Universidad San Carlos de Guatemala
Centro Universitario de Occidente
División de Ciencias de la Ingeniería
Lenguajes Formales y de Computación
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Proyecto Final Parte Lexica

Quetzaltenango 10 de Noviembre de 2021

Token 1: **Lexema**
ID **Letras y números**
L=letra mayúscula.
N = número.

(L/_).(L/_)*.N*

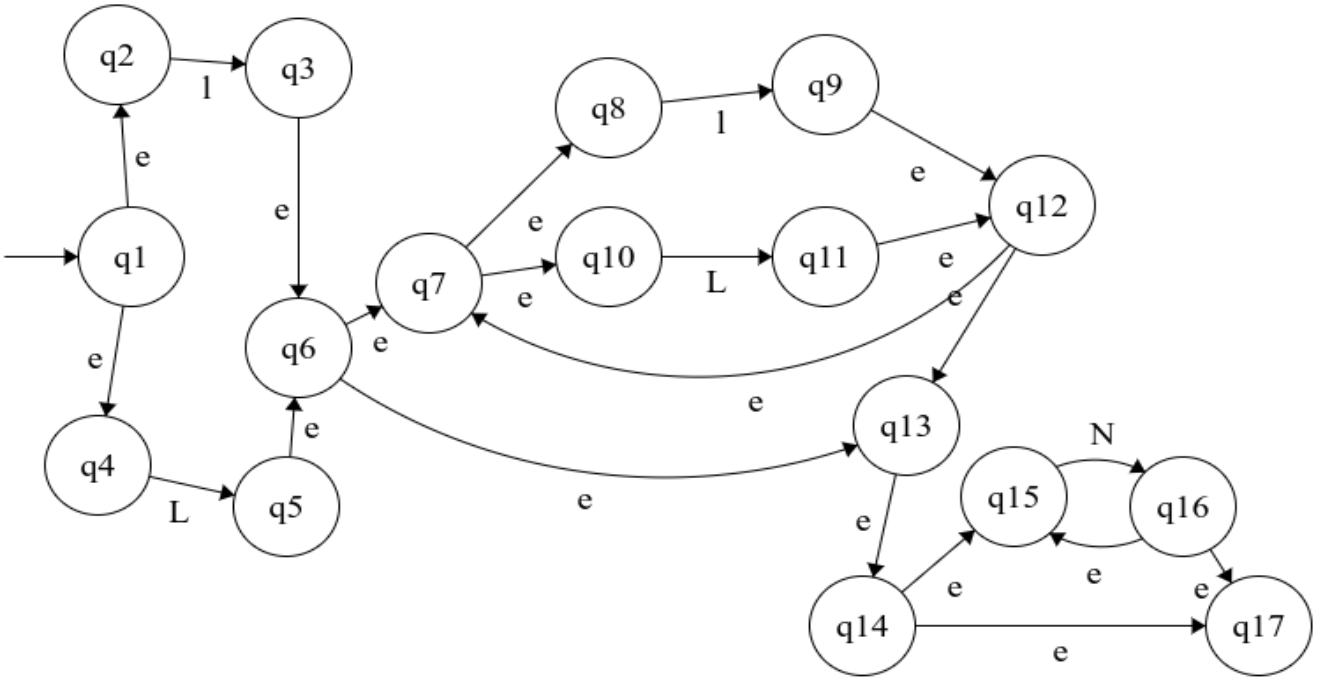


Tabla de Thompson

Estados	Transiciones ε	Funcion transición "l"	Funcion transición "L"	Funcion transición "N"
q1	q2,q4= A	δ(A,l)= q3	δ(A,L)= q5	----
q3	q6,q7,q8,q10,q13, q14,q15,q17= B	δ(B,l)= q9	δ(B,L)=q11	δ(B,N)= q16
q5	q6,q7,q8,q10,q13, q14,q15,q17= B	δ(B,l)= q9	δ(B,L)=q11	δ(B,N)= q16
q9	q7,q8,q9,q12,q13, q14,q15,q17=C	δ(C,l)=q9	δ(C,L)= q11	δ(C,N)= q16
q11	q7,q8,q9,q12,q13, q14,q15,q17=C	δ(C,l)=q9	δ(C,L)= q11	δ(C,N)= q16
q16	q15=D	δ(E,a)=	δ(E,b)=	δ(D,N)= D

