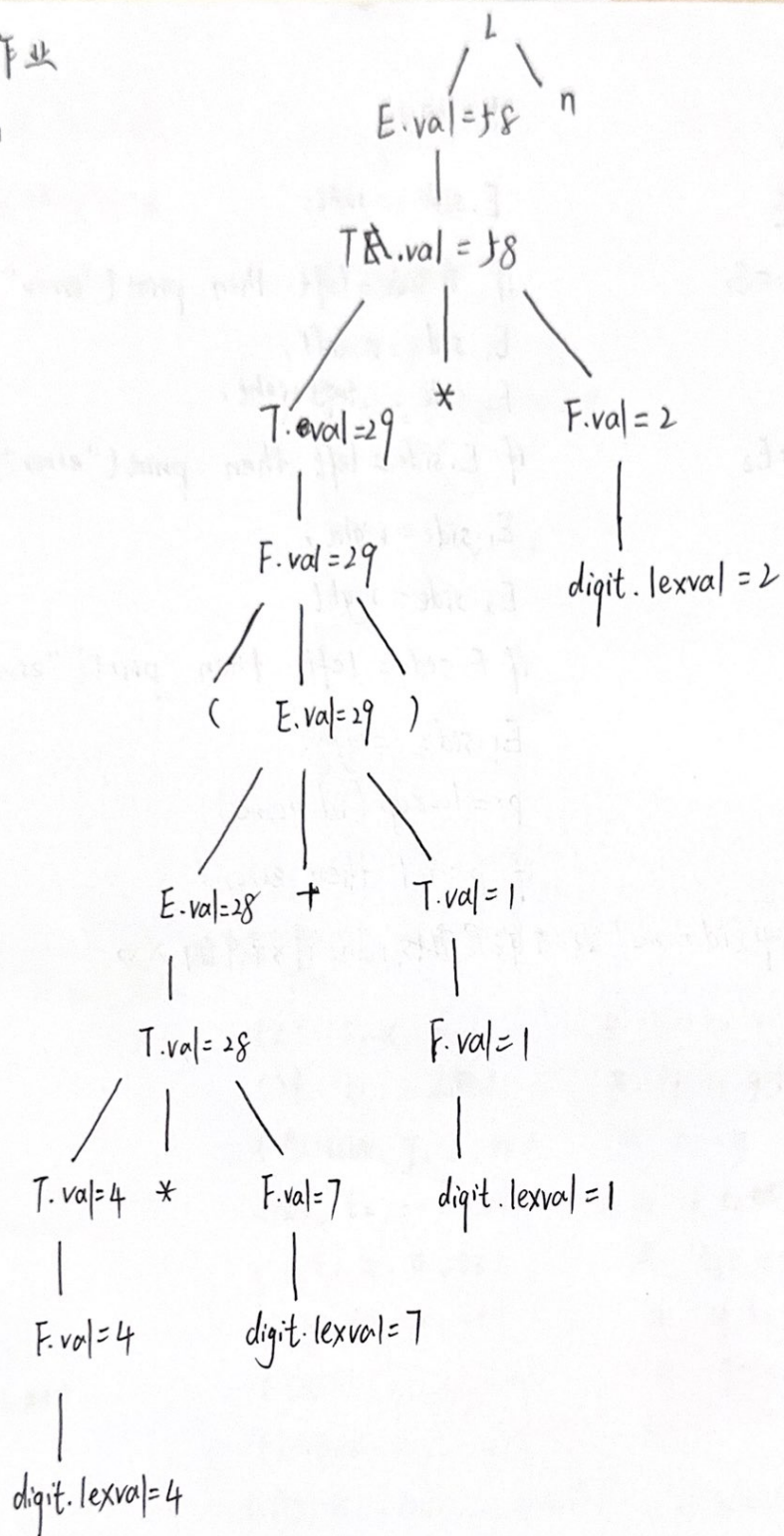


第八次作业

P164. 1



P164. 9

11)

