Compiler 5-1&2

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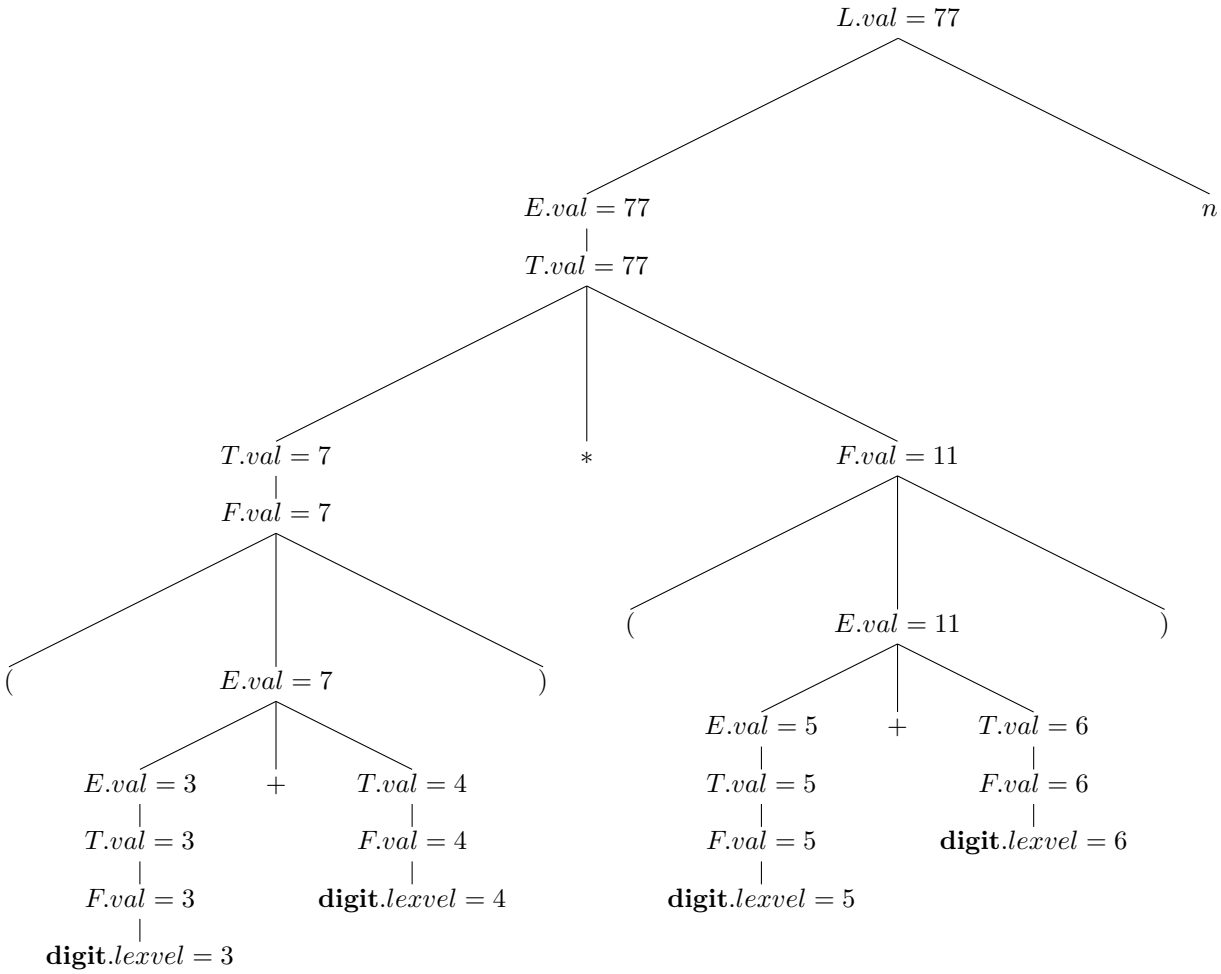
5.1.1



5.1.2

产生式	语法规则
$L \to En$	$L.val = E.val$
$E \to TE'$	$E'.inh = T.val$ $E.val = E'.syn$
$E' \to +TE_1{}'$	$E_1{}'.inh = E'.inh + T.val$ $E'.syn = E_1{}'.syn$
$E' \to \epsilon$	$E'.syn = E'.inh$
$T \to FT'$	$T'.inh = F.val$

产生式	语法规则 $T.val = T'.syn$
$T' \to *FT_1{}'$	$T_1{}'.inh = T'.inh \times F.val$ $T'.syn = T_1{}'.syn$
$T' \to \epsilon$	$T'.syn = T'.inh$
$F \to (E)$	$F.val = E.val$
$F \to \textbf{digit}$	$F.val = \textbf{digit}.lexval$

5.2.3

1. 不满足; 满足; 存在;
2. 不满足; 满足; 存在;
3. 满足; 满足; 存在;
4. 不满足; 不满足; 不存在.