Tabla de transiciones

δ(A,l)= B	**δ(A,L)= B**	**δ(A,N)= ---**
δ(B,l)= C	**δ(B,L)= C**	**δ(B,N)= D**
δ(C,l)= C	**δ(C,L)= C**	**δ(C,N)= D**
δ(D,l)= ---	**δ(D,l)= ---**	**δ(D,N)= D**

Definición formal.

K= (Q, Σ, ∂, S1, F)

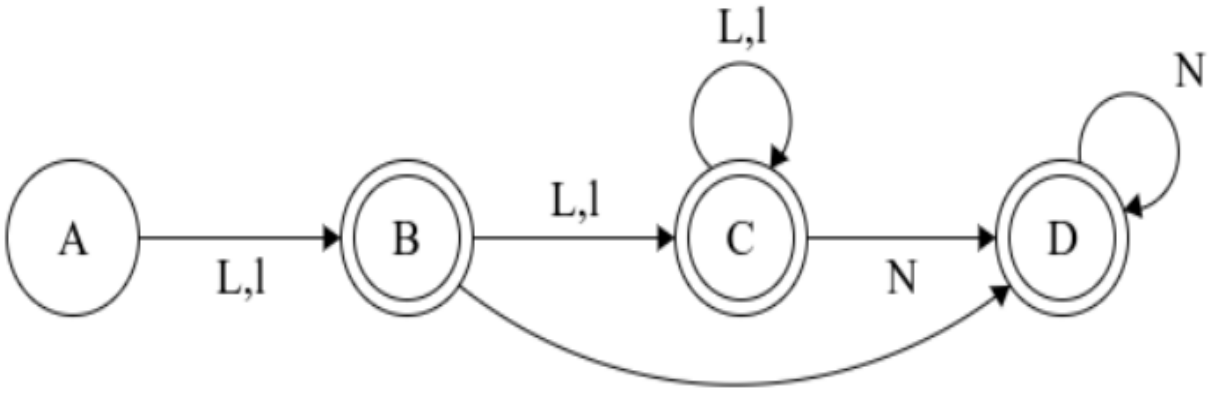
Conjunto de estados del A
Q = { A, B,C,D}

Estado inicial.
A

Alfabeto Σ
Σ = {_L,N}

Estados de aceptación
D

Autómata final.



Token 2: **Lexema**
Número **Solo números**
N = número.

N+

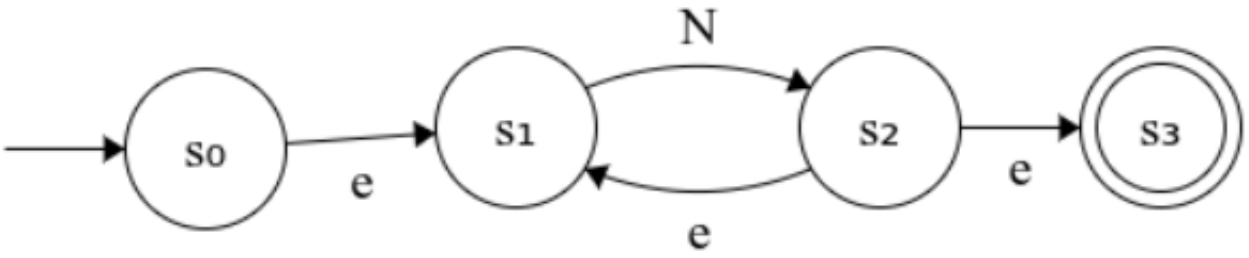


Tabla de Thompson

Estados	Transiciones ε	Funcion transición "N"
S0	**S1= A**	**δ(A,N)= S2**
S2	**S1,S3=B**	**δ(B,N)= S2**

Definición formal.

