Final Project – FAQ

What is the general form of a string representing an expression tree? (This string will be printed to the output file)

Recall in the assignment document you were asked to implement a function which receives a tree representing an expression (**SPTree* tree**). The pseudo code for generating this string is as follow:

```
String treeToStr(SPTree* tree):
1- if tree==NULL return ""
2- if isInteger(tree->txt) || isVariable(tree->txt)
        return "(" + "tree->txt + ")"
3- if isBinaryOperation(tree->txt)
        String str_0=NULL, str_1=NULL;
        foreach(int i : Tree->Children){
            if isInteger(Tree->Children[i]) || isVariable(Tree->Children[i])
                str_i =  Tree->Children[i]->txt
            else
                str_i = treeToStr(Tree->Children[i])
        }
   return "(" + str_1 + tree->txt + str_2 + ")"

4- if isUnaryOperation(tree->txt)
         str_0 = NULL
         if isInteger(Tree->Children[0]) || isVariable(Tree->Children[0])
                str_0 =  Tree->Children[0]->txt
            else
                str_0 = treeToStr(Tree->Children[0])
          return "(" + tree->txt + str_0 + ")"
5- if isMax/MinOperation(tree->txt)
        String str_i=NULL; //Foreach i
        foreach(int i : Tree->Children){
            if isInteger(Tree->Children[i]) || isVariable(Tree->Children[i])
                str_i =  Tree->Children[i]->txt
            else
                str_i = treeToStr(Tree->Children[i])
        }
        return "("tree->txt+"("+str_1+","+..+","+str_n+")"+")"

6 – if isAssignment(tree->txt):
    return "(" + tree->Children[0] + "=" + treeToStr(tree->children[1]) + ")"
```

Notes:

- The general rule is as follow, if the expression is a variable/integer. Then return "(exp)". If the expression contains integers/variables, then don't put parenthesis to the integers/variables (We don't want the expression to be too messy!"
- This is a pseudo code – You should read carefully the example we saw in the tutorial on how to construct a string recursively.