5.3.1

1. SSD:

产生式	语法规则
$E \to E_1 + T$	$E.type = (E_1.type == int \ \&\& \ T.type == int) \ ? \ int \ : \ float$
$E \to T$	$E.type = T.type$
$T \to \textbf{num.num}$	$T.type = float$
$T \to \textbf{num}$	$T.type = int$

2. SSD:

产生式	语法规则
$E \to E_1 + T$	$E.type = (E_1.type == int \ \&\& \ T.type == int) \ ? \ int \ : \ float$ **if** $(E_1.type == T.type)$ $E.post = E_1.post \ \ T.post \ +$ **else if** $(E_1.type == int)$ $E.post = \textbf{intToFloat}(E_1.post) \ \ T.post \ +$ **else** $E.post = E_1.post \ \ \textbf{intToFloat}(T.post) \ +$
$E \to T$	$E.type = T.type$ $E.post = T.post$
$T \to \textbf{num}$	$T.type = int$ $T.post = \textbf{num}$
$T \to \textbf{num.num}$	$T.type = float$ $T.post = \textbf{num.num}$

5.4.2

$A \to 0A'$
$A' \to \{a\}BA'|B\{b\}A'|\epsilon$
$B \to 1B'$
$B' \to \{c\}AB'|A\{d\}B'|\epsilon$

5.4.6

- SSD:

产生式	语法规则
$S \to B$	$B.ps = 10$
$B \to B_1\ B_2$	$B_1.ps = B.ps$ $B_2.ps = B.ps$ $B.ht = max(B_1.ht, B_2.ht)$ $B.dp = max(B_1.dp, B_2.dp)$ $B.le = B_1.le + B_2.le$
$B \to B_1$ **sub** B_2	$B_1.ps = B.ps$ $B_2.ps = 0.7 \times B.ps$ $B.ht = max(B_1.ht, B_2.ht - 0.25 \times B.ps)$ $B.dp = max(B_1.dp, B_2.dp + 0.25 \times B.ps)$ $B.le = B_1.le + 0.7 \times B_2.le$
$B \to (B_1)$	$B_1.ps = B.ps$ $B.ht = B_1.ht$ $B.dp = B_1.dp$ $B.le = B_1.le + getLe(B_1.ps, `(') + getLe(B_1.ps, `)')$
$B \to$ **text**	$B.ht = getHt(B.ps, \textbf{text}.lexval)$ $B.dp = getDp(B.ps, \textbf{text}.lexval))$ $B.le = getLe(B.ps, \textbf{text}.lexval$

- SDT:

产生式	语义动作
$S \to$ B	$\{B.ps = 10;\}$
$B \to$ B_1 B_2	$\{B_1.ps = B.ps;\}$ $\{B_2.ps = B.ps;\}$ $\{B.ht = max(B_1.ht, B_2.ht);$ $B.dp = max(B_1.dp, B_2.dp);$ $B.le = B_1.le + B_2.le;\}$
$B \to$ B_1 **sub** B_2	$\{B_1.ps = B.ps;\}$ $\{B_2.ps = 0.7 \times B.ps;\}$ $\{B.ht = max(B_1.ht, B_2.ht - 0.25 \times B.ps);$ $B.dp = max(B_1.dp, B_2.dp + 0.25 \times B.ps);$ $B.le = B_1.le + 0.7 \times B_2.le;\}$
$B \to$ (B_1)	$\{B_1.ps = B.ps;\}$ $\{B.ht = B_1.ht;$ $B.dp = B_1.dp;$ $B.le = B_1.le + getLe(B_1.ps, `(') + getLe(B_1.ps, `)');\}$
$B \to$ **text**	$\{B.ht = getHt(B.ps, \textbf{text}.lexval);$ $B.dp = getDp(B.ps, \textbf{text}.lexval);$ $B.le = getLe(B.ps, \textbf{text}.lexval);\}$