342 SEMINAR 5

1) Sa se construiasca tabela LR(1) pentru gramatica G cu productiile

S->aSB | aAc A->bAc | lambda B->b

1: 2: 3: 4: 5:

Extindem G: S’->S si simbolul terminal #.

Construim multimile canonice LR(1)

I0= S’->.S;# —> I1 I3= S->aS.B;# —> I8

S->.aSB;# (=First(#)) —> I2 B->.b;# (#=First(#)) —> I9

S->.aAc;# —> I2 I4= S->aA.c;# —> I10

I1= S’->S.;# I5= S->a.SB;b —> I11

I2= S->a.SB;# —> I3 S->a.Ac;b —> I12

S->a.Ac;# —> I4 S->.aSB;b —> I5

S->.aSB;b (b=First(B#)) —> I5 S->.aAc;b —> I5

S->.aAc;b —> I5 A->.bAc;c —> I6

A->.bAc;c —> I6 A->.;c

A->.;c I10= S->aAc.;#

I6= A->b.Ac;c —> I7 I11= S->aS.B;b —> I14

A->.bAc;c —> I6 B->.b;b —> I15

A-.;c I12= S->aA.c;b —> I16

I7= A->bA.c;c —> I13 I13= A->bAc.;c

I8= S->aSB.;# I14= S->aSB.;b

I9= B->b.;# I15= B->b.;b

I16= S->aAc.;b

Tabela de analiza sintactica: action, goto

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| M | a | b | c | # | S | A | B |  |  |
| 0 | Shift 2 | error | error | error | 1 | error | error |  |  |
| 1 |  |  |  | accept |  |  |  |  |  |
| 2 | Shift 5 | Shift 6 | Reduce4 |  | 3 | 4 |  |  |  |
| 3 |  | Shift 9 |  |  |  |  | 8 |  |  |
| 4 |  |  | Shift 10 |  |  |  |  |  |  |
| 5 | Shift 5 | Shift 6 | reduce4 |  | 11 | 12 |  |  |  |
| 6 |  | Shift 6 | reduce4 |  |  | 7 |  |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 |  |  | Shift 13 |  |  |  |  |  |  |
| 8 |  |  |  | reduce1 |  |  |  |  |  |
| 9 |  |  |  | reduce5 |  |  |  |  |  |
| 10 |  |  |  | reduce2 |  |  |  |  |  |
| 11 |  | Shift 15 |  |  |  |  | 14 |  |  |
| 12 |  |  | Shift 16 |  |  |  |  |  |  |
| 13 |  |  | reduce3 |  |  |  |  |  |  |
| 14 |  | reduce1 |  |  |  |  |  |  |  |
| 15 |  | reduce5 |  |  |  |  |  |  |  |
| 16 |  | reduce2 |  |  |  |  |  |  |  |
|  | A | C T | I O | N | G O | T | O |  |  |

Tabela M nu are intrari multiple <=> G este LR(1)

Analizam sirul abcc

(0, abcc#, lambda) ->(shift 2) (0a2, bcc#, lambda) -> (shift 6) (0a2b6, cc#, lambda) -> (reduce 4)

(0a2b6A7, cc#, 4) -> (shift 13) (0a2b6A7c’13’, c#, 4) -> (reduce 3) (0a2A4, c#, 34) -> (shift 10)

7=goto(6,A) 4=goto(2,A)

(0a2A4c’10’, #, 34) -> (reduce 2) (0S1, #, 234) -> accept

2) Sa se construiasca tabela SLR(1) pentru gramatica G2 cu prod:

E->E+E | E\*E | n

1: 2: 3:

i) Extindem G2: E’->E , # simbol terminal nou

ii) Construim Follow(x) X neterminal

|  |  |
| --- | --- |
| Follow(X) |  |
| E | #, +, \* |

E->E+E Follow(E) += First(+E.Follow(E))={+}

E->E\*E Follow(E) += First(\*E.Follow(E))={\*}

Iii) Calculam multimile canonice LR(0)

I0= E’->.E —> I1 I3= E->E+.E —> I5

E->.E+E —> I1 E->.E+E —> I5

E->.E\*E —> I1 E->.E\*E —> I5

E->.n —> I2 E->.n —> I2

I1= E’->E. I4= E->E\*.E —> I6

E->E.+E —> I3 E->.E+E —> I6

E->E.\*E —> I4 E->.E\*E —> I6

I2= E->n. E->.n —> I2

I5= E->E+E.

E->E.+E —> I3

E->E.\*E —> I4

I6= E->E\*E.

E->E.+E —> I3

E->E.\*E —> I4

Tabela SLR(1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | + | \* | n | # | E |
| 0 |  |  | Shift 2 |  | 1 |
| 1 | Shift 3 | Shift 4 |  | accept |  |
| 2 | Reduce 3 | Reduce 3 |  | Reduce 3 |  |
| 3 |  |  | Shift 2 |  | 5 |
| 4 |  |  | Shift 2 |  | 6 |
| 5 | Reduce 1/ shift 3 | Reduce 1/ shift 4 |  | Reduce 1 |  |
| 6 | Reduce 2/ shift 3 | Reduce 2/ shift 4 |  | Reduce 2 |  |

Tabela are intrari multiple <=> G2 nu este SLR(1)

Conventii: operatorii +, \* asiciativi la stanga; \* prioritar fata de +

Reduce 2/ shift 3 pentru ‘+’ : alegem reduce 2 (\* pri fata de +)

Reduce 1/ shift 3 pentru ‘+’ : alegem reduce 1 (+ asociativ stanga)

Reduce 1/ shift 4 pentru ‘\*’ : alegem shift 4

Reduce 2/ shift 4 pentru ‘\*’ : alegem reduce 2