EDAN65: Compilers
Computer Science
Lund University

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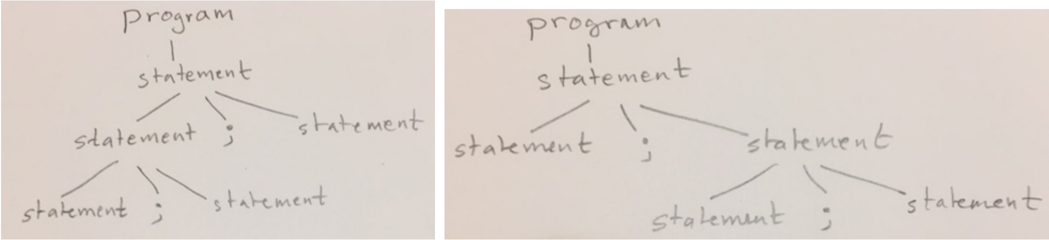
E06: LR parsing

solutions

E06-1: Solution:

(a) Parse trees:



(b) **LR actions**

The table below shows each action, followed by the resulting stack and the remaining input. The stack and input are separated by a dot (shown as an asterisk). The stack consists of a sequence of nonterminals and terminals. If a nonterminal has children, they are shown within parentheses, following the nonterminal.

For the left-recursive tree, the sequence is:

```
                                        * ; ; EOF
reduce $p_4$    s                       * ; ; EOF
shift ";"     s ;                     *   ; EOF
reduce $p_4$    s ; s                   *   ; EOF
reduce $p_2$    s(s ; s)                *   ; EOF
shift ";"     s(s ; s) ;              *     EOF
reduce $p_4$    s(s ; s) ; s            *     EOF
reduce $p_2$    s(s(s ; s) ; s)         *     EOF
reduce $p_1$    p(s(s(s ; s) ; s))      *     EOF
accept
```

And for the right-recursive tree, the sequence is:

```
                                        * ; ; EOF
reduce $p_4$    s                       * ; ; EOF
shift ";"     s ;                     *   ; EOF
reduce $p_4$    s ; s                   *   ; EOF
shift ";"     s ; s ;                 *     EOF
reduce $p_4$    s ; s ; s               *     EOF
reduce $p_2$    s ; s(s ; s)            *     EOF
reduce $p_2$    s(s ; s(s ; s))         *     EOF
reduce $p_1$    p(s(s ; s(s ; s)))      *     EOF
accept
```