2a Guía Compiladores

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A partir de hoc4 se usan dos etapas en hoc. ¿Cuáles son y qué hacen?

1. Generación de código: inserta en la RAM de la máquina virtual todas las instrucciones y operandos que se necesitan para generar la funcionalidad escrita. Utiliza *progp, yyparse(), code()*.
2. Ejecución de código: utilizando un contador de programa, se ejecutan todas las instrucciones en la RAM.

Escriba 3 cosas importantes que se almacenan usualmente en un marco (o registro de activación) de función.

1. Dirección de retorno 2. Parámetros 3. Variables locales

Falso o Verdadero (F/V)

|  |  |
| --- | --- |
| 1. En lenguaje C los parámetros formales no tienen nombre\_\_\_\_ | ( F ) |
| 1. En lenguaje C las variables locales (no estáticas) se crean cuando se entra a una función y se destruyen cuando se sale de la función | ( V ) |
| 1. En hoc los parámetros formales no tienen nombre\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ( V ) |
| 1. No es posible definir funciones recursivas en hoc\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ( F ) |
| 1. En hoc no hay variables locales\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ( F ) |
| 1. Es imposible que la pila de hoc se desborde (Stack Overflow) \_\_\_\_\_ | ( F ) |
| 1. En hoc cuando una función termina su ejecución se saca su marco de la pila de llamadas | ( V ) |
| 1. En hoc los parámetros reales son listas de expresiones \_\_\_\_\_\_\_\_\_\_\_ | ( V ) |
| 1. En hoc el código que ejecuta la máquina virtual de pila está en prefijo (considere como se ejecuta una operación de suma) | ( F ) |
| 1. Los valores de los atributos sintetizados se calculan a partir de los valores de atributos de su nodo padre o sus nodos hermanos. | ( F ) |
| 1. En hoc4 la variable pc se usa en la etapa de ejecución | ( V ) |
| 1. En hoc4 la variable progp se usa en la etapa de generación de código | ( V ) |
| 1. La variable progp indica la posición de la RAM donde está la sig. instrucción a ejecutar | ( F ) |
| 1. La variable pc indica cual es la sig. posición de la RAM donde se almacenará una instrucción | ( F ) |

1. Un \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ es [A , a] donde A es una producción y a es un terminal o $.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) mango | b) prefijo viable | c) elemento LR (1) | d) elemento LR(0) | ( C ) |

2. Es una producción de G con un punto en cierta posición del lado derecho.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) mango | b) prefijo viable | c) elemento LR (1) | d) elemento LR(0) | ( D ) |

3. Son prefijos de las formas de frase derecha que pueden aparecer en la pila

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) mango | b) elemento LR (0) | c) prefijo viable | d) elemento LR (1) | ( C ) |

4. Un \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ de una forma de frase derecha g es una producción A b y una posición de g donde la cadena b podría encontrarse y sustituirse por A para producir la forma de frase derecha previa en una derivación por la derecha de g.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) prefijo viable | b) mango | c) elemento LR (0) | d) elemento LR (1) | ( B ) |

1. Ejecutar la función (poner el contador de programa igual a la dirección de su primera instrucción y ejecutar la instrucción a la que apunta el contador de programa) y meter el valor de retorno de la función en la pila.
2. Meter los parámetros en la pila y meter el marco de la función en la pila de llamadas.
3. Poner el contador de programa igual a la dirección de retorno y ejecutar la instrucción a la que apunta el contador de programa.
4. Sacar parámetros de la pila y sacar marco de la pila de llamadas.
5. ¿De acuerdo al mecanismo de llamada a función cual es el orden correcto?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) 1, 2, 3, 4 | b) 1, 3, 4 ,2 | c) 2, 1, 4, 3 | d) 4, 3, 2, 1 | ( C ) |

Problema 1.-Considere la siguiente gramática:

|  |  |  |  |
| --- | --- | --- | --- |
| 1) S X | 2) X **a** X **c** | 3) X X X | 4) X **b** |

Calcule

cerradura ({X X X}), cerradura ({X X X }) e ir\_a ({X **a** X **c**}, X)

cerradura({X XX}) = {

X X X

X aXc

X XX

X b

}

cerradura({X → X X }) ={

X X X

}

ir\_a ( { X a X c } , X ) = {

X a X c

}

Para el Análisis LR las gramáticas se muestran con sus producciones numeradas

Para cada gramática:

* Calcule los conjuntos PRIMERO y SIGUIENTE
* Construya la tabla Análisis Sintáctico Predictivo no Recursivo (LL (1))
* Construya la colección de conjuntos de elementos LR (0)
* Construya la tabla SLR

PRIM(S)={a, b} PRIM(X)={a,b}

SIG(S)= {$} SIG{X}={c,$,a,b}

Problema 2

|  |  |  |
| --- | --- | --- |
| 1) A xA | 2) A yA | 3) A y |

Explicar porque esta gramática no es LL (1).

