1. 设有文法 G：

S→AB

B→cBd|cd

A→aAb|ab

它是否为SLR（1）文法？ 若是，请构造相应的SLR（1）分析表。

增广文法G’的项目有：

0.S’→S

1.S→AB

2.B→cBd

3.B→cd

4.A→aAb

5.A→ab

I0 = closure({S’→•S }) = { S’→•S, S→•AB, A→•aAb, A→•ab}

go(I0,, S) = { S’→S•} = I1

go(I0,, A) = { S→A•B, B→•cBd, B→•cd} = I2

go(I0,, a) = { A→a•Ab, A→a•b，A→•aAb, A→•ab } = I3

go(I2, B) = { S→AB• } = I4

go(I2, c) = { B→c•Bd, B→c•d, B→•cBd, B→•cd } = I5

go(I3, A) = { A→aA•b } = I6

go(I3, a) = I3

go(I3, b) = { A→ab• } = I7

go(I5, B) = { B→cB•d } = I8

go(I5, d) = { B→cd• } = I9

go(I5, c) = I5

go(I6, b) = { A→aAb• } = I10

go(I8, d) = { B→cBd• } = I11

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 状态 | action | | | | | Goto | | |
| a | b | c | d | # | S | A | B |
| 0 | S3 |  |  |  |  | 1 | 2 |  |
| 1 |  |  |  |  | acc |  |  |  |
| 2 |  |  | S5 |  |  |  |  | 4 |
| 3 | S3 | S7 |  |  |  |  | 6 |  |
| 4 | r1 | r1 | r1 | r1 | r1 |  |  |  |
| 5 |  |  | S5 | S9 |  |  |  | 8 |
| 6 |  | S10 |  |  |  |  |  |  |
| 7 | r5 | r5 | r5 | r5 | r5 |  |  |  |
| 8 |  |  |  | S11 |  |  |  |  |
| 9 | r3 | r3 | r3 | r3 | r3 |  |  |  |
| 10 | r4 | r4 | r4 | r4 | r4 |  |  |  |
| 11 | r2 | r2 | r2 | r2 | r2 |  |  |  |

无冲突，为LR(0) （SLR(1)）文法。

2.设有文法 G：

S→bA|aB

A→Sa|a

B→Sb|b

它是否为SLR（1）文法？ 若是，请构造相应的SLR（1）分析表

增广文法G‘

0.S’→S

1.S→bA

2.S→aB

3.A→Sa

4.A→a

5.B→Sb

6.B→b

I0 = closure({S’→•S }) = { S’→•S, S→•bA, S→•aB}

go(I0,, S) = { S’→S•} = I1

go(I0,, b) = { S→b•A, A→•Sa, A→•a, S→•bA, S→•aB } = I2

go(I0,, a) = { S→a•B, B→•Sb，B→•b, S→•bA, S→•aB } = I3

go(I2, b) = I2

go(I2, a) = { A→a•, S→a•B, B→•Sb，B→•b, S→•bA, S→•aB } = I4

go(I2, A) = { S→bA• } = I5

go(I2, S) = { A→S•a, } = I6

go(I3, a) = I3

go(I3, b) = { B→b•, S→b•A, A→•Sa, A→•a, S→•bA, S→•aB } = I7

go(I3, B) = { S→aB•} = I8

go(I3, S) = { B→S•b} = I9

go(I4, B) = I8

go(I4, S) = I9

go(I4, b) = I7

go(I4, a) = I3

go(I6, a) = { A→Sa• } = I10

go(I7, A) = I5

go(I7, S) = I6

go(I7, b) = I2

go(I7, a) = I4

go(I9, b) = { B→Sb•} = I11

文法G‘的FOLLOW集

FOLLOW(S’) = {#, }

FOLLOW(S) = {#, a, b}

FOLLOW(A) = {#, a, b}

FOLLOW(B) = {#, a, b}

由于a,b,#属于FOLLOW(A)，因此当处于状态4且下一个符号为a,b,#时应该用第四个产生式规约，产生冲突，同理，对于状态7也有冲突，因此不是SLR(1)文法

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 状态 | action | | | goto | | |
| a | b | # | S | A | B |
| 0 | s3 | s2 |  | 1 |  |  |
| 1 |  |  | acc |  |  |  |
| 2 | s4 | s2 |  | 6 | 5 |  |
| 3 | s3 | s7 |  | 9 |  | 8 |
| 4 | s3/r4 | s7/r4 | r4 | 9 |  | 8 |
| 5 | r1 | r1 | r1 |  |  |  |
| 6 | s10 |  |  |  |  |  |
| 7 | s4/r6 | s2/r6 | r6 | 6 | 5 |  |
| 8 | r2 | r2 | r2 |  |  |  |
| 9 |  | s11 |  |  |  |  |
| 10 | r3 | r3 | r3 |  |  |  |
| 11 | r5 | r5 | r5 |  |  |  |