

Universidad San Carlos de Guatemala  
Centro Universitario de Occidente  
División de Ciencias de la Ingeniería  
Laboratorio Lenguajes Formales de Programación  
Ing. Oliver Sierra.  
Segundo Semestre 2021.



## Practica 1.

### Analizador Léxico

Nombre: Estuardo Israel Ramos Gómez

Carné: 201830358

Quetzaltenango 6 de octubre de 2021.

## Practica No 1

### Token Enteros

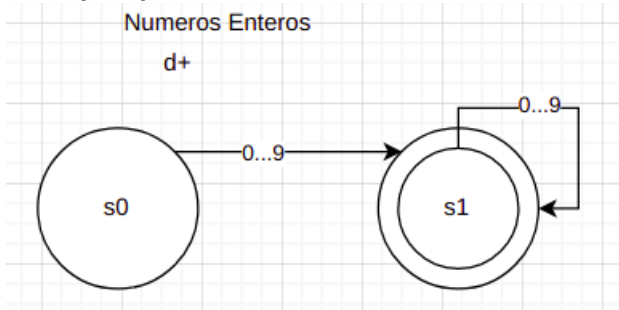
Definición formal AFD:  $A = (Q, \Sigma, \partial, A, F)$

$Q = \{ S0, S1 \}$

2.  $S0$

3.  $\Sigma = \{ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 \}$

4.  $F = \{ S1 \}$



### Token decimal

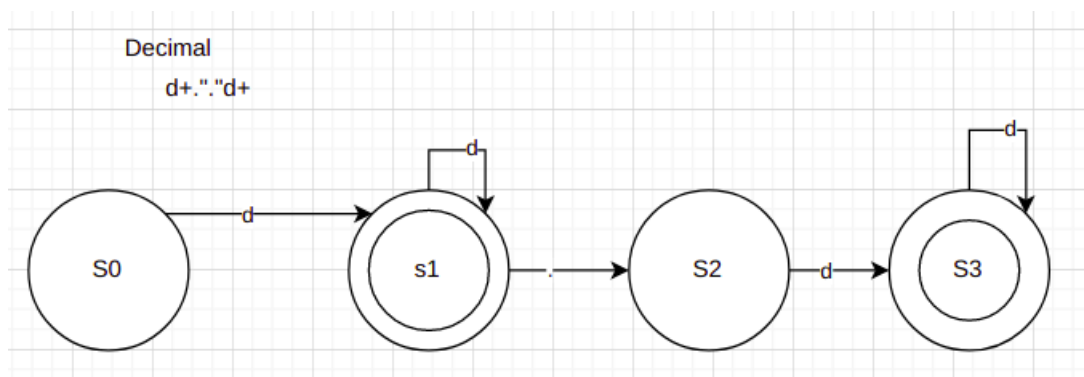
Definición formal AFD:  $A = (Q, \Sigma, \partial, A, F)$

$Q = \{ S0, S1, S2, S3 \}$

2.  $S0$

3.  $\Sigma = \{ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, . \}$

4.  $F = \{ S1, S3 \}$



### Token Identificador

Definición formal AFD:  $A = (Q, \Sigma, \partial, A, F)$

Expresión regular  $L+.d^*$

$L$  = Letras de la a a la z.

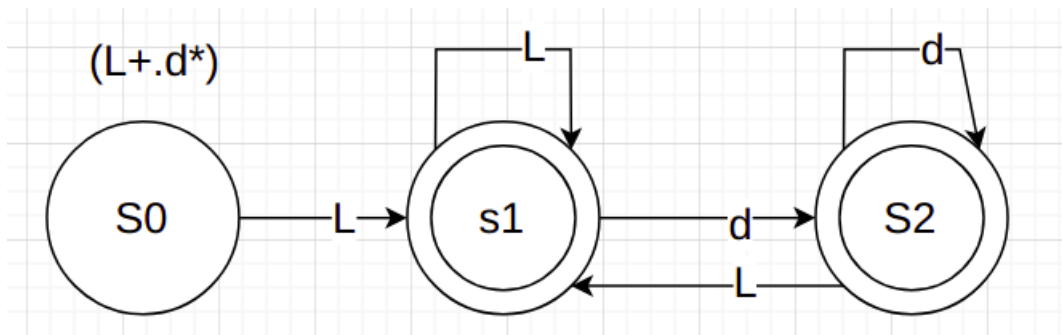
$d$  = dígitos de 0 a 9.