I1=ir\_a (I0, x), I2=ir\_a (I0, y), I3=ir\_a (I0, A), I4=ir\_a (I1, A), I5=ir\_a(I2, A )

Ya que no se tiene un terminal de lad

Problema 3

|  |  |  |  |
| --- | --- | --- | --- |
| 1) S a | 2) S (S R | 3) R , S R | 4) R ) |

I1=ir\_a (I0, a), I2=ir\_a (I0, (), I3=ir\_a (I0, S), I4=ir\_a (I2, S) , I5=ir\_a(I4 , **,** ) , I6=ir\_a(I4, ) ),

I7=ir\_a (I4, R), I8=ir\_a (I5, S), I9=ir\_a (I8, R)

Use ambos análisis para analizar las siguientes cadenas:

|  |  |  |  |
| --- | --- | --- | --- |
| (a) | (a, a) | (a, a, a) | (a, a, a, a) |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PRIMERO(S) = { a , ( } | | | | SIGUIENTE(S) = { , , ) , $} | | | |
| PRIMERO(R) = { , , ) } | | | | SIGUIENTE(R) = { , , ) , $ } | | | |
|  | | | |  | | | |
|  | a | ( | , | | ) | $ |
| S | S a | S ( S R |  | |  |  |
| R |  |  | R , S R | | R ) |  |

I1=ir\_a(I0, **a** ) , I2=ir\_a(I0, **(** ) , I3=ir\_a(I0, S ), I4=ir\_a(I2, S ) , I5=ir\_a(I4 , **,** ) , I6=ir\_a(I4, **)** ),

I7=ir\_a(I4 , R ) , I8=ir\_a(I5, S ) , I9=ir\_a(I8, R )

I0:

S

S ( S R

S a

I1:

S

I2:

S ( S R

S ( S R

S a

I3:

S (S R

R , S R

R )

I4:

S → (S R ∙

I5:

R , S R

S ( S R

S a

I6:

R , S R

R , S R

R )

I7:

R , S R

I8:

S a

I9:

R )

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Estados | Acción | | | | | Ir\_a | |
|  | ( | ) | a | , | $ | S | R |
| 0 | d2 |  | d8 |  |  | 1 |  |
| 1 |  |  |  |  | Aceptar |  |  |
| 2 | d2 |  | d8 |  |  | 3 |  |
| 3 |  | d9 |  | d5 |  |  | 4 |
| 4 |  | r2 |  | r2 | r2 |  |  |
| 5 | d2 |  | d8 |  |  | 6 |  |
| 6 |  | d9 |  | d5 |  |  | 7 |
| 7 |  | r3 |  | r3 | r3 |  |  |
| 8 |  | r1 |  | r1 | r1 |  |  |
| 9 |  | r4 |  | r4 | r4 |  |  |

( a )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | (a)$ | S ( S R |
| $RS( | (a)$ |  |
| $RS | a)$ | S a |
| $Ra | a)$ |  |
| $R | )$ | R ) |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (a)$ | d2 |
| 0(2 | a)$ | d8 |
| 0(2a8 | )$ | r1 |
| 0(2S3 | )$ | d9 |
| 0(2S3)9 | $ | r4 |
| 0(2S3R4 | $ | r2 |
| 0S1 | $ | Aceptar |