K= (Q, Σ, ∂, S1, F)

Conjunto de estados del A
Q = { A, B}

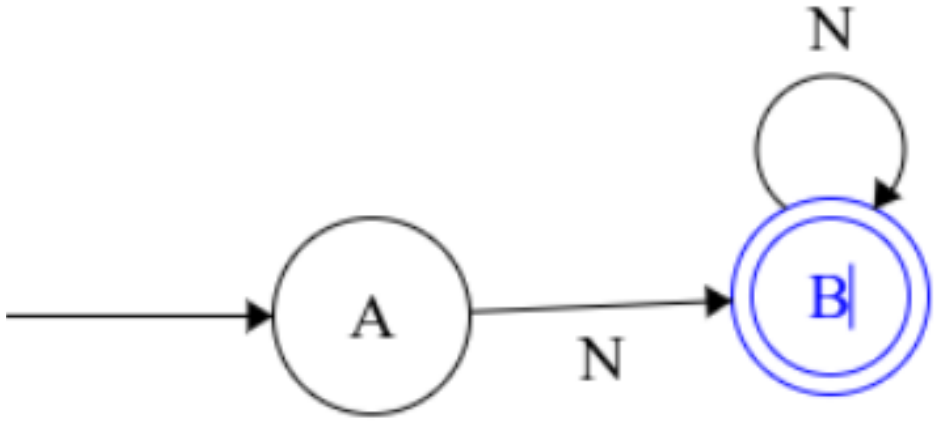
Estado inicial.
A

Alfabeto Σ
Σ = {0,1,2,3,4,5,6,7,8,9}

Estados de aceptación
B

Autómata final

δ(A,N)= B
δ(B,N)= B



Token 3: **Lexema**
Símbolo **Signos de puntuación, comillas, slash**
P = Algún símbolo.

P

Autómata Final

Definición formal.

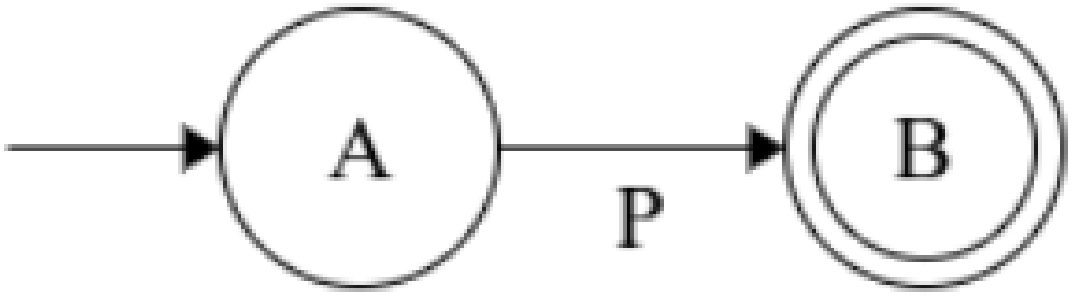
K= (Q, Σ, ∂, S1, F)

Conjunto de estados del A
Q = { A, B}

Estado inicial.
A

Alfabeto Σ
Σ = {‘ , . : ; / < > + * ÷ -}

Estados de aceptación
B



Token 4: **Lexema**
Comentario **doble diagonal y palabras seguidas**
C = Símbolo de comentario.

