Bài1 :

cho VPG:

A->A or B | B (1) (2)

B->B and C | C (3)(4)

C->not C | (A) | true | false (5)(6)(7)(8)

Hỏi xâu x: true and false or (not true) có được sinh ra từ VPG? c/m bằng PP SLR

**+ Xây dựng bảng SLR**

* **Văn phạm gia tố G’**

A’->A

A->A or B | B

B->B and C | C

C->not C | (A) | true | false

* Tập thực thể LR(0)

I0 = closure({A’->.A})

= A’->.A

A->.A or B

A->.B

B-> .B and C

B -> .C

C -> .not C

C-> .(A)

C -> .true

C-> .false

Goto(I0,A) = closure({A’->A. ;A’-> A. or B})

= A’-> A.

A-> A .or B = I1

Goto(I0,B)= closure({A->B. ;B-> B .and C})

= A-> B.

B-> B .and C =I2

Goto(I0,C) = closure({B-> C.})

= B->C. =I3

Goto(I0,not) = closure ({C-> not .C})

= C-> not .C

C ->.(A)

C-> .true

C-> .false =I4

Goto(I0,( ) = closure({C->(.A) })

= C->(.A)

A->.A or B

A->.B

B-> .B and C

B -> .C

C -> .not C

C-> .(A)

C -> .true

C-> .false =I5

Goto(I0,true) = closure({C->true.})

=C->true. =I6

Goto(I0,false) = closure({C->false})

=C-> false. =I7

========

I1 = A’-> A.

A-> A .or B

Goto (I1, or) = closure ({A->A or .B})

= A-> A or .B

B-> .B and C

B -> .C

C -> .not C

C-> .(A)

C -> .true

C-> .false =I8

=========

I2 = A-> B.

B-> B .and C

Goto (I2, and) = closure({B-> B and .C})

= B->B and .C

C -> .not C

C-> .(A)

C -> .true

C-> .false =I9

=========

I3 không có goto

=========

I4 = C-> not .C

C ->.(A)

C-> .true

C-> .false

Goto(I4,C) = closure({C-> not C.})

= C-> not C. =I10

Goto(I4,() = closure({ C-> (.A)}) =I5

Goto (I4,true) = closure({C->true.}) =I6

Goto(I4,false) = closure({C->false .}) =I7

==========

I5= C->(.A)

A->.A or B

A->.B

B-> .B and C

B -> .C

C -> .not C

C-> .(A)

C -> .true

C-> .false

Goto(I5,A) = closure({C->(A.) ; A->A .or B })

= C->(A.)

A->A .or B =I11

Goto(I5,B) = closure({A-> B. ; B-> B .and C}) =I2

Goto(I5,C) = closure({B-> C.}) =I3

Goto(I5,not) = closure ({C-> not .C}) =I4

Goto(I5,( )= closure({C->(.A) }) =I5

Goto (I5,true) = closure({C->true.}) =I6

Goto(I5,false) = closure({C->false .}) =I7

===========

I6,I7 không có goto

===========

I8= A-> A or .B

B-> .B and C

B -> .C

C -> .not C

C-> .(A)

C -> .true

C-> .false

Goto (I8,B) = closure({ A-> A or B. ; B-> B .and C})

= A->A or B.

B-> B and .C

C -> .not C

C-> .(A)

C -> .true

C-> .false =I12

Goto(I8,C) = closure({B-> C.}) =I3

Goto(I8,not) = closure ({C-> not .C}) =I4

Goto(I8,( )= closure({C->(.A) }) =I5

Goto (I8,true) = closure({C->true.}) =I6

Goto(I8,false) = closure({C->false .}) =I7

============

I9= B->B and .C

C -> .not C

C-> .(A)

C -> .true

C-> .false

Goto(I9,C) = closure({B-> B and C.})

= B-> B and C. =I13

Goto(I9,not) = closure ({C-> not .C}) =I4

Goto(I9,() = closure({C-> (.A)} ) =I5

Goto (I9,true) = closure({C->true.}) =I6

Goto(I9,false) = closure({C->false .}) =I7

============

I10 không có goto nào

============

I11 = C->(A.)

A->A .or B

Goto(I11,)) = closure({C-> (A).}) = C->(A). =I14

Goto(I11, or) = closur ({A-> A or .B}) =I8

==========

I12= A->A or B.

B-> B and .C

C -> .not C

C-> .(A)

C -> .true

C-> .false

Goto(I12,C) = closure({B->B and C.}) = I13

Goto(I12,not) = closure ({C-> not .C}) =I4

Goto(I12,() = closure({C-> (.A)} ) =I5

Goto (I12,true) = closure({C->true.}) =I6

Goto(I12,false) = closure({C->false .}) =I7

==========

I13,I14 không có goto.

