Software-Modellierung und Verifikation
Informatik 2
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7. Exercise sheet *Compiler Construction 2010*

Due to Wed., 8th December 2010, *before* the exercise course begins.
Hand in your solutions in groups of three or four!

Exercise 7.1: **(4 points)**

Let G_{bool} be the following grammar:

$$\begin{array}{lcl} A & \rightarrow & B \\ B & \rightarrow & (B \wedge B) \mid \neg B \mid t \mid f \end{array}$$

- Calculate the $LR(0)$ information.
- Provide the $LR(0)$ analysis table for G_{bool}.
- State the run of the $LR(0)$ automaton for the input word $((\neg t \wedge f) \wedge (f \wedge t))$.

Exercise 7.2: **(3 points)**

Show that the class of all regular languages is orthogonal to the class $\mathfrak{L}(LR(0))$ of all $LR(0)$ languages.

Exercise 7.3: **(4 points)**

- Give a method to calculate $LALR(1)$ sets, which gets by without calculating the $LR(1)$ sets first.
- Apply your approach to the following grammar:

$$\begin{array}{lcl} S & \rightarrow & aaSb \mid A \mid \epsilon \\ A & \rightarrow & aA \mid c \end{array}$$