/./.id*

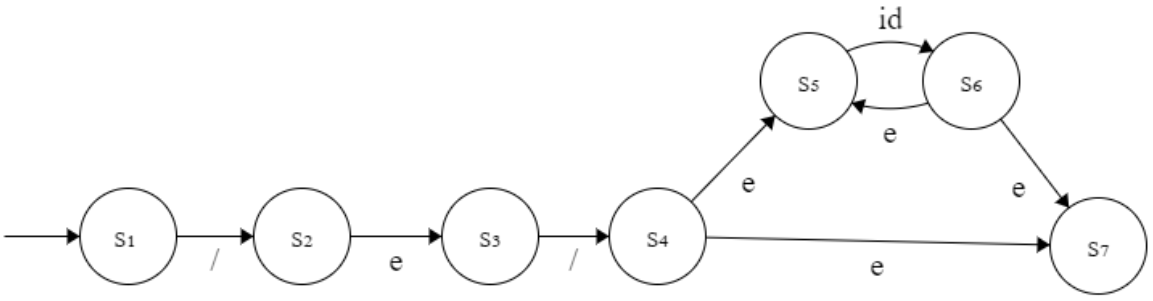


Tabla de transiciones thompson

Estados	Transiciones ε	Transiciones /	Transiciones id
s1	0=A	(A,/)=s2	---
s2	s3=B	(B, /)=s4	---
s4	s5,s7=C	(C, /)=---	(C, id)= s6
s6	s5,s7=C	(C, /)=---	(C)

Tabla de transiciones

δ(A,/)= B	**δ(A,id)= --**
δ(B,/)= C	**δ(B,id)=--**
δ(C,/)= --	**δ(C,id)= C**
δ(C,)= ---	**δ(C,id)= C**

Definición formal.

K= (Q, Σ, ∂, S1, F)

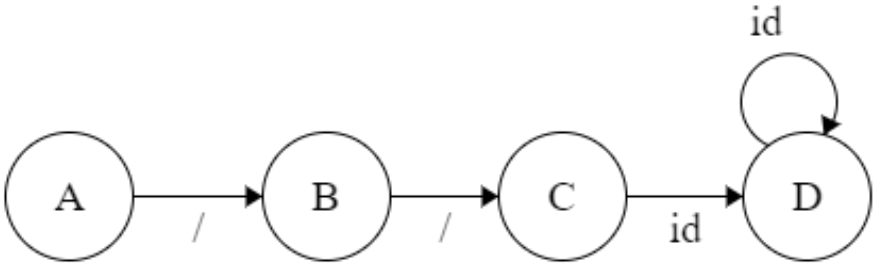
Conjunto de estados del A
Q = { A, B,C,D}

Estado inicial.
A

Alfabeto Σ
Σ = {/,[a-z]}

Estados de aceptación
D

Autómata final.



Token 5: **Lexema**
Especial **diagonal y letras**
E = Símbolo de operador.

\.(r/n/t/f)

