TECNOLÓGICO NACIONAL DE MÉXICO

INSTITUTO TECNOLÓGICO TOLUCA

INGENIERÍA EN SISTEMAS COMPUTACIONALES

LENGUAJES Y AUTÓMATAS I

Nombre del Equipo: LOBO

Integrantes: Velazquez Contreras Eduardo

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| **OBJETIVO** |

Desarrollar los siguientes puntos del lenguaje

* Gramática en número de token’s factorizada y sin recursión 10%.
* First 2.5%,.
* Follow 2.5%
* Tabla de Transiciones sin ambigüedad 5%.

|  |
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| **DESARROLLO** |

**Gramática completa**

<pri> 1 2 3 4 5 <pri1> <pri2> 6

<pri1> 🡪 <dec>| 70 9 <pri3>10| <esc> | <ciclo> | <sc>

<pri2> 🡪 <pri1> <pri2> | λ

<pri3> 🡪 70<oper> |71 <oper>| 72 | 20 | <lec>

<dec> 🡪 7 70 <dec1><dec2>10

<dec1> 🡪 9 <val> | λ

<dec2> 🡪 8 70 <dec1> <dec2>| λ

<val>🡪 71 | 72 | 20

<oper> 🡪 <oper2>

<oper1> 🡪 71 | 70| 72

<oper2> 🡪 <oper3> <oper1> <oper2> | λ

<oper3> 🡪11|14

<lec> 🡪 12 3 4

<esc> 🡪 <esc1> 3<esc5>4 10

<esc1> 🡪 13

<esc2> 🡪 72

<esc3> 🡪 14 70 <esc4> | λ

<esc4> 🡪14 <esc5>| λ

<esc5> 🡪<esc2> <esc3>

<ciclo> 🡪 15 3 <cond> 4 5 <pri1> <pri2>6

<sc> 🡪 16 3 <cond> 4 5 <pri1><pri2> 6 <sc1>

<sc1> 17 5 <pri1><pri2> 6 | λ

<cond> 🡪 <cond1> 18 <cond1> <cond2>

<cond1>🡪 70 | <val> | <oper>

<cond2> 🡪 19 <cond> | λ

**First and follows**

|  |  |  |
| --- | --- | --- |
| Estado | First | Follow |
| <pri> | **1** | **$** |
| <pri1> | 7 70 13 15 16 | 6 7 70 13 15 16 |
| <pri2> | 7 70 13 15 16 λ | 6 |
| <pri3> | 70 71 72 20 12 | 10 |
| <dec> | 7 | 6 7 70 13 15 16 |
| <dec1> | 9 λ | 8 10 |
| <dec2> | 8 λ | 10 |
| <val> | 71 72 20 | 8 10 |
| <oper> | 11 14 λ | 10 |
| <oper1> | 71 70 72 | 11 14 10 |
| <oper2> | 11 14 λ | 10 |
| <oper3> | 11 14 | 71 70 72 |
| <lec> | 12 | 10 |
| <esc> | 13 | 6 7 70 13 15 16 |
| <esc1> | 13 | 3 |
| <esc2> | 72 | 14 4 |
| <esc3> | 14 λ | 4 |
| <esc4> | 14 λ | 4 |
| <esc5> | 72 | 4 |
| <ciclo> | 15 | 6 7 70 13 15 16 |
| <sc> | 16 | 6 7 70 13 15 16 |
| <sc1> | 17 λ | 6 7 70 13 15 16 |
| <cond> | 70 71 72 20 11 14 λ | 4 |
| <cond1> | 70 71 72 20 11 14 λ | 18 19 4 |
| <cond2> | 19 λ | 4 |