* **Xác định hành động**

**Qui tắc 1:**

I4 = Goto(I0,not) =====> Action[0,not]=S4

I5 = Goto(I0,() =====> Action[0,(]=S5

I6 = Goto(I0,true) =====> Action[0,true]=S6

I7 = Goto(I0,false) =====> Action[0,false]=S7

I8 = Goto (I1, or) =====> Action[1,or]=S8

I9 = Goto (I2, and) =====> Action[2,and]=S9

I5 = Goto(I4,() =====> Action[4,(]=S5

I6 = Goto(I4,true) =====> Action[4,true]=S6

I7 = Goto(I4,false) =====> Action[4,false]=S7

I4 = Goto(I5,not) =====> Action[5,not]=S4

I5 = Goto(I5,() =====> Action[5,(]=S5

I6 = Goto(I5,true) =====> Action[5,true]=S6

I7 = Goto(I5,false) =====> Action[5,false]=S7

I4 = Goto(I8,not) =====> Action[8,not]=S4

I5 = Goto(I8,() =====> Action[8,(]=S5

I6 = Goto(I8,true) =====> Action[8,true]=S6

I7 = Goto(I8,false) =====> Action[8,false]=S7

I4 = Goto(I9,not) =====> Action[9,not]=S4

I5 = Goto(I9,() =====> Action[9,(]=S5

I6 = Goto(I9,true) =====> Action[9,true]=S6

I7 = Goto(I9,false) =====> Action[9,false]=S7

I14=Goto(I11,)) =====> Action[11,)]=S14

I8 = Goto(I11,or) =====> Action[11,or]=S8

I4=Goto(I12,not) =====> Action[12,not]=S4

I5=Goto(I12,() =====> Action[12,(]=S5

I6=Goto (I12,true) =====> Action[12,true]=S6

I7=Goto(I12,false) =====> Action[12,false]=S7

**Qui tắc 2:**

I1= Goto(I0,A) =====> Goto[0,A]=1

I2= Goto(I0,B) =====> Goto[0,B]=2

I3= Goto(I0,C) =====> Goto[0,C]=3

I10= Goto(I4,C) =====> Goto[4,C]=10

I11= Goto(I5,A) =====> Goto[5,A]=11

I2= Goto(I5,B) =====> Goto[5,B]=2

I3= Goto(I5,C) =====> Goto[5,C]=3

I12= Goto(I8,B) =====> Goto[8,B]=12

I3= Goto(I8,C) =====> Goto[8,C]=3

I13= Goto(9,C) =====> Goto[9,C]=13

I13= Goto(12,C) =====> Goto[12,C]=13

**Qui tắc 3:**

A’->A thuộc I1 =====> Action[1,$]=accept

**Qui tắc 4:**

Follow(A)={ $, or, ) }

Follow(B)= { $, or, ),and }

Follow(C)= { $, or, ), and }

(+) A->B. thuộc I2 =====> Action[2,$]=Reduce A->B = R2 (A->B là sx(2))