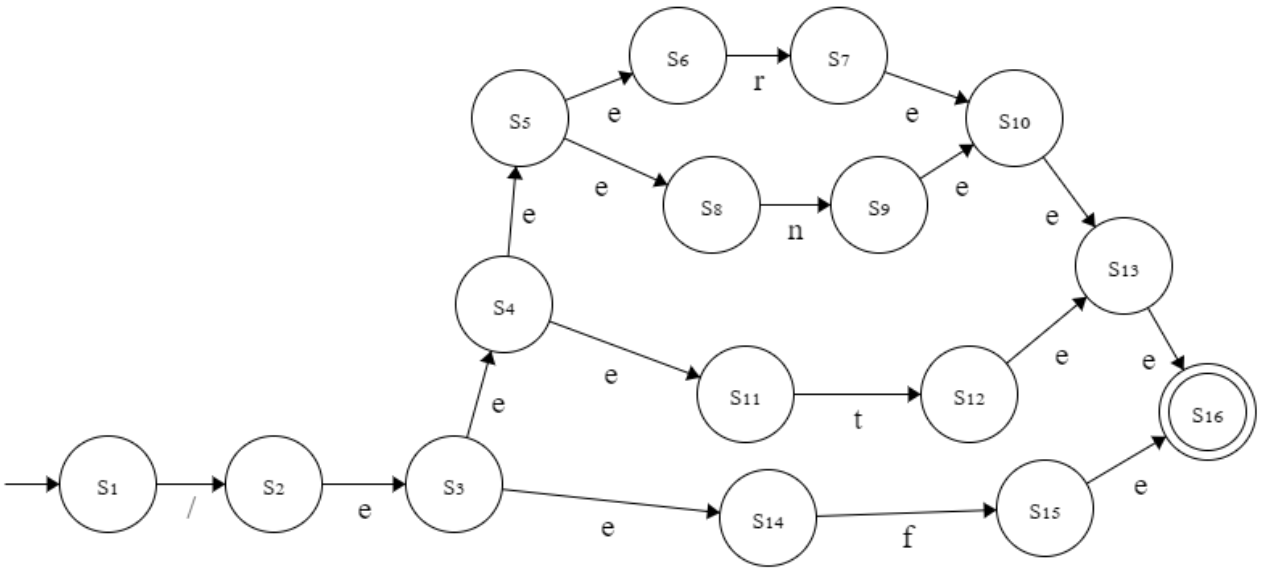


Tabla de Thompson

Estados	Transiciones ε	Funcion transición "\"	Funcion transición "r"	Funcion transición "t"	Funcion transición "n"	Funcion transición "f"
s1	0= A	δ(A,\)= B	δ(A,r)= ----	δ(A,t)= ----	δ(A,n)=	δ(A,f)= ----
s2	s3,s4,s5,s6,s8,s11,s14=B	δ(B,\)= ---	δ(B,r)=s7	δ(B,t)= s12	δ(B,n)= s9	δ(B,f)= s15
s7	s10,s13,s16=C	δ(C,\)= ---	δ(C,r)=---	δ(C,t)= ---	δ(C,n)= ---	δ(C,f)= ---
s12	s13,s16=D	δ(D,\)=---	δ(D,r)= ---	δ(D,t)= ---	δ(D,n)= ---	δ(D,f)= ---
s9	s10,s13,s16=E	δ(E,\)=---	δ(E,r)= ---	δ(E,t)= ---	δ(E,n)= ---	δ(E,f)= ---
s15	s16=f	δ(f,\)=---	δ(f,r)=---	δ(f,t)= ---	δ(f,n)= ---	δ(f,f)= ---

Tabla de transiciones

δ(A,\)= B	δ(A,r)= --	δ(A,t)= --	δ(A,n)= --	δ(A,f)= --
δ(B,\)= ---	δ(B,r)= C	δ(B,t)=D	δ(B,n)= E	δ(B,f)= F
δ(C,\)= ---	δ(C,r)= ---	δ(C,t)= ---	δ(C,n)= ---	δ(C,f)= ---

δ(D,\)=---	δ(D,r)=---	δ(D,t)=---	δ(D,n)=---	δ(D,f)=---
δ(E,\)=---	δ(E,r)=---	δ(E,t)=---	δ(E,n)=---	δ(E,f)=---
δ(f,\)=---	δ(f,r)=---	δ(f,t)=---	δ(f,n)=---	δ(f,f)=---

Definición formal.

K= (Q, Σ, ∂, S1, F)