( a , a )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | (a,a)$ | S ( S R |
| $RS( | (a,a)$ |  |
| $RS | a,a)$ | S a |
| $Ra | a,a)$ |  |
| $R | ,a)$ | R , S R |
| $RS, | ,a)$ |  |
| $RS | a)$ | S a |
| $Ra | a)$ |  |
| $R | )$ | R ) |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (a,a)$ | d2 |
| 0(2 | a,a)$ | d8 |
| 0(2a8 | ,a)$ | r1 |
| 0(2S3 | ,a)$ | d5 |
| 0(2S3,5 | a)$ | d8 |
| 0(2S3,5a8 | )$ | r1 |
| 0(2S3,5S6 | )$ | d9 |
| 0(2S3,5S6)9 | $ | r4 |
| 0(2S3,5S6R7 | $ | r3 |
| 0(2S3R4 | $ | r2 |
| 0S1 | $ | Aceptar |

( a , a , a )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | (a,a,a)$ | S ( S R |
| $RS( | (a,a,a)$ |  |
| $RS | a,a,a)$ | S a |
| $Ra | a,a,a)$ |  |
| $R | ,a,a)$ | R , S R |
| $RS, | ,a,a)$ |  |
| $RS | a,a)$ | S a |
| $Ra | a,a)$ |  |
| $R | ,a)$ | R , S R |
| $RS, | ,a)$ |  |
| $RS | a)$ | S a |
| $Ra | a)$ |  |
| $R | )$ | R ) |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (a,a,a)$ | d2 |
| 0(2 | a,a,a)$ | d8 |
| 0(2a8 | ,a,a)$ | r1 |
| 0(2S3 | ,a,a)$ | d5 |
| 0(2S3,5 | a,a)$ | d8 |
| 0(2S3,5a8 | ,a)$ | r1 |
| 0(2S3,5S6 | ,a)$ | d5 |
| 0(2S3,5S6,5 | a)$ | d8 |
| 0(2S3,5S6,5a8 | )$ | r1 |
| 0(2S3,5S6,5S6 | )$ | d9 |
| 0(2S3,5S6,5S6)9 | $ | r4 |
| 0(2S3,5S6,5S6R7 | $ | r3 |
| 0(2S3,5S6R7 | $ | r3 |
| 0(2S3R4 | $ | r2 |
| 0S1 | $ | Aceptar |

(a , a , a , a )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | (a,a,a,a)$ | S ( S R |
| $RS( | (a,a,a,a)$ |  |
| $RS | a,a,a,a)$ | S a |
| $Ra | a,a,a,a)$ |  |
| $R | ,a,a,a)$ | R , S R |
| $RS, | ,a,a,a)$ |  |
| $RS | a,a,a)$ | S a |
| $Ra | a,a,a)$ |  |
| $R | ,a,a)$ | R , S R |
| $RS, | ,a,a)$ |  |
| $RS | a,a)$ | S a |
| $Ra | a,a)$ |  |
| $R | ,a)$ | R , S R |
| $RS, | ,a)$ |  |
| $RS | a)$ | S a |
| $Ra | a)$ |  |
| $R | )$ | R ) |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (a,a,a,a)$ | d2 |
| 0(2 | a,a,a,a)$ | d8 |
| 0(2a8 | ,a,a,a)$ | r1 |
| 0(2S3 | ,a,a,a)$ | d5 |
| 0(2S3,5 | a,a,a)$ | d8 |
| 0(2S3,5a8 | ,a,a)$ | r1 |
| 0(2S3,5S6 | ,a,a)$ | d5 |
| 0(2S3,5S6,5 | a,a)$ | d8 |
| 0(2S3,5S6,5a8 | ,a)$ | r1 |
| 0(2S3,5S6,5S6 | ,a)$ | d5 |
| 0(2S3,5S6,5S6,5 | a)$ | d8 |
| 0(2S3,5S6,5S6,5a8 | )$ | r1 |
| 0(2S3,5S6,5S6,5S6 | )$ | d9 |
| 0(2S3,5S6,5S6,5S6)9 | $ | r4 |
| 0(2S3,5S6,5S6,5S6R7 | $ | r3 |
| 0(2S3,5S6,5S6R7 | $ | r3 |
| 0(2S3,5S6R7 | $ | r3 |
| 0(2S3R4 | $ | r2 |
| 0S1 | $ | Aceptar |

Problema 4

|  |  |  |
| --- | --- | --- |
| 1) S A | 2) A | 3) A bbA |

I1=ir\_a (I0, b), I2=ir\_a (I0, S), I3=ir\_a (I0, A), I4=ir\_a (I1, b), I5=ir\_a(I4, A )

