

Informatik für Mathematiker und Physiker HS15

Exercise Sheet 10

Submission deadline: 15:15 - Tuesday 24th November, 2015

Course URL: <http://lec.inf.ethz.ch/ifmp/2015/>**Assignment 1 – Skript-Aufgabe 136**

The *nesting depth* of an arithmetic expression counts how many pairs of parentheses enclose the innermost number in the expression. For example, the expression 5 has nesting depth 0, $(3+4) * (5/6)$ has nesting depth 1, $((3+4) * (5/6))$ has nesting depth 2, and $2 * (3 * (4 * (5 * 6)))$ has nesting depth 3 (attained by the numbers 5 and 6).

- Formally define the nesting depth of an arithmetic expression given by the BNF of the calculator from the lecture. This means that you have to find formulas for how to compute the nesting depth for each of the following non-terminal BNF-symbols: `expression`, `term`, `factor`.
- Write a program `nesting_depth.cpp` that computes the nesting depth of an expression using your formulas from part a)!

Hint: you can adapt the program `calculator_r.cpp` from the lecture website.

Judge Examples(Explanation: http://lec.inf.ethz.ch/ifmp/2015/judge_boxes.html)`(((((2))))))`

7

5

0

`(2+3) * (4+5 * (6+7)) - 8 * (9+1)`

2

Submission: <https://challenge.inf.ethz.ch/team/websubmit.php?cid=5&problem=MP15101>