ESTRUCTURA DE DATOS 1
Código ST0245

Laboratory practice No. 4: Trees

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3) Practice for final project defense presentation

3.1 The tree used into the system file representation was a Red-Black tree, the data structure created stores the directories existing in a directory into Map Table and the files in a directory were these belongs to some user are stored also into a Map Table.

It is said since STL C++ library tell us that every std::map data structure stores they data into a Red-Black tree data structure, this data structures searches on O(logn) time complexity.

The methods to perform the queries have a different time complexity because they not only search a specified value but files and directories with very specific requisites.

Method	Time Complexity
Query 1	$O(r + x + y*z_y + k \log n)$ r: Route length x : Number of directories y : Number of users z_y : Number of files for each respective user k : Number of directories to reach the desire directory
Query 2 Query 3	$O(r + k \log n + u_w*f_i)$ k : Number of directories to reach the desire directory r : Route length u : The directory w : Every directory found f : Represents a file i : Every file on every directory found

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3.2 No, it is not possible, the way how we insert depends on how the person that is inserting the data want it to be modeled, and for the search it also depends where it was inserted and since we do not know where the name of that respective person is going to be, it will be always O(n) where n represents the name of persons on your genealogical tree.

3.3 The input given is put into a Binary Search data structure, then just by a recursive algorithm it goes first through every left branch until it gets into all leafs on that side, then it will go over the stack generated and will print out all the leafs on the right hand side in the root indicated, once both leafs are print out the algorithm prints the root of the subtree it is in (left - right - root).

3.4

Method	Time Complexity
add(int x) : Binary Tree	**O(n)**
postorder (Node *n)	**O(n)**

Therefore O(n) + O(n), then O(2n), which is the same as O(n) being this the time complexity for this problem.

3.5 n : Number of elements given.

4) Practice for midterms

4.1
- ***4.1a*** 1+altura(raiz.izq)
- ***4.1b*** 1+altura(raiz.der)

4.2 c

4.3
- ***4.3a*** false
- ***4.3b*** 0
- ***4.3c*** (a.izq, suma-a.dato)
- ***4.3d*** (a.der, suma-a.dato)

4.4
- ***4.4.1*** c
- ***4.4.2*** a
- ***4.4.3*** d
- ***4.4.4*** a

4.5
- ***4.5a*** (toInsert == null)
- ***4.5b*** (toInsert > p.data)

4.6

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4.6.1 d
4.6.2 return 0
4.6.3 == 0