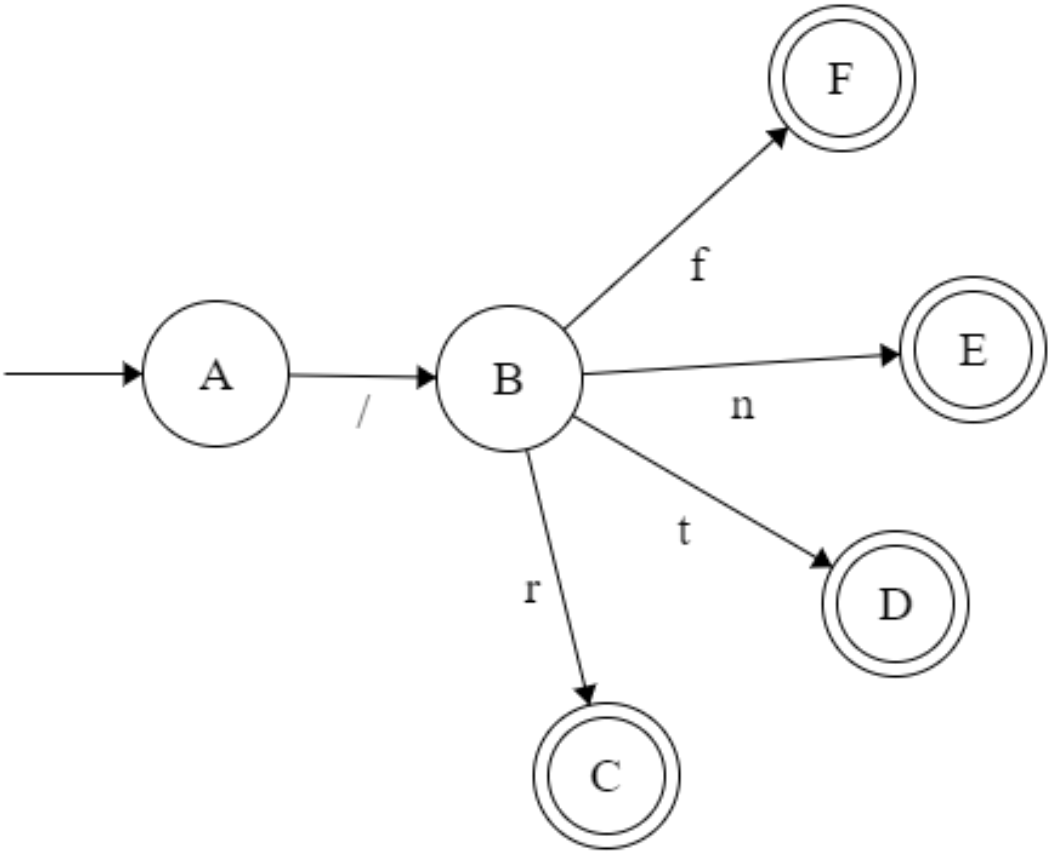
Conjunto de estados del A
Q = { A, B}

Estado inicial.
A

Alfabeto Σ
Σ = {A}

Estados de aceptación
B

Autómata final



Expresión regular Total.