$Q = \{ S0, S1, S2 \}$

2.  $S0$

3.  $\Sigma = \{ a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z \}$

4.  $F = \{ S1, S3 \}$



### Token Signos de puntuación

Definición formal AFD:  $A = (Q, \Sigma, \partial, A, F)$

Expresión regular  $L+.d^*$

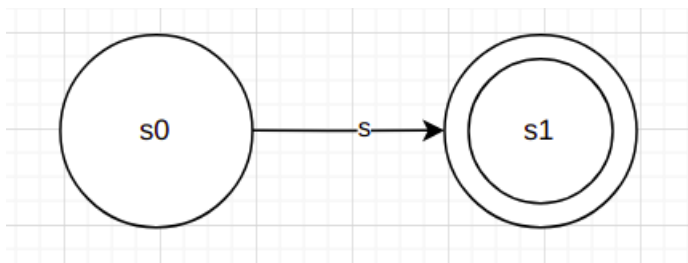
$p$  = signos de puntuación

$Q = \{ S0, S1, S2 \}$

2.  $S0$

3.  $\Sigma = \{ “.”, “,”, “:”, “:” \}$

4.  $F = \{ S1 \}$



### Token Signos de Agrupación

Definición formal AFD:  $A = (Q, \Sigma, \delta, A, F)$

Expresión regular  $s$

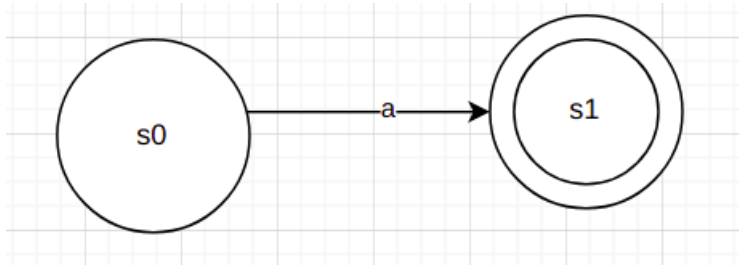
$a$  = signos de agrupación

$Q = \{ S0, S1 \}$

2.  $S0$

3.  $\Sigma = \{ (, ), \{, \}, [, ] \}$

4.  $F = \{ S1 \}$



### Token Operadores

Definición formal AFD:  $A = (Q, \Sigma, \delta, A, F)$

Expresión regular  $s$

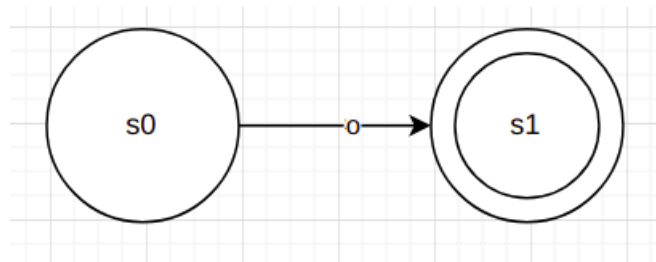
$o$  = operadores  $-|+|*|/|\%$

$Q = \{ S0, S1 \}$

2.  $S0$

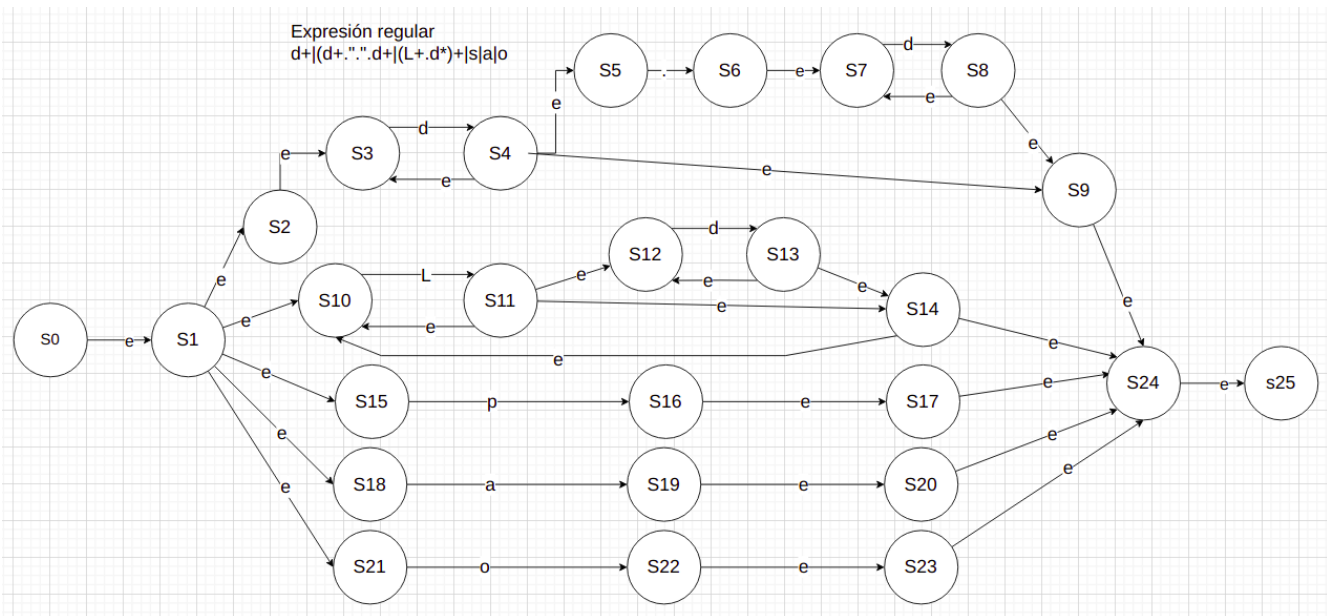
3.  $\Sigma = \{ -, +, /, *, \% \}$

4.  $F = \{ S1 \}$



## AFD de todos los tokens

Utilizamos el método de Thompson



FT	e	d	.	L	p	a	o
s0	s1,s2,s3,s10,s15,s18,s21=A	$\partial(A,d)=s4$	$\partial(A,.)=$	$\partial(A,L)=s11$	$\partial(A,p)=s16$	$\partial(A,a)=s19$	$\partial(A,o)=s22$
s4	S3,s5,s9,s24,s25=B	$\partial(B,d)=s4$	$\partial(B,.)=s6$	$\partial(B,L)$	$\partial(B,p)$	$\partial(B,a)$	$\partial(B,o)$
