编译原理第三次作业

卢雨轩 19071125

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4. G': $< bexpr > \rightarrow < bterm >< bexpr >'$

$< bexpr >' \rightarrow or < bterm >< bexpr >' |\epsilon$

$< bterm > \rightarrow < bfactor >< bterm' >$

$< bterm >' \rightarrow and < bfactor >< bterm' > |\epsilon$

$< bfactor > \rightarrow not < bfactor > |(< bexpr >)|true|false$

13. G_1 (1) $V \rightarrow NV'$

$V' \rightarrow [E]|\epsilon$

$E \rightarrow VE'$

$E' \rightarrow +E|\epsilon$

$N \rightarrow i$

(2) $\text{FIRST}(V) = \{i\}$

$\text{FIRST}(V') = \{[, \epsilon\}$

$\text{FIRST}(N) = \{i\}$

$\text{FIRST}(E) = \{i\}$

$\text{FIRST}(E') = \{+, \epsilon\}$

$\text{FOLLOW}(V) = \{\#, +\}$

$\text{FOLLOW}(V') = \{\#, +\}$

$\text{FOLLOW}(N) = \{\#, +, [,]\}$

$\text{FOLLOW}(E) = \{]\}$

$\text{FOLLOW}(E') = \{]\}$

(3)

	i	$+$	$[$	$]$	$\#$
V	NV'				
V'		ϵ	$[E]$		ϵ
E	VE'				
E'		$+E$		ϵ	
N	i				

G_2 (1) $S \rightarrow aABe$

$A \rightarrow bA'$

$A' \rightarrow bcA'|\epsilon$

$B \rightarrow d$

(2) $\mathrm{FIRST}(S) = \{a\}$

$\mathrm{FIRST}(A) = \{b\}$

$\mathrm{FIRST}(A') = \{b, \epsilon\}$

$\mathrm{FIRST}(B) = \{d\}$

$\mathrm{FOLLOW}(S) = \{\#\}$

$\mathrm{FOLLOW}(A) = \{d\}$

$\mathrm{FOLLOW}(A') = \{d\}$

$\mathrm{FOLLOW}(B) = \{d\}$

(3)

	a	b	c	d	e	$\#$
S	$aABe$					
A		bA'				
A'		bcA'		ϵ		
B				d		

G_3 (1) $S \to aAS'$

$S' \to bAS'|\epsilon$

$A \to Sdc|dc$

(2) $\mathrm{FIRST}(S) = \{a\}$

$\mathrm{FIRST}(S') = \{b, \epsilon\}$

$\mathrm{FIRST}(A) = \{a, d\}$

$\mathrm{FOLLOW}(S) = \{\#, d\}$

$\mathrm{FOLLOW}(S') = \{\#, d\}$

$\mathrm{FOLLOW}(A) = \{\#, d\}$

(3)

	a	b	c	d	$\#$
S	aAS'				
S'		bAS'		ϵ	ϵ
A	Sdc			dc	

Algorithm 1 递归下降分析器

```
1:  procedure LEXP
2:      if lookahead = number then
3:          MATCH(number)
4:      else
5:          if lookahead = '(' then
6:              MATCH('(')
7:              op()
8:              lexp_seq()
9:              MATCH(')')
10:         end if
11:     end if
12: end procedure
13: procedure OP
14:     if lookahead ∈ {+, −, ∗} then
15:         call MATCH accordingly
16:     end if
17: end procedure
18: procedure LEXP_SEQ
19:     lexp()
20:     while lookahead ∈ {+, (} do
21:         lexp()
22:     end while
23: end procedure
```