Use ambos análisis para analizar la siguiente cadena: bbbb

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | bbbb$ | S A |
| $A | bbbb$ |  |
| $bbA | bbbb$ | A bbA |
| $bbbbA | bbbb$ |  |
| $ bbbb A | bb$ | A bbA |
| $ bbbb | bb$ |  |
| $ bb | $ | A |
| $ | $ |  |
| $ | $ |  |

Análisis LRPara cada gramática:

* Calcule los conjuntos PRIMERO y SIGUIENTE
* Construya la colección de conjuntos de elementos LR (0)
* Construya la tabla SLR
* Use la tabla de análisis SLR para analizar la(s) cadena(s) propuesta(s)

Problema 5

|  |  |
| --- | --- |
| 1) A A c | 2) A d |

I1=ir\_a (I0, b), I2=ir\_a (I0, A), I3=ir\_a (I2, a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| cadenas | d | dc | dcc | dccc |

Problema 5.1

|  |  |
| --- | --- |
| 1) S → S **a** | 2) S → **b** |

I1=ir\_a (I0, b), I2=ir\_a (I0, S), I3=ir\_a (I2, a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| cadenas | b | ba | baa | baaa |

**Problema 6**

|  |  |  |
| --- | --- | --- |
| 1) S AA | 2) A a A | 3) A b |

I1=ir\_a (I0, a), I2=ir\_a (I0, b), I3=ir\_a (I0, S), I4=ir\_a( I0, A ) , I5=ir\_a( I1, A ) ,

I6=ir\_a (I4, A)

cadenas: abab y baab

I1 =

S

I2 =

S A A

S Ca

S b

I3 = A aA

A aA

A b

I4 = A b

I5 = S AA

I6 = A aA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Estado | Acción | | | ir\_a | |
|  | a | b | $ | A | S |
| 0 | d3 | d4 |  | 2 | 1 |
| 1 |  |  | Aceptar |  |  |
| 2 | d3 | d4 |  | 5 |  |
| 3 | d4 | r3 |  | 6 |  |
| 4 |  |  |  |  |  |
| 5 | ok | r3 |  |  |  |
| 6 |  |  | r2 |  |  |

1. abab

|  |  |  |
| --- | --- | --- |
| Pila | Cadena | Acción |
| 0 | abab$ | r3 |
| 0b1 | bab$ | d4 |
| 0b4a3 | ab$ | d4 |
| 0b4a3a3 | b$ | r2 |
| 0b4 | $ | r1 |
| 0 | $ |  |

1. baab

|  |  |  |
| --- | --- | --- |
| Pila | Cadena | Acción |
| 0 | baab$ | d4 |
| 0b1 | aab$ | r3 |
| 0b4a3 | ab$ | d4 |
| 0b4a3a3 | b$ | r2 |
| 0b4 | $ | r1 |
| 0 | $ |  |

Problema 7

|  |  |  |
| --- | --- | --- |
| 1) S BB | 2) B b B | 3) B c |

I1=ir\_a (I0, b), I2=ir\_a (I0, c), I3=ir\_a (I0, S ), I4=ir\_a( I0, B ) , I5=ir\_a( I1, B ) ,

I6=ir\_a (I4, B)

cadenas: bcbcycbbc

Problema 8

|  |  |
| --- | --- |
| 1) A (A) | 2) A a |

I1=ir\_a (I0, (), I2=ir\_a (I0, a), I3=ir\_a (I0, A), I4=ir\_a (I1, A ) , I5=ir\_a(I4, ) )

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| cadenas | (a) | ((a)) | (((a))) | ((((a)))) |

I0 =

.A

A (A)

A a

I1 =

A

I2 = A (A)

A (A)

A a

I3 = A a

I4 = A (A )

I5 = A (A)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Estado | Acción | | | ir\_a | |
|  | ( | ) | a | $ | a |
| 0 | d2 |  |  |  | 1 |
| 1 |  |  | d3 | ok |  |
| 2 | d2 |  |  |  | 4 |
| 3 |  | r2 | d3 | r2 |  |
| 4 |  | d5 |  |  |  |
| 5 |  | r1 |  | r1 |  |

1. ( a )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $A | (a)$ | A(A) |
| $)A( | (a)$ |  |
| $)A | a)$ | Aa |
| $)a | a)$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (a)$ | d2 |
| 0(2 | a)$ | d5 |
| 0(2a5 | )$ | r2 |
| 0(2A3 | )$ | d4 |
| 0(2A3)4 | $ | r1 |
| 0A1 | $ | aceptar |