s11	s10,s12,s14,s24,s25=C	$\partial(C,d)=s13$	$\partial(C,.)=$	$\partial(C,L)=s11$	$\partial(C,.)=$	$\partial(C,.)=$	$\partial(C,.)=$
s16	s17,s24,s25=D	$\partial(D,d)=$	$\partial(D,.)=$	$\partial(D,.)=$	$\partial(D,.)=$	$\partial(D,.)=$	$\partial(D,.)=$
s19	s20,s24,s25=E	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$
s22	s23,s24,s25=F	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$
S6	S7=G	$\partial(G,d)=s8$	$\partial(G,.)=$				
s13	S10,S12,s14=H	$\partial(H,d)=s13$		$\partial(H,d)=s11$			
s8	s7,s9,s24,s25=I	$\partial(I,d)=s8$					

	d	.	L	p	a	o
A	$\partial(A,d)=B$	$\partial(A,.)=$	$\partial(A,L)=C$	$\partial(A,p)=D$	$\partial(A,a)=E$	$\partial(A,o)=F$
B	$\partial(B,d)=B$	$\partial(B,.)=G$	$\partial(B,L)$	$\partial(B,p)$	$\partial(B,a)$	$\partial(B,o)$
C	$\partial(C,d)=H$	$\partial(C,.)=$	$\partial(C,L)=C$	$\partial(C,.)=$	$\partial(C,.)=$	$\partial(C,.)=$
D	$\partial(D,d)=$	$\partial(D,.)=$	$\partial(D,.)=$	$\partial(D,.)=$	$\partial(D,.)=$	$\partial(D,.)=$
E	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$	$\partial(E,.)=$
F	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$	$\partial(F,.)=$
G	$\partial(G,d)=I$	$\partial(G,.)=$				
H	$\partial(H,d)=H$		$\partial(H,d)=C$			
I	$\partial(I,d)=I$					

