

编译原理与技术 H3-2

PB18111697 王章瀚

3.16

- (a) 用习题3.1的文法(如下)构造 $(a, (a, a))$ 的最右推导, 说出每个右句型的句柄

$$S \rightarrow (L)|a$$
$$L \rightarrow L, S|S$$

最右推导为:

$$S \rightarrow (L) \rightarrow (L, S) \rightarrow (L, (L)) \rightarrow (L, (L, S)) \rightarrow (L, (L, a)) \rightarrow (L, (S, a)) \rightarrow (L, (a, a)) \rightarrow (S, (a, a)) \rightarrow (a, (a, a))$$

用红色标记出句柄如下:

$$S \rightarrow (\textcolor{red}{L}) \rightarrow (\textcolor{red}{L}, S) \rightarrow (L, (\textcolor{red}{L})) \rightarrow (L, (\textcolor{red}{L}, S)) \rightarrow (L, (L, \textcolor{red}{a})) \rightarrow (L, (S, \textcolor{red}{a})) \rightarrow (L, (\textcolor{red}{a}, a)) \rightarrow (\textcolor{red}{S}, (a, a)) \rightarrow (\textcolor{red}{a}, (a, a))$$

为方便对照, 对应句柄列表如下:

右句型	句柄
(L)	(L)
(L, S)	L, S
$(L, (L))$	(L)
$(L, (L, S))$	L, S
$(L, (L, a))$	a
$(L, (S, a))$	S
$(L, (a, a))$	a
$(S, (a, a))$	S
$(a, (a, a))$	a

(b) 给出对应(a)的最右推导的移进-归约分析器的步骤

栈	输入	动作
\$	$(a, (a, a))\$$	移进
$\$($	$a, (a, a))\$$	移进
$\$(a$	$, (a, a))\$$	按 $S \rightarrow a$ 归约
$\$(S$	$, (a, a))\$$	按 $L \rightarrow S$ 归约
$\$(L$	$, (a, a))\$$	移进
$\$(L,$	$(a, a))\$$	移进
$\$(L, ($	$a, a))\$$	移进
$\$(L, (a$	$, a))\$$	按 $S \rightarrow a$ 归约
$\$(L, (S$	$, a))\$$	按 $L \rightarrow S$ 归约
$\$(L, (L$	$, a))\$$	移进
$\$(L, (L,$	$a))\$$	移进
$\$(L, (L, a$	$))\$$	移进
$\$(L, (L, S$	$))\$$	按 $S \rightarrow a$ 归约
$\$(L, (L$	$))\$$	按 $L \rightarrow L, S$ 归约
$\$(L, (L)$	$)\$$	按 $S \rightarrow (L)$ 归约
$\$(L, S$	$)\$$	按 $L \rightarrow L, S$ 归约
$\$(L$	$)\$$	移进
$\$(L)$	$\$$	按 $S \rightarrow (L)$ 归约
$\$S$	$\$$	接受

```

graph TD
    S1[S] --- L1[L]
    S1 --- L2[L]
    S1 --- S2[S]
    S1 --- S3[S]
    S1 --- S4[S]
    L1 --- S5[S]
    L1 --- C1[,]
    S5 --- a1[a]
    L2 --- L3[L]
    L2 --- L4[L]
    L2 --- S6[S]
    L3 --- a2[a]
    L4 --- a3[a]
    S6 --- C2[,]
    S2 --- C3[)]
    S3 --- C4[)]
    S4 --- C5[$]
  
```