**EJERCICIOS COMPILADORES**

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Ejercicio

Considere la gramática que representa expresiones

simplificadas tipo LISP:

1. lexp-sec→ lexp-sec lexp | lexp

lexp →atom | list

list → ( lexp-sec )

atom →numero | identificador

Utilizar el algoritmo básico ascendente para aceptar la

cadena(s):

(a (b (2)) (c)).

2. lexp-sec→ lexp , lexp-sec | lexp

lexp →atom | list

list → ( lexp-sec )

atom →numero | identificador

Utilizar el algoritmo básico ascendente para aceptar la

cadena(s):

(a, (b, (2)), (c))

3. E→ (L) | a

L→ L , E | E

Utilizar el algoritmo básico ascendente para aceptar la

cadena(s):

((a),a,(a,a))

1. **(a (b (2)) (c)).**

|  |  |  |  |
| --- | --- | --- | --- |
| Pasos | Pila | Cadena | Acciones |
| 1 | $ | (a (b (2)) (c))$ | Desplazar |
| 2 | $( | a (b (2)) (c))$ | Desplazar |
| 3 | $( identificador | (b (2)) (c))$ | Reducir atom 🡪 identificador |
| 4 | $( atom | (b (2)) (c))$ | Reducir lexp 🡪 atom |
| 5 | $( lexp | (b (2)) (c))$ | Reducir lexp-sec 🡪 lexp |
| 6 | $( lexp-sec | (b (2)) (c))$ | Desplazar |
| 7 | $( lexp-sec ( | b (2)) (c))$ | Desplazar |
| 8 | $( lexp-sec ( identificador | (2)) (c))$ | Reducir atom 🡪 identificador |
| 9 | $( lexp-sec (atom | (2)) (c))$ | Reducir lexp 🡪 atom |
| 10 | $( lexp-sec (lexp | (2)) (c))$ | Reducir lexp-sec 🡪 lexp |
| 11 | $( lexp-sec (lexp-sec | (2)) (c))$ | Desplazar |
| 12 | $( lexp-sec (lexp-sec ( | 2)) (c))$ | Desplazar |
| 13 | $( lexp-sec (lexp-sec ( numero | )) (c))$ | Reducir atom 🡪 numero |
| 14 | $( lexp-sec (lexp-sec ( atom | )) (c))$ | Reducir lexp 🡪 atom |
| 15 | $( lexp-sec (lexp-sec ( lexp | )) (c))$ | Reducir lexp-sec 🡪 lexp |
| 16 | $( lexp-sec (lexp-sec ( lexp-sec | )) (c))$ | Desplazar |
| 17 | $( lexp-sec (lexp-sec ( lexp-sec ) | ) (c))$ | Reducir list 🡪 (lexp-sec) |
| 18 | $( lexp-sec (lexp-sec list | ) (c))$ | Reducir lexp 🡪 list |
| 19 | $( lexp-sec (lexp-sec lexp | ) (c))$ | Reducir lexp-sec 🡪 lexp-sec lexp |
| 20 | $( lexp-sec (lexp-sec | ) (c))$ | Desplazar |
| 21 | $( lexp-sec (lexp-sec) | (c))$ | Reducir list 🡪 (lexp-sec) |
| 22 | $( lexp-sec list | (c))$ | Reducir lexp 🡪 list |
| 23 | $( lexp-sec lexp | (c))$ | Reducir lexp-sec 🡪 lexp-sec lexp |
| 24 | $( lexp-sec | (c))$ | Desplazar |
| 25 | $( lexp-sec ( | c))$ | Desplazar |
| 26 | $( lexp-sec ( identificador | ))$ | Reducir atom 🡪 identificador |
| 27 | $( lexp-sec (atom | ))$ | Reducir lexp 🡪 atom |
| 28 | $( lexp-sec (lexp | ))$ | Reducir lexp-sec 🡪 lexp |
| 29 | $( lexp-sec (lexp-sec | ))$ | Desplazar |
| 30 | $( lexp-sec (lexp-sec) | )$ | Reducir list 🡪 (lexp-sec) |
| 31 | $( lexp-sec list | )$ | Reducir lexp 🡪 list |
| 32 | $( lexp-sec lexp | )$ | Reducir lexp-sec 🡪 lexp-sec lexp |
| 33 | $( lexp-sec | )$ | Desplazar |
| 34 | $( lexp-sec ) | $ | Reducir list 🡪 (lexp-sec) |
| 35 | $ list | $ | Reducir lexp 🡪 list |
| 36 | $ lexp | $ | Reducir lexp-sec 🡪 lexp |
| 37 | $ lexp-sec | $ | Reducir lexp-sec’ 🡪 lexp-sec |
| 38 | $ lexp-sec’ | $ | ACEPTAR |