**Gramática separada y enumerada**

|  |  |
| --- | --- |
| No. produccion | produccion |
| 1 | <pri>🡪 1 2 3 4 5 <pri1> <pri2> 6 |
| 2 | <pri1> 🡪 <dec> |
| 3 | <pri1> 🡪70 9 <pri3>10 |
| 4 | <pri1> 🡪<esc> |
| 5 | <pri1> 🡪<ciclo> |
| 6 | <pri1> 🡪<sc> |
| 7 | <pri2> 🡪<pri1> <pri2> |
| 8 | <pri2> 🡪 λ |
| 9 | <pri3> 🡪 70<oper> |
| 10 | <pri3> 🡪71 <oper> |
| 11 | <pri3> 🡪72 |
| 12 | <pri3> 🡪20 |
| 13 | <pri3> 🡪<lec> |
| 14 | <dec> 🡪 7 70 <dec1><dec2>10 |
| 15 | <dec1> 🡪 9 <val> |
| 16 | <dec1> 🡪 λ |
| 17 | <dec2> 🡪 8 70 <dec1> <dec2> |
| 18 | <dec2> 🡪 λ |
| 19 | <val>🡪 71 |
| 20 | <val>🡪 72 |
| 21 | <val>🡪 20 |
| 22 | <oper> 🡪 <oper2> |
| 23 | <oper1> 🡪 71 |
| 24 | <oper1> 🡪 70 |
| 25 | <oper2> 🡪 <oper3> <oper1> <oper2> |
| 26 | <oper2> 🡪λ |
| 27 | <oper3> 🡪11 |
| 28 | <oper3> 🡪14 |
| 29 | <lec> 🡪12 3 4 |
| 30 | <esc> 🡪<esc1> 3<esc5>4 10 |
| 31 | <esc1> 🡪 13 |
| 32 | <esc2> 🡪 72 |
| 33 | <esc3> 🡪 14 70 <esc4> |
| 34 | <esc3> 🡪 λ |
| 35 | <esc4> 🡪 14 <esc5> |
| 36 | <esc4> 🡪 λ |
| 37 | <esc5> 🡪 <esc2> <esc3> |
| 38 | <ciclo> 🡪 15 3 <cond> 4 5 <pri1><pri2> 6 |
| 39 | <sc> 🡪 16 3 <cond> 4 5 <pri1><pri2> 6 <sc1> |
| 40 | <sc1>🡪 17 5 <pri1><pri2> 6 |
| 41 | <sc1>🡪 λ |
| 42 | <cond> 🡪<cond1> 18 <cond1> <cond2> |
| 43 | <cond1> 🡪70 |
| 44 | <cond1> 🡪<val> |
| 45 | <cond1> 🡪<oper> |
| 46 | <cond2> 🡪19 <cond> |
| 47 | <cond2> 🡪λ |
| 48 | <oper1> 🡪 72 |

**Tabla de transiciones**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 70 | 71 | 72 | $ |
| <pri> | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <pri1> |  |  |  |  |  |  | 2 |  |  |  |  |  | 4 |  | 5 | 6 |  |  |  |  | 3 |  |  |  |
| <pri2> |  |  |  |  |  | 8 | 7 |  |  |  |  |  | 7 |  | 7 | 7 |  |  |  |  | 7 |  |  |  |
| <pri3> |  |  |  |  |  |  |  |  |  |  |  | 13 |  |  |  |  |  |  |  | 12 | 9 | 10 | 11 |  |
| <dec> |  |  |  |  |  |  | 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <dec1> |  |  |  |  |  |  |  | 16 | 15 | 16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <dec2> |  |  |  |  |  |  |  | 17 |  | 18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <val> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 21 |  | 19 | 20 |  |
| <oper> |  |  |  |  |  |  |  |  |  | 22 | 22 |  |  | 22 |  |  |  |  |  |  |  |  |  |  |
| <oper1> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 24 | 23 | 48 |  |
| <oper2> |  |  |  |  |  |  |  |  |  | 26 | 25 |  |  | 25 |  |  |  |  |  |  |  |  |  |  |
| <oper3> |  |  |  |  |  |  |  |  |  |  | 27 |  |  | 28 |  |  |  |  |  |  |  |  |  |  |
| <lec> |  |  |  |  |  |  |  |  |  |  |  | 29 |  |  |  |  |  |  |  |  |  |  |  |  |
| <esc> |  |  |  |  |  |  |  |  |  |  |  |  | 30 |  |  |  |  |  |  |  |  |  |  |  |
| <esc1> |  |  |  |  |  |  |  |  |  |  |  |  | 31 |  |  |  |  |  |  |  |  |  |  |  |
| <esc2> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 32 |  |
| <esc3> |  |  |  | 34 |  |  |  |  |  |  |  |  |  | 33 |  |  |  |  |  |  |  |  |  |  |
| <esc4> |  |  |  | 36 |  |  |  |  |  |  |  |  |  | 35 |  |  |  |  |  |  |  |  |  |  |
| <esc5> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 37 |  |
| <ciclo> |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 38 |  |  |  |  |  |  |  |  |  |
| <sc> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 39 |  |  |  |  |  |  |  |  |
| <sc1> |  |  |  |  |  | 41 | 41 |  |  |  |  |  | 41 |  | 41 | 41 | 40 |  |  |  | 41 |  |  |  |
| <cond> |  |  |  |  |  |  |  |  |  |  | 42 |  |  | 42 |  |  |  | 42 |  |  | 42 | 42 | 42 |  |
| <cond1> |  |  |  | 45 |  |  |  |  |  |  | 45 |  |  | 45 |  |  |  | 45 | 45 | 44 | 43 | 44 | 44 |  |
| <cond2> |  |  |  | 47 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 46 |  |  |  |  |  |

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| **CONCLUSIONES** |

Llevar a cabo el desarrollo sintáctico del lenguaje es tedioso y de prestar mucha atención a lo que colocas o modificas, pues un movimiento de estado puede desencadenar un cambio entero en los first y follows de todos los demás estados sin mencionar que pueden resultar ambigüedades en la tabla de transiciones que te obliguen a hacer modificaciones en la gramática.