "len(color1)" and "len(color2)" is the length of the list color 1 and color2, respectively.

4) Practice for midterms

4.1



4.2

Note: In the graph is not posible to recognize the direction of the edge 1-2. For this exercise we are goin to assume that is form 1 to 2.

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

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4.3 *Adjacency List:*

0 : *[3,4]*
1 : *[0,2,5]*
2 : *[4,6]*
3 : *[7]*
4 : *[2]*
5 : *[ ]*
6 : *[2]*
7 : *[ ]*

4.4 B) O(n*n)

Is the memory ocupated by the worst case of a representation of a graph in a adjacencylista, because it would be a matriz.

5) Recommended reading

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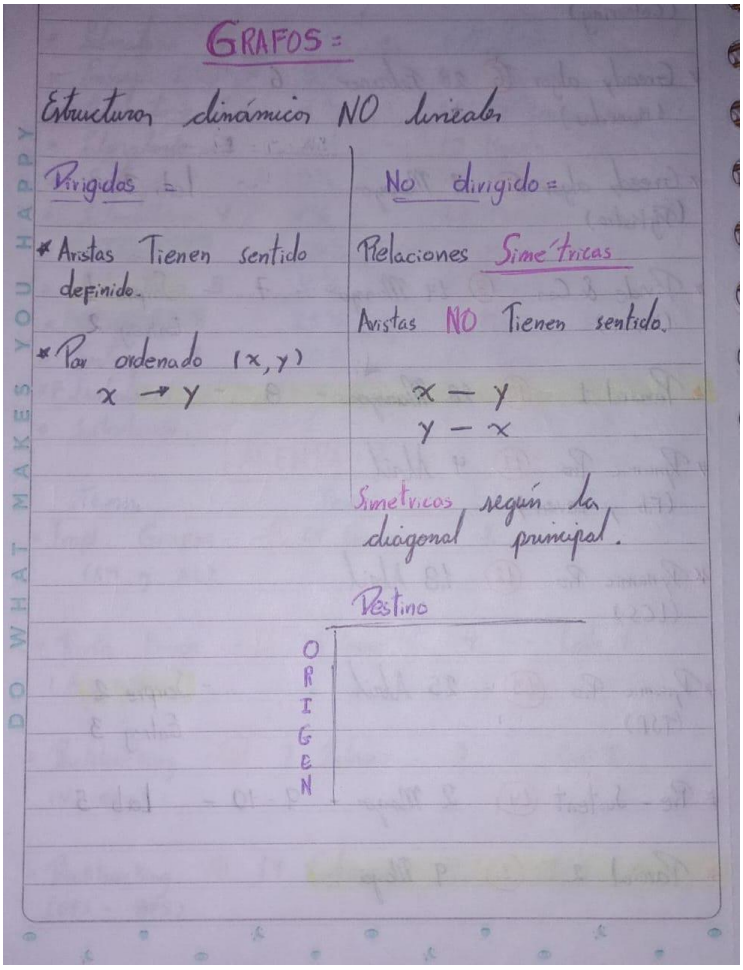

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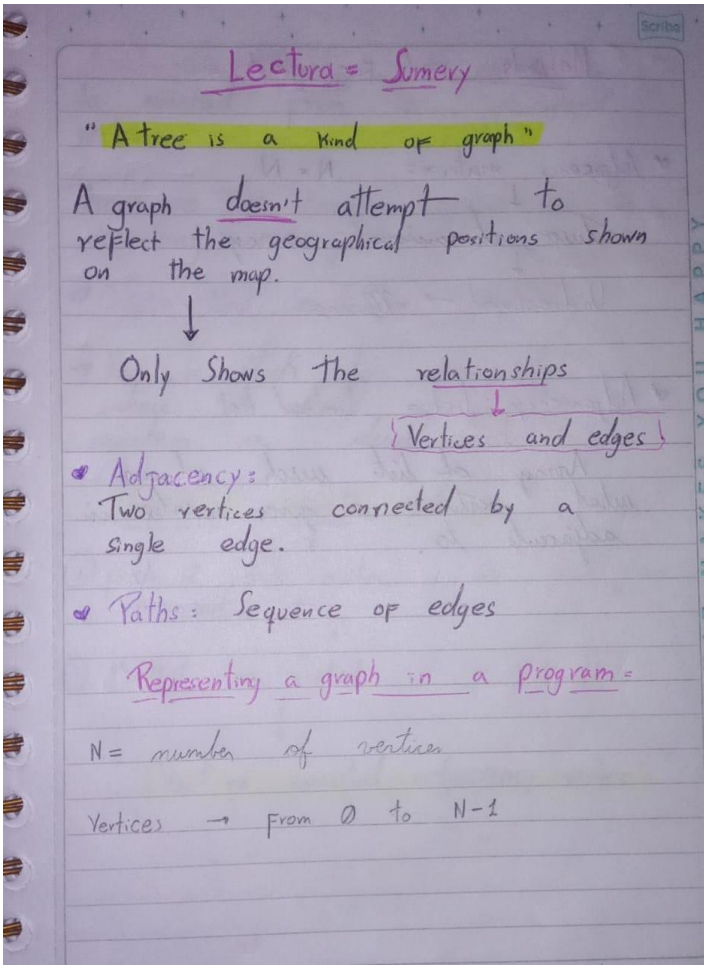

Lectura = Sumery

"A tree is a kind of graph"

A graph doesn't attempt to reflect the geographical positions shown on the map.