1. ( ( a ) )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $A | ((a))$ | A (A) |
| $)A( | ((a))$ |  |
| $)A | (a))$ | A (A) |
| $))A( | (a))$ |  |
| $))A | a))$ | A a |
| $))a | a))$ |  |
| $)) | ))$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | ((a))$ | d2 |
| 0(2 | (a))$ | d2 |
| 0(2(2 | a))$ | d5 |
| 0(2(2a5 | ))$ | r2 |
| 0(2(2A3 | ))$ | d4 |
| 0(2(2A3)4 | )$ | r1 |
| 0(2A3 | )$ | d4 |
| 0(2A3)4 | $ | r1 |
| 0A1 | $ | Aceptar |

1. ( ( ( a ) ) )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $A | (((a)))$ | A (A) |
| $)A( | (((a)))$ |  |
| $)A | ((a)))$ | A (A) |
| $))A( | ((a)))$ |  |
| $))A | (a)))$ | A (A) |
| $)))A( | (a)))$ |  |
| $)))A | a)))$ | A a |
| $)))a | a)))$ |  |
| $))) | )))$ |  |
| $)) | ))$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (((a)))$ | d2 |
| 0(2 | ((a)))$ | d2 |
| 0(2(2 | (a)))$ | d2 |
| 0(2(2(2 | a)))$ | d5 |
| 0(2(2(2a5 | )))$ | r2 |
| 0(2(2(2A3 | )))$ | d4 |
| 0(2(2(2A3)4 | ))$ | r1 |
| 0(2(2A3 | ))$ | d4 |
| 0(2(2A3)4 | )$ | r1 |
| 0(2A3 | )$ | d4 |
| 0(2A3)4 | $ | r1 |
| 0A1 | $ | Aceptar |

1. ( ( ( ( a ) ) ) )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $A | ((((a))))$ | A (A) |
| $)A( | ((((a))))$ |  |
| $)A | (((a))))$ | A (A) |
| $))A( | (((a))))$ |  |
| $))A | ((a))))$ | A (A) |
| $)))A( | ((a))))$ |  |
| $)))A | (a))))$ | A(A) |
| $))))A( | (a))))$ |  |
| $))))A | a))))$ | A a |
| $))))a | a))))$ |  |
| $)))) | ))))$ |  |
| $))) | )))$ |  |
| $)) | ))$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | ((((a))))$ | d2 |
| 0(2 | (((a))))$ | d2 |
| 0(2(2 | ((a))))$ | d2 |
| 0(2(2(2 | (a))))$ | d2 |
| 0(2(2(2(2 | a))))$ | d5 |
| 0(2(2(2(2a5 | ))))$ | r2 |
| 0(2(2(2(2A3 | ))))$ | d4 |
| 0(2(2(2(2A3)4 | )))$ | r1 |
| 0(2(2(2A3 | )))$ | d4 |
| 0(2(2(2A3)4 | ))$ | r1 |
| 0(2(2A3 | ))$ | d4 |
| 0(2(2A3)4 | )$ | r1 |
| 0(2A3 | )$ | d4 |
| 0(2A3)4 | $ | r1 |
| 0A1 | $ | Aceptar |

Problema 9

|  |  |
| --- | --- |
| 1) S (S) | 2) S e |

I1=ir\_a (I0, (), I2=ir\_a (I0, **e**), I3=ir\_a (I0, S), I4=ir\_a (I1, S ) , I5=ir\_a(I4, **)** )

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| cadenas | (e) | ((e)) | (((e))) | ((((e)))) |

Tabla SLR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Estado | Acción | | | | Ir\_a |
|  | ( | ) | a | $ | S |
| 0 | d2 |  | d5 |  | 1 |
| 1 |  |  |  | Aceptar |  |
| 2 | d2 |  | d5 |  | 3 |
| 3 |  | d4 |  |  |  |
| 4 |  | r1 |  | r1 |  |
| 5 |  | r2 |  | r2 |  |

1. ( e )

