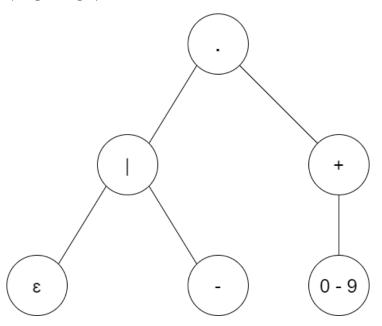
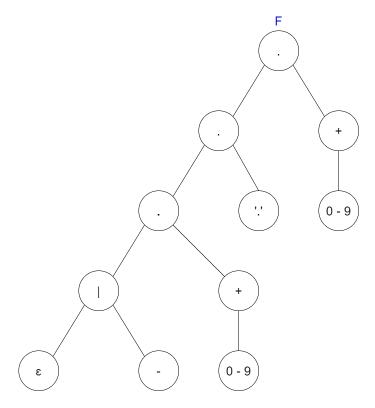
DEFINICIÓN DEL AUTÓMATA (MÉTODO DEL ÁRBOL)

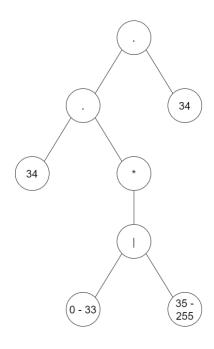
- Enteros: (-?[0-9]+)



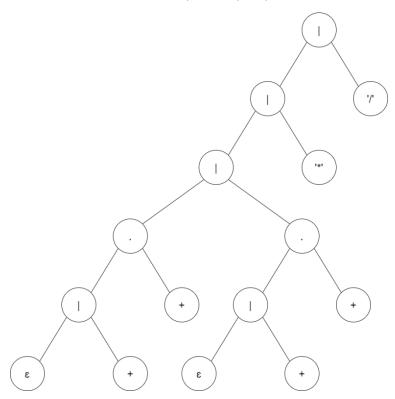
- **Decimal:** (-?[0-9]+'.'[0-9]+)



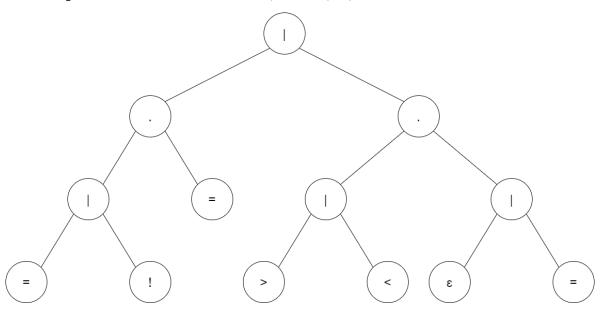
- Cadena: (34 ([0 - 33] | [35 - 255])* 34)



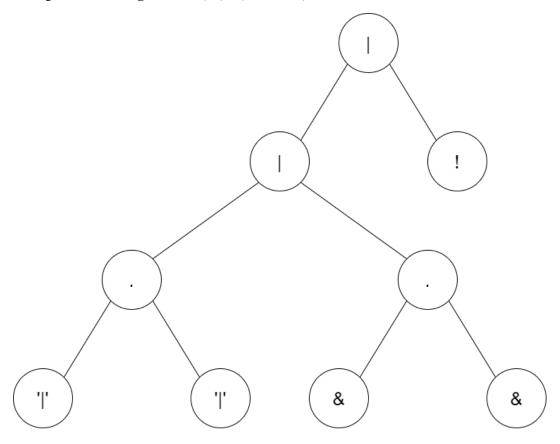
- Operadores Aritméticos: [((+?+) | (-?-)) | '*' | '/']



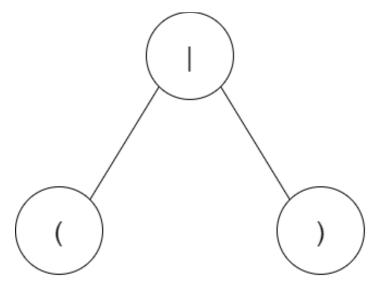
- Operadores Relacionales: [((> | <) =?) | (=|!)=]



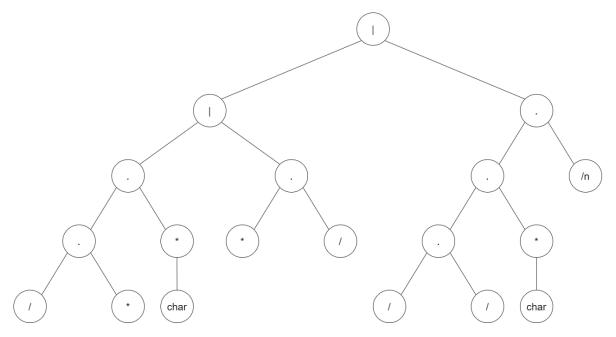
- Operadores Lógicos: (('|' '|')|(&&)|!)