4.7
4.7.1 a
4.7.2 b

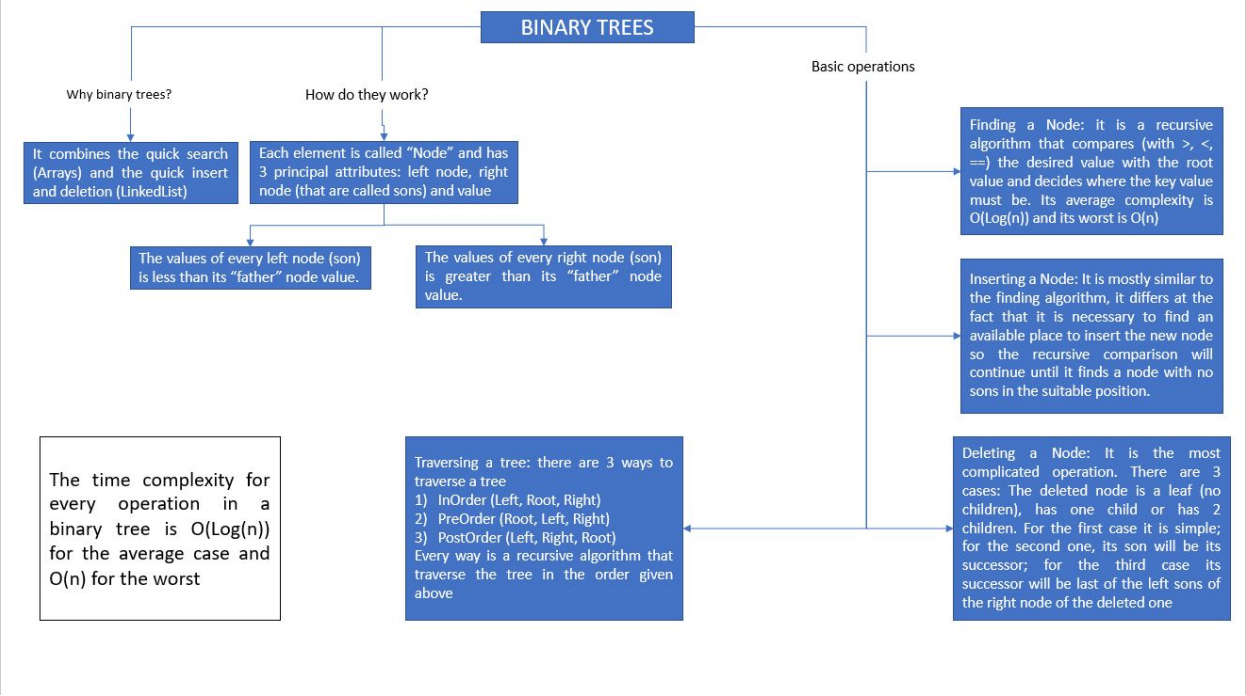
4.8 b
4.9 a
4.10 b

4.11
4.11.1 b
4.11.2 a
4.11.3 b

4.12
4.12.1 i
4.12.2 a
4.12.3 a

4.13
4.13.1 e.id
4.13.2 a

5) Recommended reading



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6) Team work and gradual progress

6.1 Meeting minutes

Member	Data	Done	Doing	To Do
Miguel Pablo	2019/10/05		Worksheet point 1	Worksheet points 2, 3, 4, 5 , 6
Miguel	2019/10/06		Worksheet point 1 readjustments	Worksheet points 2, 3, 6
Miguel	2019/10/06	Worksheet point 1	Worksheet point 2	Worksheet points 3, 6
Pablo	2019/10/06		Worksheet point 4	Worksheet point 5
Miguel	2019/10/06	Worksheet point 2	Worksheet point 3	Worksheet point 6
Pablo	2019/10/06	Worksheet point 4	Worksheet point 5	
Miguel	2019/10/06	Worksheet point 3	Worksheet point 6	
Pablo	2019/10/06	Worksheet point 5		
Miguel	2019/10/06	Worksheet point 6		

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6.2 History of changes of the code

```
*           commit    0765edff3c868176c3e82296ef4fd15387228cb7    (HEAD    ->    master,
        origin/master, origin/HEAD)
|\  Merge: 9385037 24edebf
| | Author: miguelmque <macorream@eafit.edu.co>
| | Date:   Sun Oct 6 23:43:53 2019 -0500
| |
| |     Merge remote-tracking branch 'origin'
| |
| * commit 24edebf8cd44db79564a4a94b69a3a4732c78add
| | Author: miguelmque <miguelmque@gmail.com>
| | Date:   Sun Oct 6 23:42:49 2019 -0500
| |
| |     point1 solved
| |
```