Action[2,or] = R2

Action[2,)]=R2

(+) B->C. thuộc I3 =====> Action[3,$]=R4

Action[3,or] = R4

Action[3,)]=R4

Action[3,and]=R4

(+) C->true. thuộc I6 =====> Action[6,$]=R7

Action[6,or] = R7

Action[6,)]=R7

Action[6,and]=R7

(+) C-> false. Thuộc I7 =====> Action[7,$]=R8

Action[7,or] = R8

Action[7,)]=R8

Action[7,and]=R8

(+) C-> not C. thuộc I10 =====> Action[10,$]=R5

Action[10,or] = R5

Action[10,)]=R5

Action[10,and]=R5

(+) A-> A or B. thuộc I12 =====> Action[12,$]=R1

Action[12,or] = R1

Action[12,)]=R1

(+) B-> B and C. thuộc I13 =====> Action[13,$]=R3

Action[13,or] = R3

Action[13,)]=R3

Action[13,and]=R3

(+) C->(A). thuộc I14 =====> Action[14,$]=R6

Action[14,or] = R6

Action[14,)]=R6

Action[14,and]=R6

* **Kẻ bảng và điền giá trị**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Trạng thái** |  | **Action** | | | | | | | **Go to** | | |
| **or** | **and** | **not** | **(** | **)** | **true** | **false** | **$** | **A** | **B** | **C** |
| **0** |  |  | S4 | **S5** |  | **S6** | **S7** |  | **1** | **2** | **3** |
| **1** | **S8** |  |  |  |  |  |  | **Accept** |  |  |  |
| **2** | **R2** | **S9** |  |  | **R2** |  |  | **R2** |  |  |  |
| **3** | **R4** | **R4** |  |  | **R4** |  |  | **R4** |  |  |  |
| **4** |  |  |  | **S5** |  | **S6** | **S7** |  |  |  | **10** |
| **5** |  |  | **S4** | **S5** |  | **S6** | **S7** |  | **11** | **2** | **3** |
| **6** | **R7** | **R7** |  |  | **R7** |  |  | **R7** |  |  |  |
| **7** | **R8** | **R8** |  |  | **R8** |  |  | **R8** |  |  |  |
| **8** |  |  | **S4** | **S5** |  | **S6** | **S7** |  |  | **2** | **3** |
| **9** |  |  | **S4** | **S5** |  | **S6** | **S7** |  |  |  | **13** |
| **10** | **R5** | **R5** |  |  | **R5** |  |  | **R5** |  |  |  |
| **11** | **S8** |  |  |  | **S14** |  |  |  |  |  |  |
| **12** | **R1** |  | **S4** | **S5** | **R1** | **S6** | **S7** | **R1** |  |  | **13** |
| **13** | **R3** | **R3** |  |  | **R3** |  |  | **R3** |  |  |  |
| **14** | **R6** | **R6** |  |  | **R6** |  |  | **R6** |  |  |  |

* Xét xâu: true and false or (not true)

|  |  |  |  |
| --- | --- | --- | --- |
| STT | stack | Buffer | HD |
| 0 | $0 | true and false or (not true) $ | S6 |
| 1 | $0 true 6 | and false or (not true) $ | R7(C->true) |
| 2 | $0 C 3 | and false or (not true) $ | R4(B->C) |
| 3 | $0 B 2 | and false or (not true) $ | S9 |
| 4 | $0 B 2 and 9 | false or (not true) $ | S7 |
| 5 | $0 B 2 and 9 false 7 | or (not true) $ | R8 (C->false) |
| 6 | $0 B 2 and 9 C 12 | or (not true) $ | R3 (B-> B and C) |
| 7 | $0 B 2 | or (not true) $ | R2 (A->B) |
| 8 | $0 A 1 | or (not true) $ | S8 |
| 9 | $0 A 1 or 8 | (not true) $ | S5 |
| 10 | $0 A 1 or 8 ( 5 | not true ) $ | S4 |
| 11 | $0 A 1 or 8 ( 5 not 4 | true ) $ | S6 |
| 12 | $0 A 1 or 8 ( 5 not 4 true 6 | )$ | R7 (C->true) |
| 13 | $0 A 1 or 8 ( 5 not 4 C 10 | )$ | R5 (C->not C) |
| 14 | $0 A 1 or 8 ( 5 C 3 | )$ | R4 (B->C) |
| 15 | $0 A 1 or 8 ( 5 B 2 | )$ | R2 (A->B) |
| 16 | $0 A 1 or 8 ( 5 A 11 | )$ | S14 |
| 17 | $0 A 1 or 8 ( 5 A 11 ) 14 | $ | R6 (C->(A)) |
| 18 | $0 A 1 or 8 C 3 | $ | R4 (B->C) |
| 19 | $0 A 1 or 8 B 12 | $ | R1 (A->A or B) |
| 10 | $0 A 1 | $ | accept |

Bài2:Cho VPG:

S ->AS| b

A->SA| a  
Xây dựng bảng SLR cho VP G?

**+ Xây dựng văn phạm gia tố G’**

S’-> S

S ->AS| b

A->SA| a

**+ Tập thực thể LR(0)**

I0= closure(S’->.S)

= S’-> .S

S-> .AS

S-> .b

A-> .SA

A-> .a

Goto(I0,S) = closure( { S’-> S. ; A-> S.A})

= S’-> S.

A-> S.A

A-> .SA

A-> .a

S-> .AS

S->.b = I1

Goto(I0,A) = closure ({S->A.S})

= S-> A.S

S-> .AS

S->.b

A-> .SA

A-> .a =I2

Goto(I0,b) = closure ({S->b.}) = S-> b. =I3

Goto(I0,a) = closure ({A->a.}) = A-> a. =I4

========

I1= S’-> S.

A-> S.A

A-> .SA

A-> .a

S-> .AS

S->.b

Goto(I1,A) = closure({A-> SA. ; S-> A.S })

= A-> SA.

