Universidad Rafael Landivar

Facultad de Ingenieria

Lenguajes Formales

Ingeniera. Damaris campos

APLICACIÓN DEL METODO DEL ARBOL A LAS EXPRESIONES DISEÑADAS

Jarod Michael Bolaños 1251621

Guillermo Contreras 1154322

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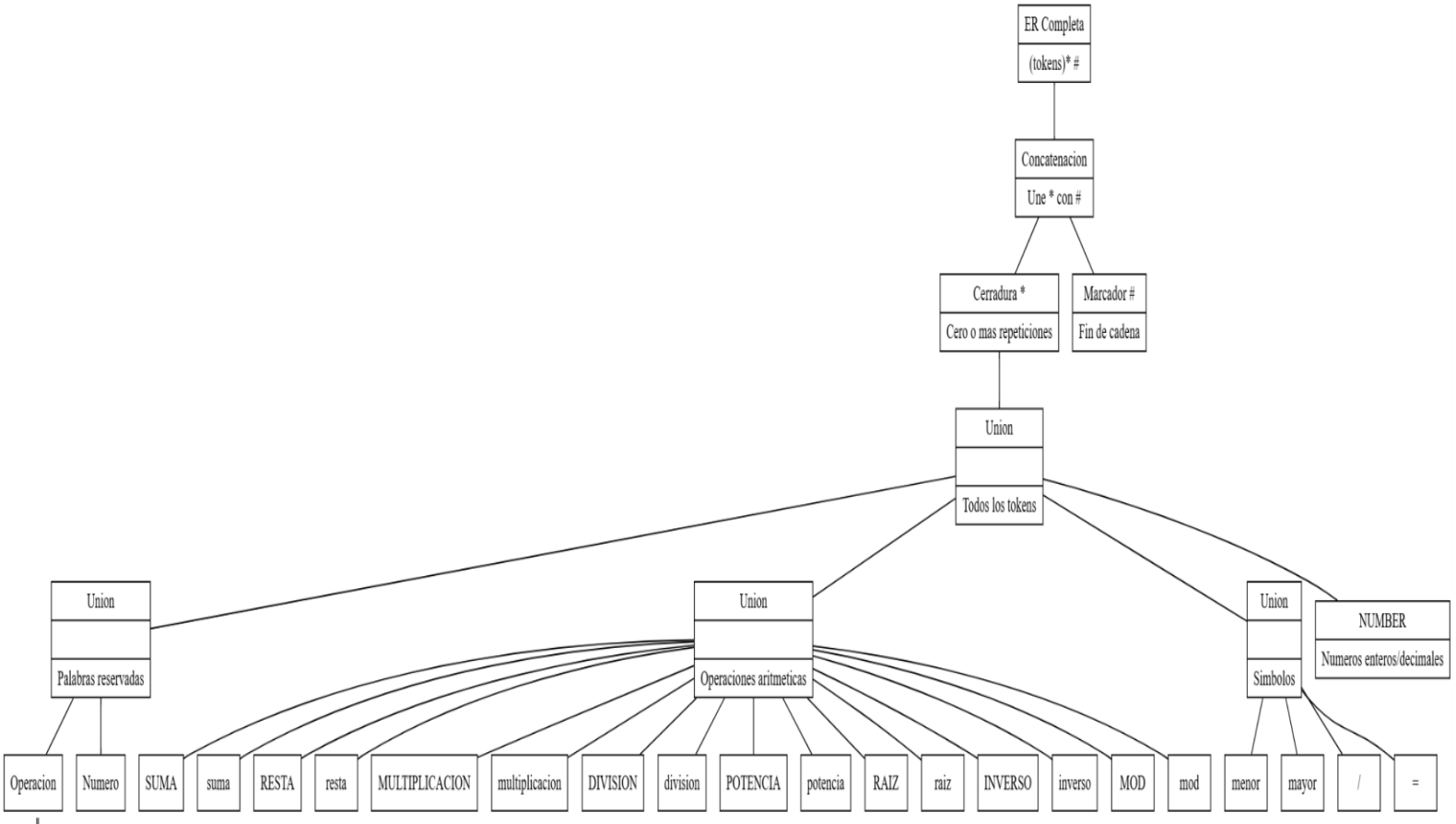
Contenido