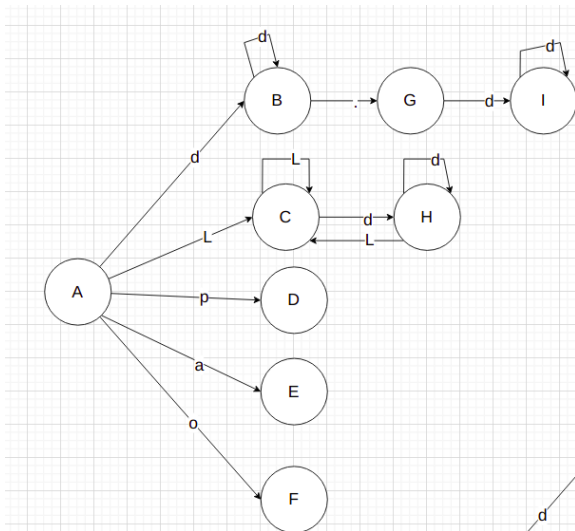


Tabla de transiciones

	d	.	L	p	a	o
A	<u>B</u>	error	C	D	E	<u>F</u>
<u>B</u>	<u>B</u>	G	error	error	error	error
C	<u>H</u>	error	C	error	error	error
D	error	error	error	error	error	error
E	error	error	error	error	error	error
<u>F</u>	error	error	error	error	error	error
G	I	error	error	error	error	error
<u>H</u>	<u>H</u>	error	C	error	error	error

Por motivos de facilidad al interpretar y programar se realizo cambio de variables

S0=A

S1=B

S2=G

S3=I

S4=C

S5=H

S6=D

S7=E

S8=F

Entonces nuestro diagrama de transiciones quedaría de la siguiente manera

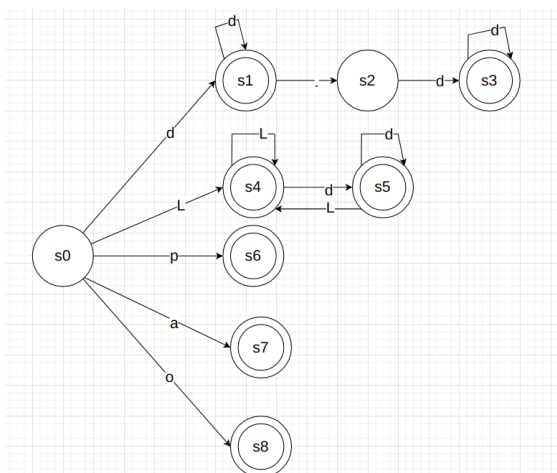


Tabla de transiciones

	d	.	L	p	a	o
s0	s1	e	s4	s6	s7	s8
s1	s1	s2	e	e	e	e
s2	s3	e	e	e	e	e
s3	s3	e	e	e	e	e
s4	s5	e	s4	e	e	e
s5	s5	e	s4	e	e	e
s6	e	e	e	e	e	e
s7	e	e	e	e	e	e
s8	e	e	e	e	e	e

Definición formal AFD:  $A = (Q, \Sigma, \partial, A, F)$

Expresión regular  $d^+|d^+."^+|d^+|(L^+d^*)^+|p|a|o$

L= Letras de la a a la z.

d = dígitos de 0 a 9.

p= signos de puntuación

a = signos de agrupación

o = operadores

$Q = \{ S0, S1, S2 \}$

2. S0

3.  $\Sigma = \{ a,b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., ", " ", ":", ":", "(", ")", \{, \}, [, ], -, +, /, *, \% \}$

4.  $F = \{ S1, S3 \}$