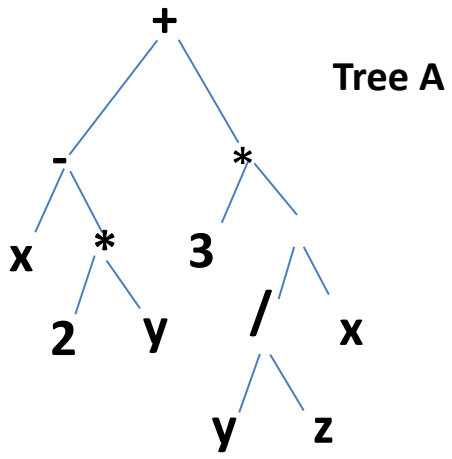
Exercice 01: An arithmetic expression can be represented by a binary tree. If it only uses binary operators (+, -, *, /), the tree is locally complete.
Let the arithmetic expression represented by the tree A be:

1) Is A degenerate? Complete? Perfect?
2) Does it contain a left comb subtree? Right comb?
3) Give the expressions represented by A when A is read in prefix, infix, and postfix order. Conclude.



Tree A

Exercise 02:

1) Give the number of locally complete binary trees of size 2n+1

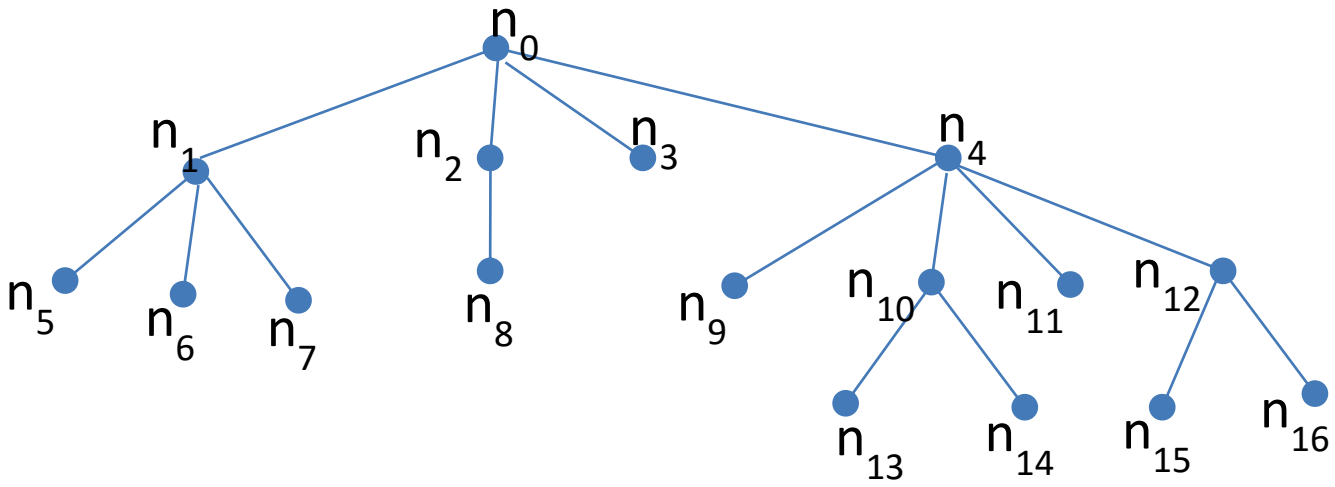
2) Deduce all locally complete binary trees whose symmetric traversal gives the expression: 2+3*4+5

3) Give a procedure for correctly parenthetizing an expression representing a tree.

Exercise 03: write a program for the construction operation :

< _ , _ , _ > :Node x GenTree x GenTree → GenTree for chained representation.

Exercise 04: Let the following general tree be :



1) Give a procedure (based on the one in the course) that allows you to traverse the tree as shown in the expression :

$(n_0(n_1(n_5)(n_6)(n_7))(n_2(n_8))(n_3)(n_4(n_9)(n_{10}(n_{13})(n_{14}))(n_{11})(n_{12}(n_{15})(n_{16}))))$

2) Same question for:

$n_0(n_1(n_5, n_6, n_7), n_2(n_8), n_3, n_4(n_9, n_{10}(n_{13}, n_{14}), n_{11}, n_{12}(n_{15}, n_{16})))$

2) Transform this tree into a binary tree.

Exercise 05: : Construct a BST for the ordered set of values E ={ 25, 60, 35, 10, 5, 20, 65, 45, 70, 40, 15, 43, 30, 37}

a) By addition to the leaves

b) By addition in root

c) Give the 3 path expressions

d) Deletion of 60, Insertion of 22

Exercice 06: Function for adding to the leaves

Exercice 07: Function for addition to root

Exercice 08 : Function for deletion in SBT