ARBOL DE EXPRESIONES



CALCULO DE FUNCIONES

ARBOL CON FIRSTPOS

Para que se entienda como lo trabajamos

siempre subimos hacia la raiz

PASO 1: Cada token = su posicion

• Operacion → {1}

• SUMA → {3}

• < → {19}

• NUMBER → {23}

PASO 2: Union | = juntamos TODOS

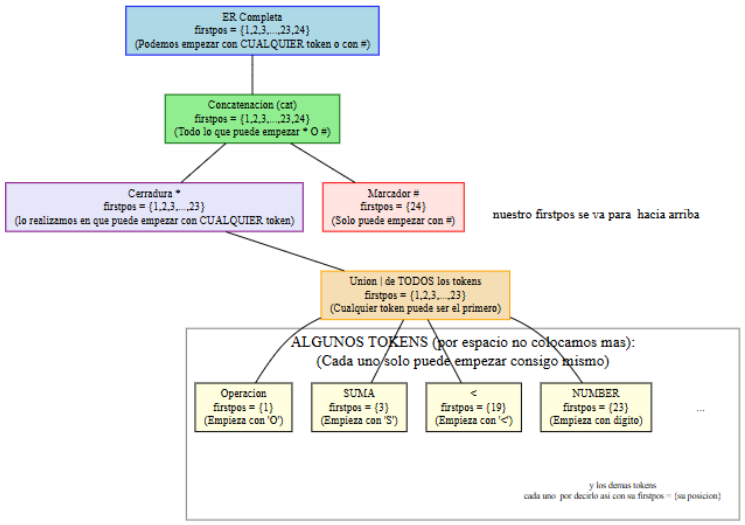
• {1} U {3} U {19} U {23} U ... = {1,2,3,...,23}

PASO 3: * = mantiene el mismo

• firstpos(*) = {1,2,3,...,23}

PASO 4: Concatenacion = los junta ambos

• {1,2,3,...,23} U {24} = {1,2,3,...,23,24}



ARBOL CON LASTPOS

nuestro LASTPOS

PASO 1: Cada token = su posicion

• Operacion → {1}

• SUMA → {3}

• < → {19}

• NUMBER → {23}

PASO 2: Union | = los junta TODOS

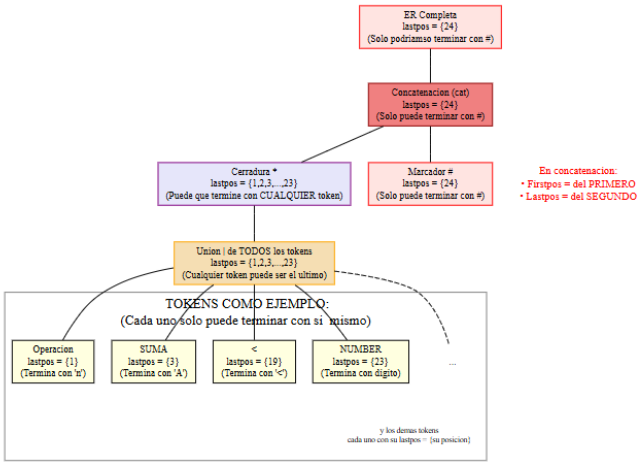
• {1} U {3} U {19} U {23} U ... = {1,2,3,...,23}

PASO 3: * = mantiene el mismo

• lastpos(*) = {1,2,3,...,23}

PASO 4: Concatenacion = SOLO el del SEGUNDO

• lastpos(conca) = lastpos(#) = {24} (porque # NO es nullable)



ARBOL CON NULLABLE

Nosotros lo leemos de esta manera

• Firstpos de A·B:
- Si A es nullable -> firstpos(A) U firstpos(B)
- Si A NO es nullable -> firstpos(A)

• Lastpos de A·B:
- Si B es nullable -> lastpos(B) U lastpos(A)
- Si B NO es nullable -> lastpos(B)

EN NUESTRO CASO:

A = * (nullable = true)

B = # (nullable = false)

Por eso:

• Firstpos = firstpos(*) U firstpos(#)

• Lastpos = lastpos(#) (porque B no es nullable)