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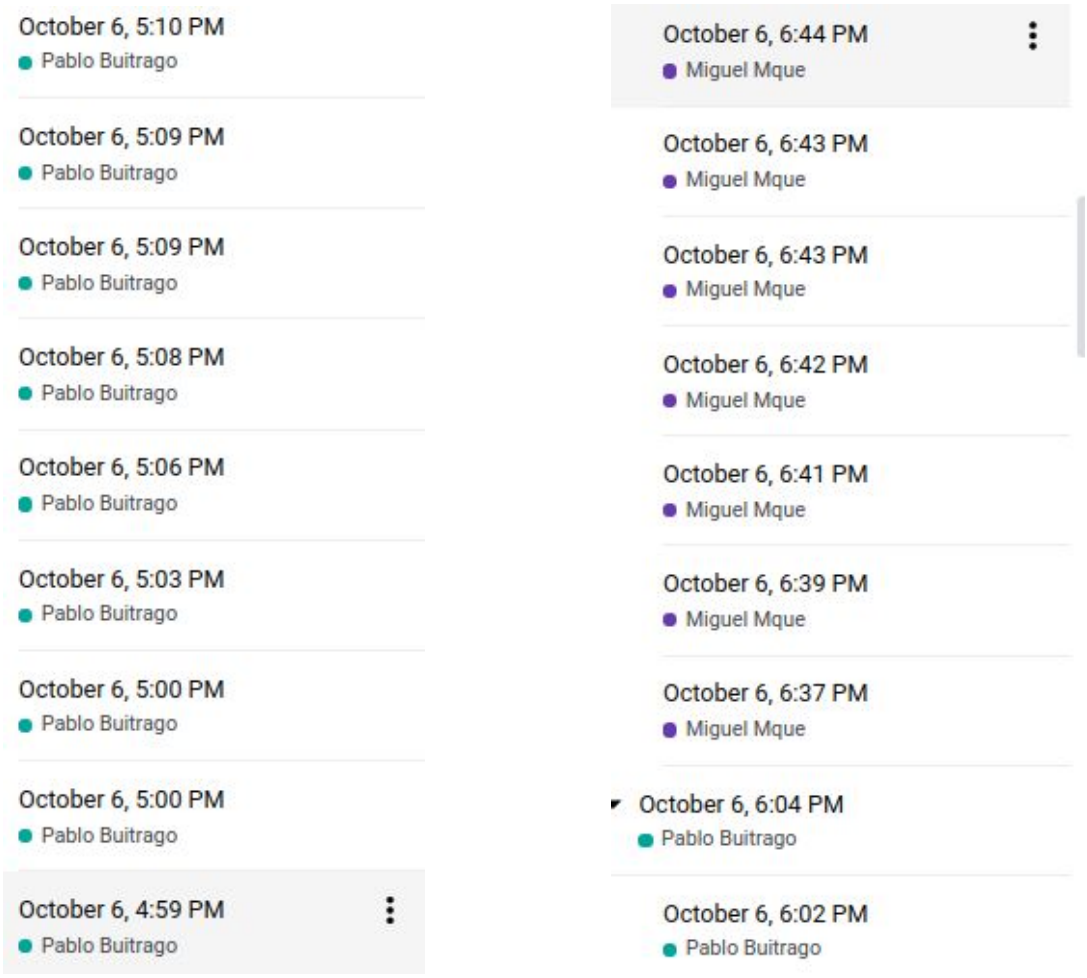
6.3 History of changes of the report



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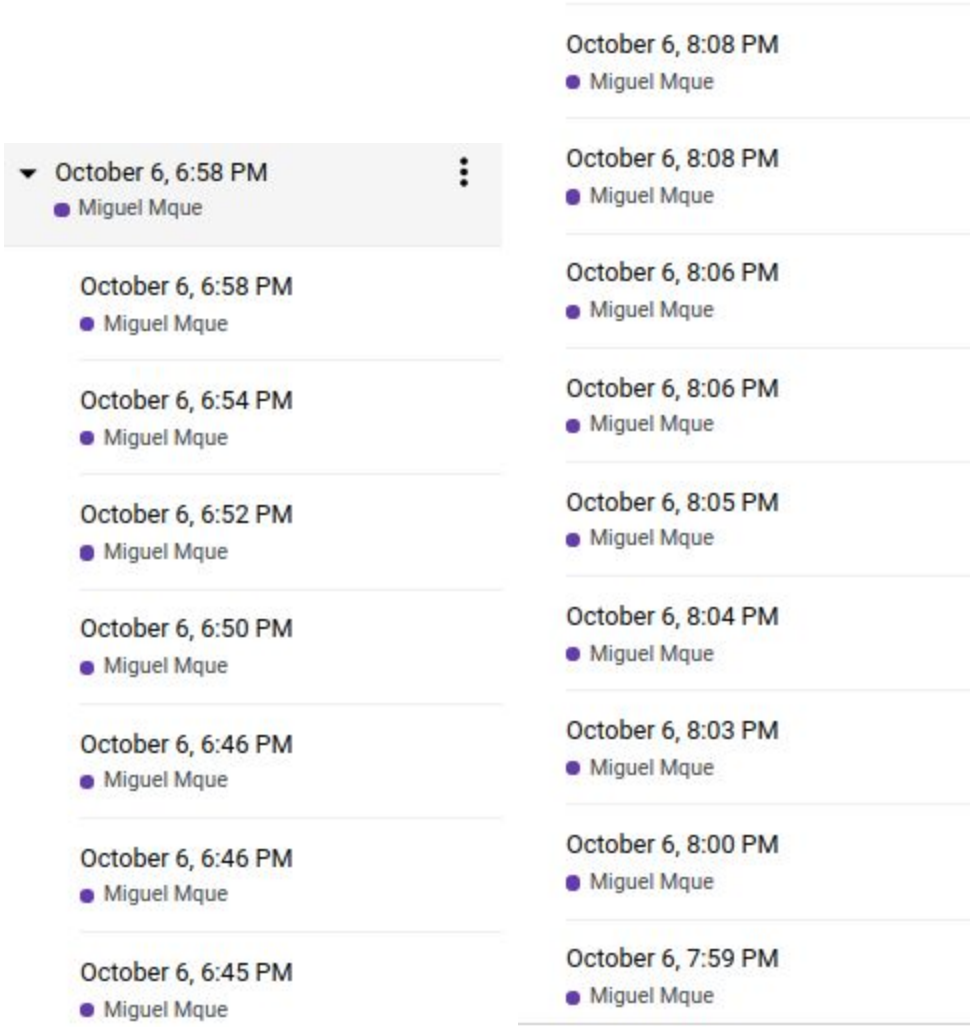