1. **(a, (b, (2)), (c))**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. Pasos | Pila | Cadena | Acciones |
| 1 | $ | (a, (b, (2)), (c))$ | Desplazar |
| 2 | $ ( | a, (b, (2)), (c))$ | Desplazar |
| 3 | $ (identificador | , (b, (2)), (c))$ | Reducir atom 🡪 identificador |
| 4 | $ (atom | , (b, (2)), (c))$ | Reducir lexp 🡪 atom |
| 5 | $ (lexp | , (b, (2)), (c))$ | Desplazar |
| 6 | $ (lexp , | (b, (2)), (c))$ | Desplazar |
| 7 | $ (lexp , ( | b, (2)), (c))$ | Desplazar |
| 8 | $ (lexp , ( identificador | , (2)), (c))$ | Reducir atom 🡪 identificador |
| 9 | $ (lexp , ( atom | , (2)), (c))$ | Reducir lexp 🡪 atom |
| 10 | $ (lexp , ( lexp | , (2)), (c))$ | Desplazar |
| 11 | $ (lexp , ( lexp , | (2)), (c))$ | Desplazar |
| 12 | $ (lexp , ( lexp , ( | 2)), (c))$ | Desplazar |
| 13 | $ (lexp , ( lexp , ( numero | )), (c))$ | Reducir atom 🡪numero |
| 14 | $ (lexp , ( lexp , ( atom | )), (c))$ | Reducir lexp 🡪 atom |
| 15 | $ (lexp , ( lexp , ( lexp | )), (c))$ | Reducir lexp-sec 🡪 lexp |
| 16 | $ (lexp , ( lexp , ( lexp-sec | )), (c))$ | Desplazar |
| 17 | $ (lexp , ( lexp , ( lexp-sec ) | ), (c))$ | Reducir list 🡪 (lexp-sec) |
| 18 | $ (lexp , ( lexp , list | ), (c))$ | Reducir lexp 🡪 list |
| 19 | $ (lexp , ( lexp , lexp | ), (c))$ | Reducir lexp-sec 🡪 lexp |
| 20 | $ (lexp , ( lexp , lexp-sec) | ), (c))$ | Reducir lexp-sec 🡪 lexp , lexp-sec |
| 21 | $ (lexp , ( lexp-sec | ), (c))$ | Desplazar |
| 22 | $ (lexp , ( lexp-sec) | , (c))$ | Reducir list 🡪 (lexp-sec) |
| 23 | $ (lexp , list | , (c))$ | Reducir lexp 🡪 list |
| 24 | $ (lexp , lexp | , (c))$ | Desplazar |
| 25 | $ (lexp , lexp , | (c))$ | Desplazar |
| 26 | $ (lexp , lexp , ( | c))$ | Desplazar |
| 27 | $ (lexp , lexp , ( identificador | ))$ | Reducir atom 🡪 identificador |
| 28 | $ (lexp , lexp , ( atom | ))$ | Reducir lexp 🡪 atom |
| 29 | $ (lexp , lexp , ( lexp | ))$ | Reducir lexp-sec 🡪 lexp |
| 30 | $ (lexp , lexp , ( lexp-sec | ))$ | Desplazar |
| 31 | $ (lexp , lexp , ( lexp-sec ) | )$ | Reducir list 🡪 (lexp-sec) |
| 32 | $ (lexp , lexp , list | )$ | Reducir lexp 🡪 list |
| 33 | $ (lexp , lexp , lexp | )$ | Reducir lexp-sec 🡪 lexp |
| 34 | $ (lexp , lexp , lexp-sec | )$ | Reducir lexp-sec 🡪 lexp , lexp-sec |
| 35 | $ (lexp , lexp-sec | )$ | Reducir lexp-sec 🡪 lexp , lexp-sec |
| 36 | $ (lexp-sec | )$ | Desplazar |
| 37 | $ (lexp-sec) | $ | Reducir list 🡪 (lexp-sec) |
| 38 | $ list | $ | Reducir lexp 🡪 list |
| 39 | $ lexp | $ | Reducir lexp-sec 🡪 lexp |
| 40 | $ lexp-sec | $ | Reducir lexp-sec’ 🡪 lexp-sec |
| 41 | $ lexp-sec’ | $ | ACEPTAR |

1. ((a),a,(a,a))

|  |  |  |  |
| --- | --- | --- | --- |
| Pasos | Pila | Cadena | Acciones |
| 1 | $ | ((a),a,(a,a))$ | Desplazar |
| 2 | $( | (a),a,(a,a))$ | Desplazar |
| 3 | $(( | a),a,(a,a))$ | Desplazar |
| 4 | $((a | ),a,(a,a))$ | Reducir E 🡪 a |
| 5 | $((E | ),a,(a,a))$ | Reducir L 🡪 E |
| 6 | $((L | ),a,(a,a))$ | Desplazar |
| 7 | $((L) | ,a,(a,a))$ | Reducir E 🡪 (L) |
| 8 | $(E | ,a,(a,a))$ | Reducir L 🡪 E |
| 9 | $(L | ,a,(a,a))$ | Desplazar |
| 10 | $(L , | a,(a,a))$ | Desplazar |
| 11 | $(L , a | ,(a,a))$ | Reducir E 🡪 a |
| 12 | $(L , E | ,(a,a))$ | Reducir L 🡪 L , E |
| 13 | $(L | ,(a,a))$ | Desplazar |
| 14 | $(L , | (a,a))$ | Desplazar |
| 15 | $(L , ( | a,a))$ | Desplazar |
| 16 | $(L , ( a | ,a))$ | Reducir E 🡪 a |
| 17 | $(L , ( E | ,a))$ | Reducir L 🡪 E |
| 18 | $(L , ( L | ,a))$ | Desplazar |
| 19 | $(L , ( L , | a))$ | Desplazar |
| 20 | $(L , ( L , a | ))$ | Reducir E 🡪 a |
| 21 | $(L , ( L , E | ))$ | Reducir L 🡪 L , E |
| 22 | $(L , ( L | ))$ | Desplazar |
| 23 | $(L , ( L) | )$ | Reducir E 🡪 (L) |
| 24 | $(L , E | )$ | Reducir L 🡪 L , E |
| 25 | $(L | )$ | Desplazar |
| 26 | $(L) | $ | Reducir E 🡪 (L) |
| 27 | $E | $ | Reducir E’ 🡪 E |
| 28 | $E’ | $ | ACEPTAR |