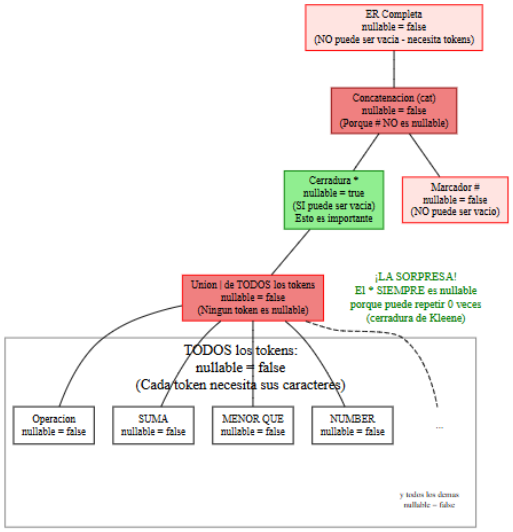


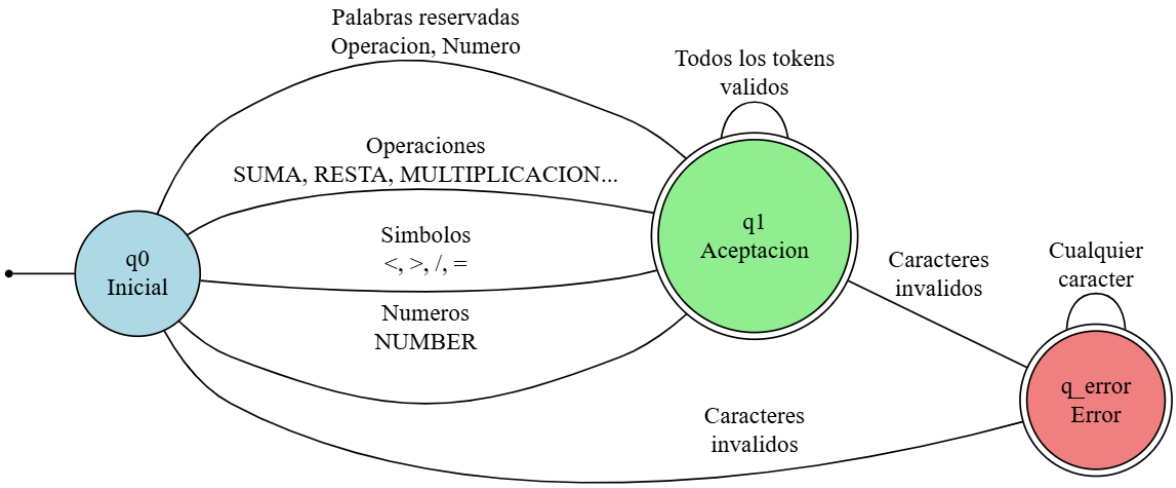
TABLA DE FOLLOW POS

Posicion	Token	Followpos
1	Operacion	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
2	Numero	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
3	SUMA	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
4	suma	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
5	RESTA	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
6	resta	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
7	MULTIPLICACION	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
8	multiplicacion	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
9	DIVISION	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
10	division	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
11	POTENCIA	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
12	potencia	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
13	RAIZ	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
14	raiz	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
15	INVERSO	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
16	inverso	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
17	MOD	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
18	mod	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
19	<	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
20	>	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
21	/	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
22	=	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
23	NUMBER	{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23}
24	#	{ }

TABLA DE TRANSICIONES

ESTADO ACTUAL	Operacion	Numero	Suma/ suma	RESTA/ resta	MULTIPLICACION/ multiplicacion	DIVISION/ division	POTENCIA/ potencia	RAIZ/ raiz	INVERSO/ inverso	<	>	/	=	Number
q0 Estado inicial {1,2,3..23,24}	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1
q1 Estado de Aceptación {1,2,3...23,24}	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1	q1

NUESTRO DFA


Palabras reservadas
Operacion, Numero
Todos los tokens
validos
Operaciones
SUMA, RESTA, MULTIPLICACION...
Simbolos
<, >, /, =
Numeros
NUMBER
q0
Inicial
q1
Aceptacion
Caracteres
invalidos
Cualquier
caracter
q_error
Error
Caracteres
invalidos