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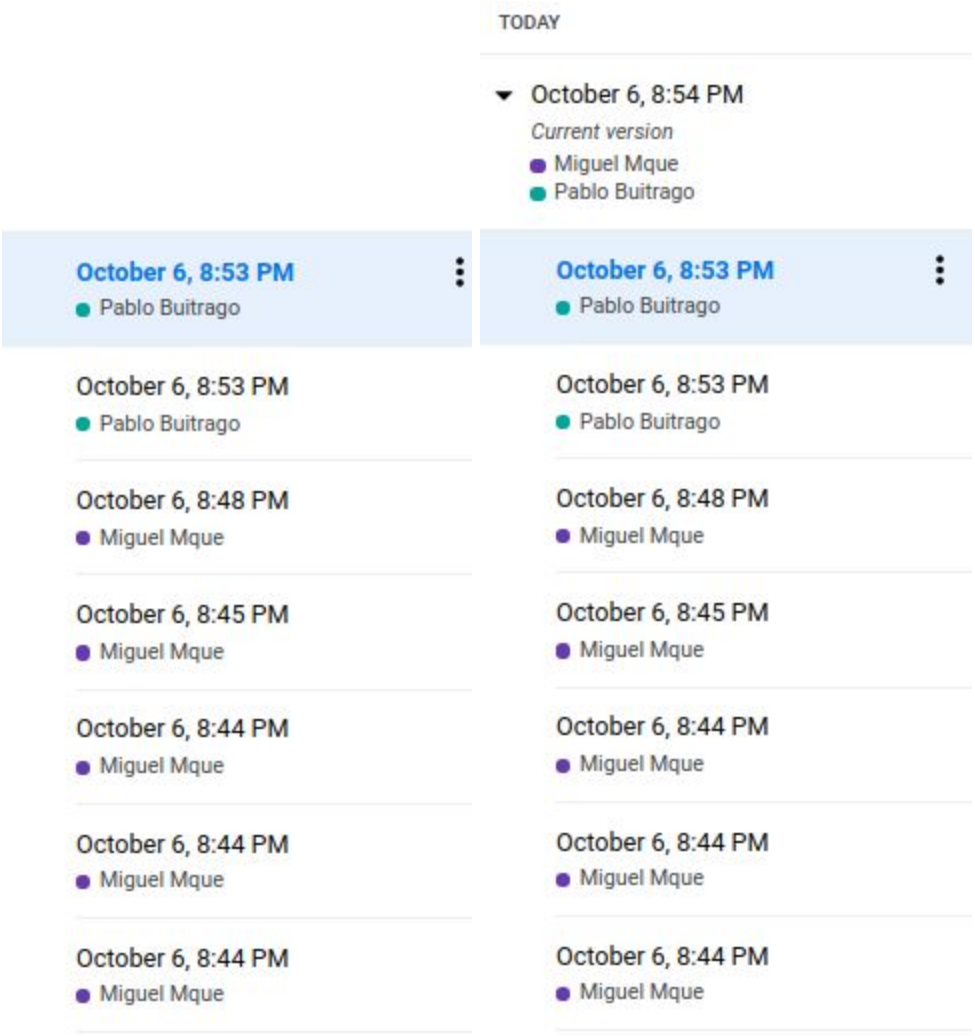

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