SEMINAR 4

1) Se da gramatica G cu productiile:

Sa se construiasca parser 2-predictiv cu alg pentru gramatici LL(k) tari.

1. Se extinde gramatica: S’->S, se introduce simbolul terminal nou, #
2. Se calculeaza Follow2(X), X in {S,A,B)

// Se fac treceri repetate peste prod de forma X->uYv;

// Follow2(Y)+=First2(v.Follow2(X)). Daca v=lambda, Follow2(Y)+=Follow2(X)

// Followk (α)={w| exista S=>\*uαz, w in Firstk(z)}

|  |  |  |
| --- | --- | --- |
| Follow2 | Pasul 1 | Pasul 2 |
| S | #, ca, b#,c#,cc,cb | bc,bb |
| A | cc,cb,c# |  |
| B | #, ca, b# | bc,bb,c#,cc,cb |

|  |  |  |
| --- | --- | --- |
| Follow | Pasul 1 |  |
| S | #, c, b |  |
| A | c |  |
| B | #, c, b |  |

S->aSB Follow2(S) += First2(B.Follow2(S))={ca,b#} =(pasul 2)={bc,bb}

B=>cSc=>caSBc

=>caAcc

=>b

Follow2(B) += Follow2(S)

S->aAc Follow2(A)+=First2(c.Follow2(S)) = {c#,cc,cb}

A ->bAc Follow2(A) +=First2(c.Follow2(A)) = {cc}

B -> cSc Follow2(S) += First2(c.Follow2(B)) = {c#,cc,cb}

iii) Determinam intrarile in tabela

1: S->aSB First2(aSB.Follow2(S))={aa}

2: S->aAc First2(aAc.Follow2(S))={ab,ac}

3: A->bAc First2(bAc.Follow2(A)) = {bb,bc}

4: A -> lambda First2(lambda.Follow2(A)) = Follow2(A) = {c#,cc,cb}

5: B -> cSc first2(cSc.Follow2(B)) = {ca}

6: B -> b First2(b.Follow2(B)) = {b#,bc,bb

Iv) Constructia tabelei de analiza sintactica

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| M | aa | ab | ac | bb | bc | b# | ca | cb | cc | c# |
| S | (aSB,1) | (aAc,2 | (aAc,2) | error | error | error | error | error | error | error |
| A | error | error | error | (bAc,3) | (bAc,3) | error | error | (lambda,4) | (lambda,4) | (lambda,4) |
| B | error | error | error | (b,6) | (b,6) | (b,6) | (cSc,5) | error | error | error |

Tabela M nu are intrari multiple <=> G este LL(2) tare

V) Sa se analizeze sirul aacb:

(aacb#, S#, lambda)|-(aacb#, aSB#, 1)|-(acb#, SB#, 1) |-(acb#,aAcB#,12)- (cb#,AcB#,12)-(cb#,cB#,124)-(b#,B#,124)-(b#,b#,1246)-(#,#,1246)|- accept

2) Sa se aplice algoritmul Earley pentru gramatica de la punctul 1 si pentru sirul aacb.

S’->S

S->aSB | aAc

A->bAc | lambda

B->cSc | b

w=aacb, |w|=4; se construiesc S0, S1, S2, S3, S4

Configuratie Earley: A->x.y,j 0<=j<=4

S0= S’->.S,0 predictie pt S

S->.aSB,0 scanare pt w1=’a’

S->.aAc,0

S1= S->a.SB,0 predictie pt S

S->a.Ac,0 predictie pt A, predictie pt A anulabil

S->.aSB,1 scanare pt w2=’a’

S->.aAc,1

A->.bAc,1

A->.,1 completare

S->aA.c,0

S2= S->a.SB,1 pred pt S

S->a.Ac,1 pred pt A, pred pt A anulabil

S->.aSB,2

S->.aAc,2 scanare pt w3=’c’

A->.bAc,2

A->.,2 completare

S->aA.c,1

S3= S ->aAc.,1 completare

S -> aS.B,0 predictie pt B

B -> .cSc,3 scanare pt w4=’b’

B ->.b,3

S4= B ->b.,3 completare

S -> aSB.,0 completare

S’ ->S., 0 <=> w in L(G)