S-> A.S

S-> .AS

S->.b

A-> .SA

A-> .a =I5

Goto(I1,S) = closure({A-> S.A })

= A-> S.A

A-> .SA

A-> .a

S-> .AS

S->.b = I6

Goto(I1,a) = closure(A-> a.) =I4

Goto(I1,b)= closure ({S->b.}) = S-> b. =I3

========

I2 = S-> A.S

S-> .AS

S->.b

A-> .SA

A-> .a

Goto(I2,S) = closure( {S-> AS. ; A-> S.A})

= S->AS.

A-> S.A

A-> .SA

A-> .a

S-> .AS

S->.b =I7

Goto (I2,A) = closure({S-> A.S }) =I2

Goto(I2,b) = closure ({S->b.}) = S-> b. =I3

Goto(I2,a) = closure(A-> a.) =I4

=========

I3,I4 không có goto

==========

I5= A-> SA.

S-> A.S

S-> .AS

S->.b

A-> .SA

A-> .a

Goto(I5,S) = closure({ S-> AS. ; A-> S.A}) =I7

Goto(I5,A) = closure({S-> A.S }) =I2

Goto(I5,b) = closure ({S->b.}) = S-> b. =I3

Goto(I5,a) = closure(A-> a.) =I4

===========

I6= A-> S.A

A-> .SA

A-> .a

S-> .AS

S->.b

Goto(I6,A) = closure({A-> SA.; S-> A.S }) =I5

Goto(I6,S)= closure({A-> S.A }) =I6

Goto(I6,b) = closure ({S->b.}) = S-> b. =I3

Goto(I6,a) = closure(A-> a.) =I4

===========

I7= S->AS.

A-> S.A

A-> .SA

A-> .a

S-> .AS

S->.b

Goto(I7,A) = closure({A-> SA.; S-> A.S }) =I5

Goto(I7,S) = closure({A-> S.A }) =I6

Goto(I7,b) = closure ({S->b.}) = S-> b. =I3

Goto(I7,a) = closure(A-> a.) =I4

* **Xác định hành động**

**Qui tắc 1:**

I3= Goto(I0,b) =====> Action[0,b]= S3

I4= Goto(I0,a) =====> Action[0,a]= S4

I3= Goto(I1,b) =====> Action[1,b]= S3

I4= Goto(I1,a) =====> Action[1,a]= S4

I3= Goto(I2,b) =====> Action[2,b]= S3

I4= Goto(I2,a) =====> Action[2,a]= S4

I3= Goto(I5,b) =====> Action[5,b]= S3

I4= Goto(I5,a) =====> Action[5,a]= S4

I3= Goto(I6,b) =====> Action[6,b]= S3

I4= Goto(I6,a) =====> Action[6,a]= S4

I3= Goto(I7,b) =====> Action[7,b]= S3

I4= Goto(I7,a) =====> Action[7,a]= S4

**Qui tắc 2:**

I1= Goto(I0,S) =====> Goto[0,S]= 1

I2= Goto(I0,A) =====> Goto[0,A]= 2

I6= Goto(I1,S) =====> Goto[1,S]= 6

I5= Goto(I1,A) =====> Goto[1,A]= 5

I7= Goto(I2,S) =====> Goto[2,S]= 7

I2= Goto(I2,A) =====> Goto[2,A]= 2

I7= Goto(I5,S) =====> Goto[5,S]= 1

I2= Goto(I5,A) =====> Goto[5,A]= 2

I6= Goto(I6,S) =====> Goto[6,S]= 6

I5= Goto(I6,A) =====> Goto[6,A]= 5

I6= Goto(I7,S) =====> Goto[7,S]= 6

I5= Goto(I7,A) =====> Goto[7,A]= 5

**Qui tắc 3:**

S’-> S thuộc I1 =====> Action[1,$]=accept

**Qui tắc 4:**

Follow(S)={$}

Follow(A)={$}

(+) S-> b. thuộc I3 =====> Action[3,$] = Reduce S->b. = R2(sx2)

(+) A-> a. thuộc I4 =====> Action[4,$] = R4

(+) A-> SA. Thuộc I5 =====> Action[5,$] = R3

(+) S->AS. Thuộc I7 =====> Action[7,$] = R1

* **Lập bảng SLR**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trạng thái | Action | | | Goto | |
| a | b | $ | S | A |
| 0 | S4 | S3 |  | 1 | 2 |
| 1 | S4 | S3 | Accept | 6 | 5 |
| 2 | S4 | S3 |  | 7 | 2 |
| 3 |  |  | R2 |  |  |
| 4 |  |  | R4 |  |  |
| 5 | S4 | S3 | R3 | 1 | 2 |
| 6 | S4 | S3 |  | 6 | 5 |
| 7 | S4 | S3 | R1 | 6 | 5 |