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | (e)$ | S (S) |
| $)S( | (e)$ |  |
| $)S | e)$ | S e |
| $)e | e)$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (e)$ | d2 |
| 0(2 | e)$ | d5 |
| 0(2e5 | )$ | r2 |
| 0(2S3 | )$ | d4 |
| 0(2S3)4 | $ | r1 |
| 0S1 | $ | aceptar |

1. ((e))

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | ((e))$ | S (S) |
| $)S( | ((e))$ |  |
| $)S | (e))$ | S (S) |
| $))S( | (e))$ |  |
| $))S | e))$ | S e |
| $))e | e))$ |  |
| $)) | ))$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | ((e))$ | d2 |
| 0(2 | (e))$ | d2 |
| 0(2(2 | e))$ | d5 |
| 0(2(2e5 | ))$ | r2 |
| 0(2(2S3 | ))$ | d4 |
| 0(2(2S3)4 | )$ | r1 |
| 0(2S3 | )$ | d4 |
| 0(2S3)4 | $ | r1 |
| 0S1 | $ | Aceptar |

1. (((e)))

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | (((e)))$ | S (S) |
| $)S( | (((e)))$ |  |
| $)S | ((e)))$ | S (S) |
| $))S( | ((e)))$ |  |
| $))S | (e)))$ | S (S) |
| $)))S( | (e)))$ |  |
| $)))S | e)))$ | S e |
| $)))e | e)))$ |  |
| $))) | )))$ |  |
| $)) | ))$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | (((e)))$ | d2 |
| 0(2 | ((e)))$ | d2 |
| 0(2(2 | (e)))$ | d2 |
| 0(2(2(2 | e)))$ | d5 |
| 0(2(2(2e5 | )))$ | r2 |
| 0(2(2(2S3 | )))$ | d4 |
| 0(2(2(2S3)4 | ))$ | r1 |
| 0(2(2S3 | ))$ | d4 |
| 0(2(2S3)4 | )$ | r1 |
| 0(2S3 | )$ | d4 |
| 0(2S3)4 | $ | r1 |
| 0S1 | $ | Aceptar |

1. ((((e))))

Análisis Sintáctico Peredictivo no Recursivo.

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| $S | ((((e))))$ | S (S) |
| $)S( | ((((e))))$ |  |
| $)S | (((e))))$ | S (S) |
| $))S( | (((e))))$ |  |
| $))S | ((e))))$ | S (S) |
| $)))S( | ((e))))$ |  |
| $)))S | (e))))$ | S (S) |
| $))))S( | (e))))$ |  |
| $))))S | e))))$ | S e |
| $))))e | e))))$ |  |
| $)))) | ))))$ |  |
| $))) | )))$ |  |
| $)) | ))$ |  |
| $) | )$ |  |
| $ | $ |  |

SLR

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | ((((e))))$ | d2 |
| 0(2 | (((e))))$ | d2 |
| 0(2(2 | ((e))))$ | d2 |
| 0(2(2(2 | (e))))$ | d2 |
| 0(2(2(2(2 | e))))$ | d5 |
| 0(2(2(2(2e5 | ))))$ | r2 |
| 0(2(2(2(2S3 | ))))$ | d4 |
| 0(2(2(2(2S3)4 | )))$ | r1 |
| 0(2(2(2S3 | )))$ | d4 |
| 0(2(2(2S3)4 | ))$ | r1 |
| 0(2(2S3 | ))$ | d4 |
| 0(2(2S3)4 | )$ | r1 |
| 0(2S3 | )$ | d4 |
| 0(2S3)4 | $ | r1 |
| 0S1 | $ | Aceptar |

Problema 10

|  |  |  |
| --- | --- | --- |
| 1) E n | 2) E **(**E, E) | Donde n es un entero |

I1=ir\_a (I0, (), I2=ir\_a (I0, n), I3=ir\_a (I0, E), I4=ir\_a (I1, E) , I5=ir\_a(I4, **,** ) ,

I6=ir\_a (I5, E), I7=ir\_a (I6,))

I0: E

E n

E ( E , E )

I1: E

I2: E n

I3: E ( E , E )

E n

E ( E , E )

I4: E (E , E )

I5: E (E, E )

E n

E ( E , E )

I6: E (E, E )