↓

Only shows the relationships

↓

{Vertices and edges}

- Adjacency: Two vertices connected by a single edge.
- Paths: Sequence of edges

Representing a graph in a program =

N = number of vertices

Vertices → From 0 to N-1

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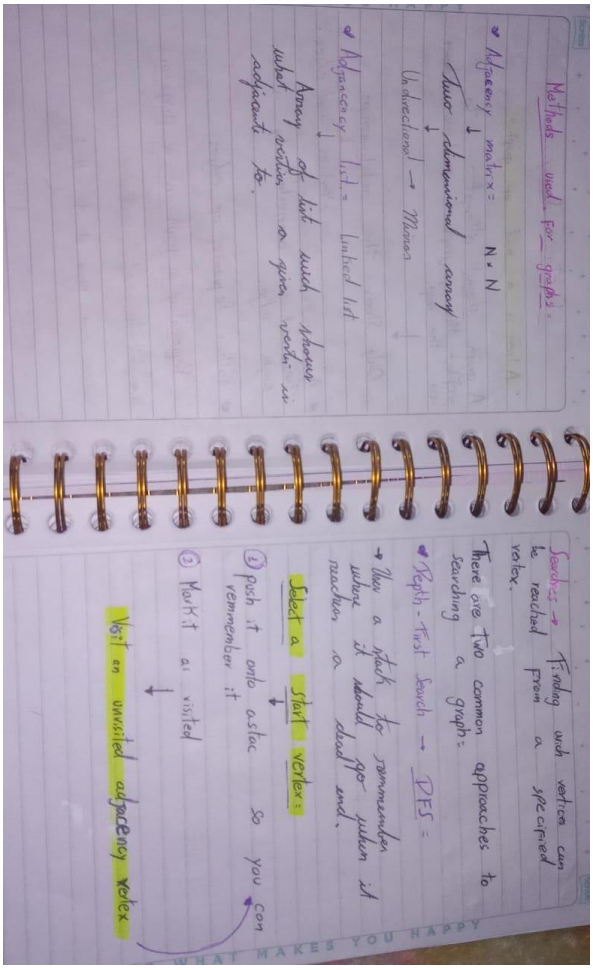

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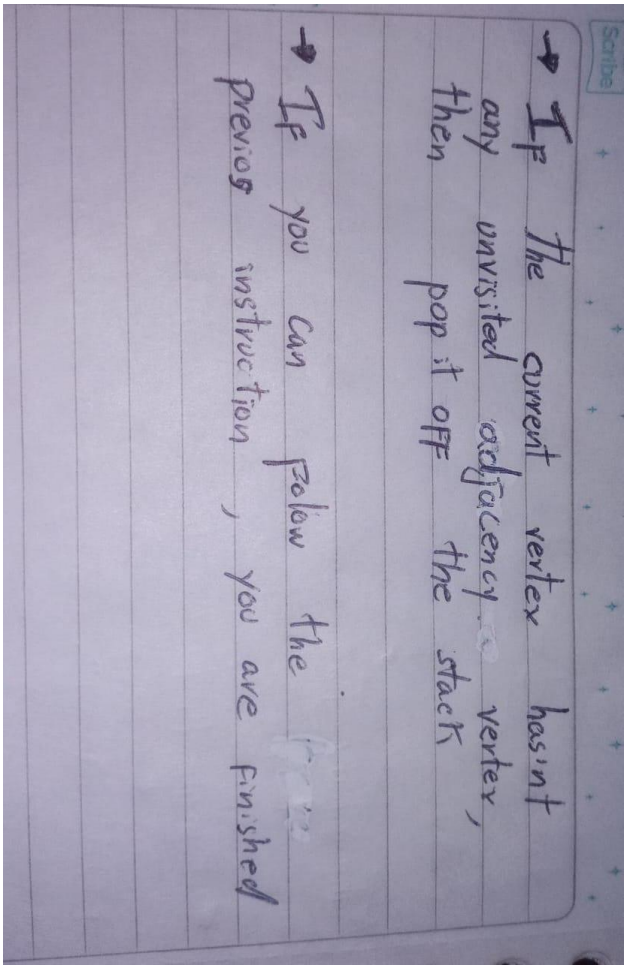

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