[P / N+ / \.(r/n/t/f) / /./.id* / (L/_).(L/_)*.N*]+

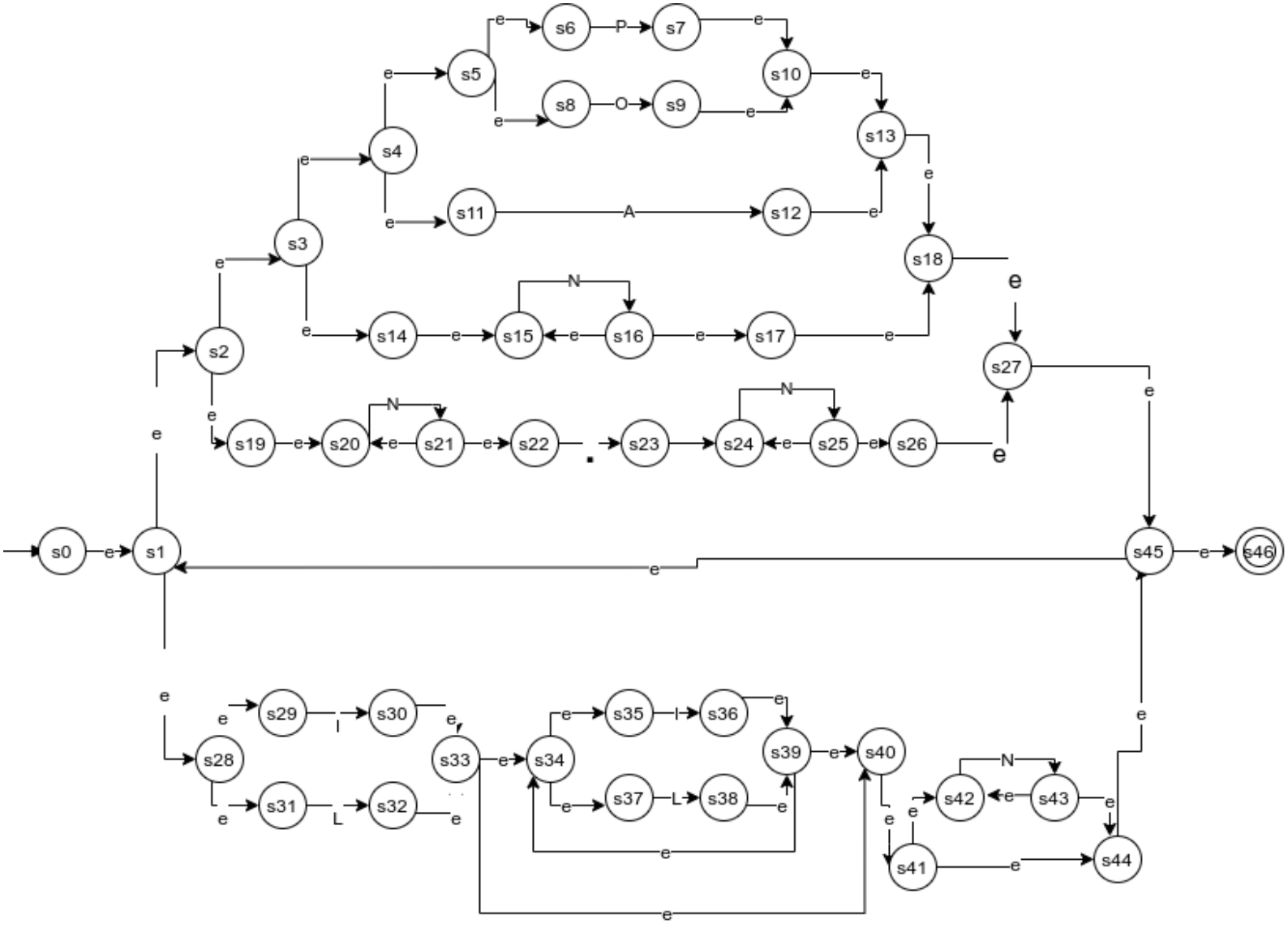


Tabla de Thompson

Estados	Transiciones ε	Funcion transición “I”	Funcion transición “L”	Funcion transición “N”	Funcion transición “.”	Funcion transición “P”	Funcion transición “O”	Funcion transición “A”
S0	s1,s2,s3,s4,s5,s6,s8,s11,s14,s15,s19,s20,s28,s29,s31 = B	δ(B,I)= s30	δ(B,L)= s32	δ(B,N)= s16,s21	δ(B, .)=-------	δ(B,P) = S7	δ(B,O)=S9	δ(B,A)=s12
s30	s33,s34,s35,s37,s40,s41,s42,s44,s45,s46 = C	δ(C,I)=s36	δ(C,L)= s38	δ(C,N)= s43	δ(C, .)=-------	δ(C, P)=-------	δ(C,O)=-------	δ(C,A)=-------
s32	s33,s34,s35,s37,s40,s41,s42,s44,s45,s46 = C	δ(C,I)=s36	δ(C,L)= s38	δ(C,N)= s43	δ(C, .)=-------	δ(C, P)=-------	δ(C,O)=-------	δ(C,A)=-------
{s16,s21}	s15,s17,s18,s27,s22,s1,s2,s3,s4,s5,s6,s8,s11,s14,s15,s19,s20,s28,s29,s31,s45,s46 = D	δ(D,I)=s30	δ(D,L)= s32	δ(D,N)= s16,s21	δ(D, .) = s23	δ(D, P)=-s7	δ(D,O)=s9	δ(D,A)= s12
S7	s10,s13,s18,s27,s45,s46,s1,s2,s3,s4,s5,s6,s8,s11,s14,s15,s19,s20,s28,s29,s31=E	δ(E,I)= s30	δ(E,L)= s32	δ(E,N)= s16,s21	δ(E, .)=-------	δ(E,P) = S7	δ(E,O)=S9	δ(E,A)=s12
s9	s10,s13,s18,s27,s45,s46,s1,s2,s3,s4,s5,s6,s8,s11,s14,s15,s19,s20,s28,s29,s31=E	δ(E,I)= s30	δ(E,L)= s32	δ(E,N)= s16,s21	δ(E, .)=-------	δ(E,P) = S7	δ(E,O)=S9	δ(E,A)=s12