产生式

$S \rightarrow E$

$E \rightarrow E_1 := E_2$

$E \rightarrow E_1 + E_2$

$E \rightarrow (E_1)$

$E \rightarrow id$

语义规则

$E.side := right;$

if  $E.side = left$  then print("error");

$E_1.side := left;$

$E_2.side := left; right;$

if  $E.side = left$  then print("error");

$E_1.side = right;$

$E_2.side = right;$

if  $E.side = left$  then print("error");

$E_1.side := right;$

$p := lookup(id.name);$

if  $p = nil$  then error;

其中,  $lookup(id.name)$  的功能是查找  $id$  在符号表中的入口。

1164. 9. 12)

产生式

$S \rightarrow E$

$E \rightarrow E_1 := E_2$

$E \rightarrow E_1 + E_2$

$E \rightarrow (E_1)$

$E \rightarrow id$

语义规则

$E.side = right;$

$S.code = E.code;$

if  $E.side = left$  then print ("error");

$E_1.side := left;$

$E_2.side := right;$

$E.place = E_1.place;$

$E.code := E_1.code || E_2.code || gen(E.place := E_2.place$

if  $E.side = left$  then print ("error");

$E_1.side := right;$

$E_2.side := right;$

$E.place := newtemp;$

$E.code := E_1.code || E_2.code || gen(E.place :=$

$E_1.place + E_2.place);$

if  $E.side = left$  then print ("error");

$E_1.side := right;$

$E.place := E_1.place;$

$E.code := E_1.code;$

$p := lookup(id.name);$

if  $p < \text{nil}$

then  $E.place := p$

else error;



# 习题 10.1

单目运算符取反,  $-z$  视为一个整体

1)

逆波兰表示

$x \ 1 \ y \ - \ z \ - \ + \ *$

三地址代码表示

$t_1 := 1 - y;$

$t_2 := -z;$

$t_3 := t_1 + t_2;$

$t_4 := x * t_3;$

四元式表示

$(SUB, 1, y, t_1)$

$(NEG, z, -, t_2)$

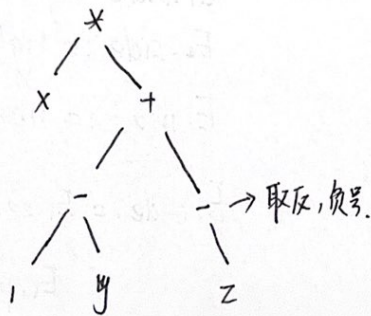
$(ADD, t_1, t_2, t_3)$

$(MUL, x, t_3, t_4)$

序号统一, SUB, NEG, ADD, MUL

分别对应  $-, -, +, *$

抽象语法树



# 习题 10.1 12)

11) 逆波兰表示

12) 三地址代码

$1 < y \leq 0 \wedge v$

$t_1 := 1 < x$

if  $t_1$  goto L1

$t_2 := y$

if  $t_2 \neq 0$  go to L2

$t_3 := z > 0$

if  $t_3$  goto L1

goto L2

L1: result = true

~~goto goto L3~~

L2: result = false

~~goto L4~~

~~L3:~~

~~L4:~~

B) 四元式表示

(LT, 1, x,  $t_1$ )

#  $t_1 = 1 < x$

(IF,  $t_1$ , -, L1)

# if  $t_1$  goto L1

(ASSIGN, y, -,  $t_2$ )

#  $t_2 = y$

(IF,  $t_2$ ,  $\neq$ , L2)

# if  $t_2 \neq 0$  goto L2

(GT, z, 0,  $t_3$ )

#  $t_3 = z > 0$

(IF,  $t_3$ , -, L1)

# if  $t_3$  goto L1

(GOTO, -, -, L2)

# goto L2

(LABEL, -, -, L1)

# L1:

(ASSIGN, true, -, result)

# result = true

~~(GOTO, -, -, L4)~~

(LABEL, -, -, L2)

# L2:

(ASSIGN, false, -, result)

# result = false

~~(LABEL, -, -, L3)~~

~~(LABEL, -, -, L4)~~

H) 抽象语法树

