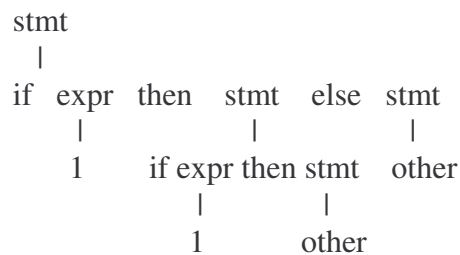
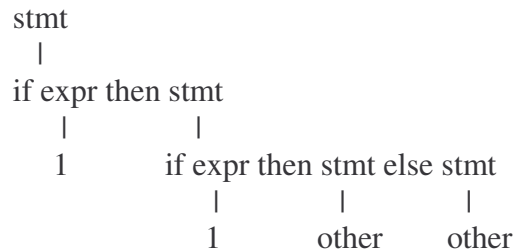


Musterlösung Übungsblatt 5

1. a)

Zwei verschiedene Parsebäume für Wort „if 1 then if 1 then other else other“:



b)

Idee: Zwischen “then” und “else” geschachtelte “if...then”s müssen auch ein “else” haben.

$S1 \rightarrow \text{if expr then } S1 \mid \text{if expr then } S2 \text{ else } S1 \mid \text{other}$

$S2 \rightarrow \text{if expr then } S2 \text{ else } S2 \mid \text{other}$

c)

$S1 \rightarrow \text{if expr then } S1_1 \{ \text{out} = \text{newlabel}();$
 $S1.t = \text{expr.t} + \text{"gofalse "+"out+"}\backslash\text{"} + S1_1.t + \text{"label "+"out+"}\backslash\text{"}; \}$
 $\mid \text{if expr then } S2 \text{ else } S1_1 \{ \text{out} = \text{newlabel}(); \text{else} = \text{newlabel}();$
 $S1.t = \text{expr.t} + \text{"gofalse "+"else+"}\backslash\text{"}$
 $+ S2.t + \text{"goto "+"out+"}\backslash\text{"}$
 $+ \text{"label "+"else+"}\backslash\text{"} + S1_1.t$
 $+ \text{"label "+"out+"}\backslash\text{"}; \}$
 $\mid \text{other} \{ S1.t = \text{other.t}; \}$

$S2 \rightarrow \text{if expr then } S2_1 \text{ else } S2_2 \{ \text{out} = \text{newlabel}(); \text{else} = \text{newlabel}();$
 $S2.t = \text{expr.t} + \text{"gofalse "+"else+"}\backslash\text{"}$
 $+ S2_1.t + \text{"goto "+"out+"}\backslash\text{"}$
 $+ \text{"label "+"else+"}\backslash\text{"} + S2_2.t$
 $+ \text{"label "+"out+"}\backslash\text{"}; \}$
 $\mid \text{other} \{ S2.t = \text{other.t}; \}$