s12	s13,s18,s27,s45, s46,s1,s2,s3,s4, s5,s6,s8,s11,s14 ,s15,s19,s20,s28 ,s29,s31=F	δ(F,I)= s30	δ(F,L)= s32	δ(F,N)= s16,s21	δ(F, .)=-------	δ(F,P) = S7	δ(F,O)=S9	δ(F,A)=s12
s36	s39,s34,s35,s37, s40,s41,s42,s44. s45.s46,s1,s2,s3 ,s4,s5,s6,s8,s11, s14,s15,s19,s20, s28,s29,s31 =G	δ(G,I)=s36	δ(G,L)= s38	δ(G,N)= s43	δ(G, .)=------	δ(G,P)= s38	δ(G,O)= s43	δ(G,A)= s43
s38	s39,s34,s35,s37, s40,s41,s42,s44. s45.s46,s1,s2,s3 ,s4,s5,s6,s8,s11, s14,s15,s19,s20, s28,s29,s31 =G	δ(G,I)=s36	δ(G,L)= s38	δ(G,N)= s43	δ(G, .)=------	δ(G,P)= s38	δ(G,O)= s43	δ(G,A)= s43
s43	s42,s44,s45,s46, s1,s2,s3,s4,s5,s 6,s8,s11,s14,s15 ,s19,s20,s28,s29 ,s31 = H	δ(H,I)=s30	δ(H,L)= s32	δ(H,N)= s43	δ(H, .)=s------	δ(H,P)= s7	δ(H,O)= s9	δ(H,A)= s12
s23	s24= I	δ(i,I)=s-------	δ(i,L)= -------	δ(i,N)= s25	δ(i, .)=s------	δ(i,P)= -------	δ(i,O)= -------	δ(i,A)= -------
a25	s24,s26,s27,s45, s46,s1,s2,s3,s4, s5,s6,s8,s11,s14 ,s15,s19,s20,s28 ,s29,s31 = j	δ(j,I)=s30	δ(j,L)= 32	δ(j,N)= s25	δ(j, .)=s------	δ(j,P)= s7	δ(j,O)= s9	δ(j,A)= s12

Tabla de transiciones

δ(B,l)= C	δ(B,L)= C	δ(B,N)= D	δ(B, .)=s------	δ(B,P)= E	δ(B,O)= E	δ(B,A)=F
δ(C,l)= G	δ(C,L)= G	δ(C,N)= H	δ(C, .)=-------	δ(C,P)= E	δ(C,O)= E	δ(C,A)= F
δ(D,l)= C	δ(D,L)= C	δ(D,N)= D	δ(D, .)= i	δ(D,P)= E	δ(D,O)= E	δ(D,A)= F
δ(E,l)= C	δ(E,L)= C	δ(E,N)= D	δ(E, .)=-------	δ(E,P)= E	δ(E,O)= E	δ(E,A)= F
δ(F,l)= C	δ(F,L)= C	δ(F,N)= D	δ(F, .)=-------	δ(F,P)= E	δ(F,O)= E	δ(F,A)= F
δ(G,l)=G	δ(G,L)=G	δ(G,N)= H	δ(G, .)=------	δ(G,P)= E	δ(G,O)= E	δ(G,A)= F
δ(H,l)=C	δ(H,L)= C	δ(H,N)= H	δ(H, .)=s------	δ(H,P)= E	δ(H,O)= E	δ(H,A)= F
δ(i,l)=s-------	δ(i,L)= -------	δ(i,N)= j	δ(i, .)=s------	δ(i,P)= -------	δ(i,O)= -------	δ(i,A)= -------
δ(j,l)=C	δ(j,L)= C	δ(j,N)= j	δ(j, .)=s------	δ(j,P)= E	δ(j,O)= E	δ(j,A)= F

Definición formal.

K= (Q, Σ, ∂, B, F)

Conjunto de estados del A
Q = { B,C,D,E,F,G,H,I,J}

Estado inicial.
B

Alfabeto Σ

Σ = {L,l,N,●,P,O,A}

Estados de aceptación
{C,D,E,F,G,H,J}

Donde

l = [a-z]

L=[A-Z]

N=[0-9]

P=[. , : ; + - * / < >]

Autómata Final