I7: E (E, E)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Estado | Acción | | | | Ir\_A | |
|  | n | ( | ) | , | $ | E |
| 0 | d2 | d3 |  |  |  | 1 |
| 1 |  |  |  |  | Aceptar |  |
| 2 |  |  | r1 | r1 | r1 |  |
| 3 | d2 | d3 |  |  |  | 4 |
| 4 |  |  |  | d5 |  |  |
| 5 | d2 | d3 |  |  |  | 6 |
| 6 |  |  | d7 |  |  |  |
| 7 |  |  | r2 | r2 | r2 |  |

cadena ( (21 , 18) , 17 )

|  |  |  |
| --- | --- | --- |
| Pila | Entrada | Acción |
| 0 | ((21,18),17)$ | d3 |
| 0(3 | (21,18),17)$ | d3 |
| 0(3(3 | 21,18),17)$ | d2 |
| 0(3(3n2 | ,18),17)$ | r1 |
| 0(3(3E4 | ,18),17)$ | d5 |
| 0(3(3E4,5 | 18),17)$ | d2 |
| 0(3(3E4,5n2 | ),17)$ | r1 |
| 0(3(3E4,5E6 | ),17)$ | d7 |
| 0(3(3E4,5E6)7 | ,17)$ | r2 |
| 0(3E4 | ,17)$ | d5 |
| 0(3E4,5 | 17)$ | d2 |
| 0(3E4,5n2 | )$ | r1 |
| 0(3E4,5E6 | )$ | d7 |
| 0(3E4,5E6)7 | $ | r2 |
| 0E1 | $ | Aceptar |

**Problema 11**

|  |  |  |  |
| --- | --- | --- | --- |
| 1) S [ L] | 2) S a | 3) L L,S | 4) L S |

I1=ir\_a (I0, **[**), I2=ir\_a (I0, **a**), I3=ir\_a (I0, S), I4=ir\_a (I1, S) , I5=ir\_a(I1, L ) , I6=ir\_a(I5, **]** ),

I7=ir\_a (I5,), I8=ir\_a (I7, S)

I0: S

S [ L ]

S a

I1: S

I2: S [ L ]

L L , S

L S

S [ L ]

S a

I3: S [L ]

I4: S [L]

I5: S a

I6: L L , S

I7: L L , S

S [ L ]

S a

I8: L L , S

I9: L S

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Estado | Acción | | | | | Ir\_A | |
|  | a | [ | , | ] | $ | S | L |
| 0 | d3 | d4 |  |  |  | 2 |  |
| 1 |  |  | d5 | d6 |  |  |  |
| 2 |  |  |  |  | ok |  |  |
| 3 |  |  | r2 | r2 | r2 |  |  |
| 4 | d3 | d4 |  |  |  |  |  |
| 5 | d3 | d5 |  |  |  | 7 |  |
| 6 | r4 |  |  |  | r4 | 8 |  |
| 7 |  |  | d5 | d6 |  |  | 9 |
| 8 |  |  | d5 | d6 |  |  | 10 |
| 9 |  |  | r1 | r1 | r1 |  |  |
| 10 | r3 |  |  |  | r3 |  |  |

Problema 12.-Considere la siguiente gramática:

|  |  |  |  |
| --- | --- | --- | --- |
| 1) S AaAb | 2) S BbBa | 3) A | 4) B |

I1=ir\_a (I0, S), I2=ir\_a (I0, A), I3=ir\_a (I0, B), I4=ir\_a (I2, a ) , I5=ir\_a(I3, b ) ,

I6=ir\_a (I4, A), I7=ir\_a (I5, B), I8=ir\_a (I6, b), I9=ir\_a (I7, a)

cadenas: ab yba

I0: S

S AaAb

S BbBa

I1: S

I2: S A aAb

I3: S Aa Ab

I4: S AaA b

I5: S AaAb

I6: S B bBa

I7: S Bb Ba

I8: S BbB a

I9: S BbBa

SLR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Estados | Acción | | | Ira\_A | | |
|  | a | b | $ | S | A | B |
| 0 |  |  |  | 1 | 2 | 6 |
| 1 |  |  |  |  |  |  |
| 2 | d3 |  | Aceptar | |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  | d5 |  |  | 4 |  |
| 5 |  |  |  |  |  |  |
| 6 |  | d7 |  | r1 |  |  |
| 7 |  |  |  |  |  | 8 |
| 8 | d9 |  |  |  |  |  |
| 9 |  |  |  | r2 |  |  |