Laboratory practice No. 1
Graph Implementation

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3) Practice for final project defense presentation

3.1 The data structure chosen was the HashMap, thanks to the fact that each vertex and each arc can store a LinkedList with the data that corresponds to each one. The vertices and the arcs are not listed sequentially, therefore other data structures can not be used.

3.2 It would consume twice as much memory.

3.3 With the use of the HashMap it does not matter the order in which the data to be stored is entered, therefore, as the identifiers they give us do not have a specific order, this type of errors will not be generated.

3.4 In Exercise 2, an adjacency matrix was used, in which the nodes are stored, which are the ones that give the size of the matrix and an array of the size of the matrix, this in order to simulate the colors to verify if the matrix meets the condition or does not meet the condition. It also has a stack that counts the entered nodes and verifies if the nodes are repeated.
What the algorithms do is to compare if the colors that are inside the matrix are the same, this to indicate whether or not it fulfilled the condition of being bicolorable. The purpose of the stack is to compare the value of the position with the color of the matrix and verify if it is the same if this is fulfilled, it would fulfill the condition of being bicolorable.

3.5 $O(n^2)$

3.6 int[] color→ is the fix that will initialize everything in -1
Stack<Integer> round→ is the stack to make comparisons with the matrix.
int nodes→ is the number of nodes per console.
int arcs→ is the number of arcs per console.
int[][] matrix→ create the matrix.
int origin→ is the coordinate of the origin by console.
int destiny→ is the destination coordinate by console.

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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 $O(n^2)$

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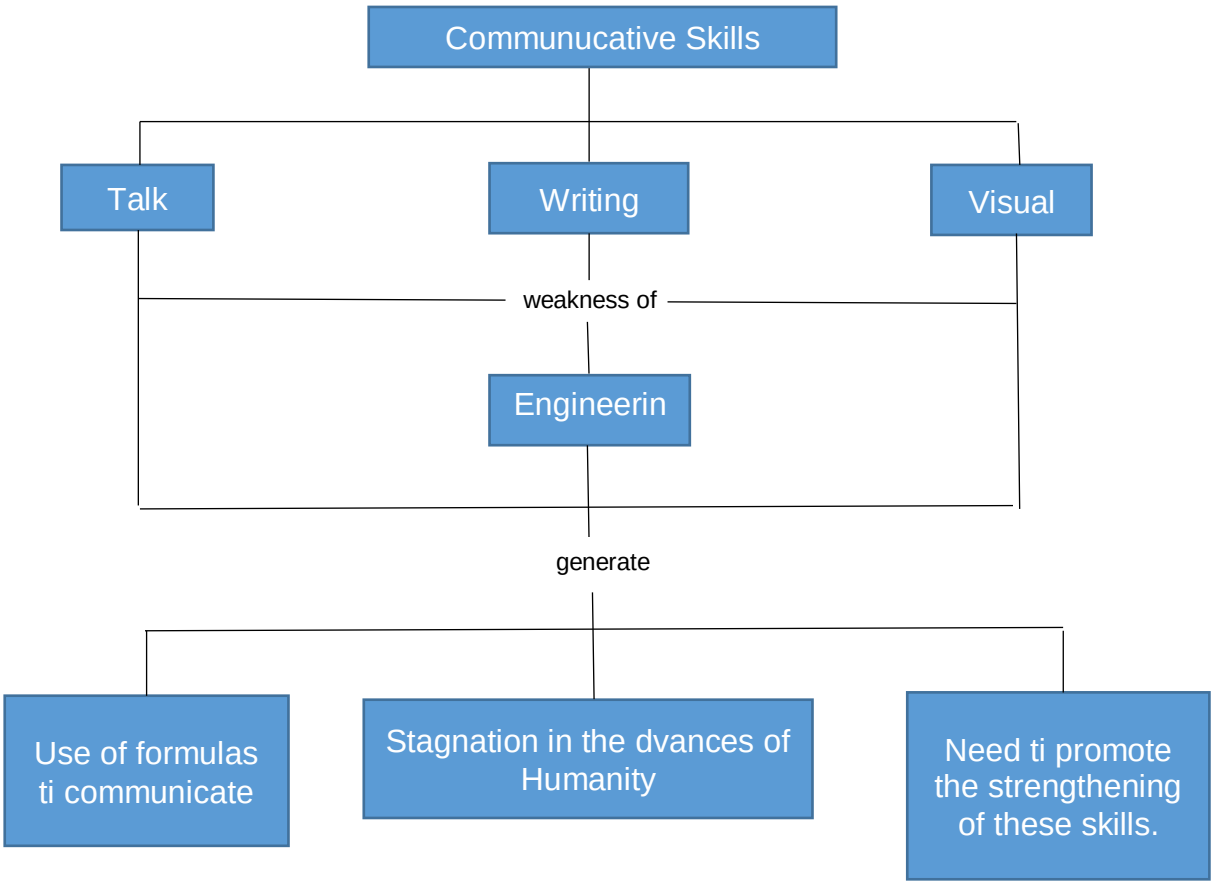
5) Recommended reading (optional)



6) Team work and gradual progress (optional)

6.1 Meeting minutes
6.2 History of changes of the code
6.3 History of changes of the report

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