# **Laboratory practice No. 4: Hash Tables and Trees**

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1. **Practice for final project defense presentation**
   1. I choose the octree structure, is efficient and fast, allows me to know which bees are pretty near without calculate the distance between each bee in the map, divides the map in zones and verify the presence of bees, and the size of the zone to determinate the risk of collision. The complexity of the algorithm is O(nlog(n)).
   2. .
   3. The algorithm for the exercise 2.1. consist in take the pos-order numbers of the tree and add them to the tree, as they appear in to the tree using the logic applied to the binary search trees, then use the traversalPreOrder function to print the numbers, this works, because the pos order has the first number as the root and then the left nodes and the right nodes, then is just print them in pre order which takes first the left nodes, right nodes and finally the value of the root.
   4. 2.1 is O(n)
   5. 2.1 n is the quantity of numbers which are inserted in pos-order.

***4) Practice for midterms***

* 1. b

*O(1)*

* 1. c, 3
  2. *A. suma*

*B. suma + a.data;*

*C. a.left, suma + a.data;*

*D. a.right, suma + a.data;*

* 1. C

O(n)

D

A

* 1. a) p.data == toInsert

b) p.data > toInser

* 1. D

Suma

== 1

* 1. A

B

D

* 1. .
  2. A