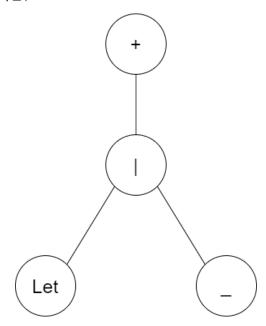
- Signos de Agrupación: ['(' | ')']



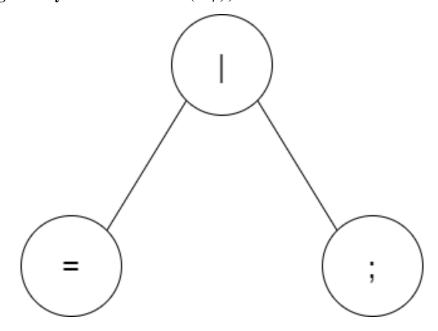
- Comentario: ['/' '*' (char)* '*' '/'] | ['/' '/' (char)* '/n']



- Palabras: $L | (L|_{-}) +$

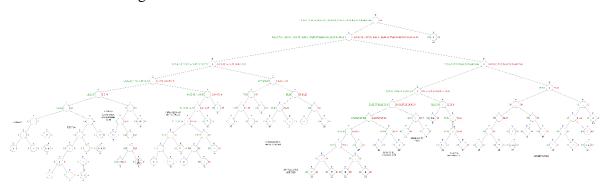


- Asignación y Fin de Sentencia: (= |;)



RESOLUCIÓN:

- Se crea el árbol, se determinó cada nodo era anulable o no era anulable y se hizo el cálculo de siguientes:



(Debido a la baja calidad de la imagen en este documento, la imagen se adjunta a la carpeta del proyecto en mejor calidad)

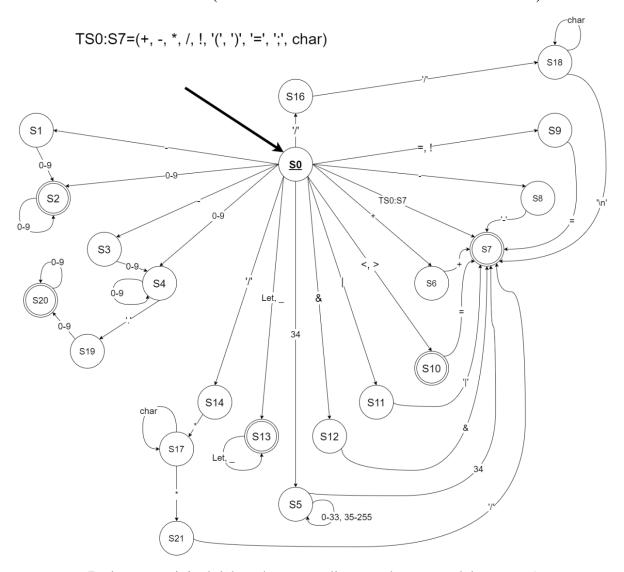
- Se hizo la tabla de siguientes:

No	Σ	Siguiente
1	-	2
2	0 - 9	2,44
3	-	4
4	0 - 9	4,5
		6
5 6	0 - 9	6,44
7	34	8,9,10
8	0 - 33	8,9,10
9	35 - 255	8,9,10
10	34	44
11	+	12
12	+	44
13	-	14
14	-	44
15	*	44
16	/	44
17	=	19
18	!	19
19	=	44
20	>	22,44
21	<	22,44
22	=	44
23		24
24		44
25	&	26
26	&	44
27	!	44
28	(44
29)	44
30	=	44
31	;	44
32	char	44
33	Let	33,34,44
34	_	33,34,44
35	/	36
36	*	37,38
37	char	37,38
38	*	39
39	/	44
40	1	41
41	1	42,43
42	char	42,43
43	\n	44
44	\$	

- Se obtuvo la tabla de transiciones:

Q/Σ	Siguientes	Transición		
	Sig(1)={2}=S1	δ(S0,-)=S1		
	Sig(2)={2,44}=S2	δ(S0,0-9)=S2		
	Sig(3)={4}=S3	δ(S0,-)=S3		
	Sig(4)={4,5}=S4	δ(S0,0-9)=S4		
	Sig(7)={8,9,10}=S5	δ(S0,34)=S5		
	Sig(11)={12}=S6	δ(S0,+)=S6		
	Sig(12)={44}=S7	δ(S0,+)=S7		
	Sig(13)={14}=S8	δ(S0,-)=S8		
	Sig(14)={44}=S7	δ(S0,-)=S7		
	Sig(15)={44}=S7	δ(S0,*)=S7		
	Sig(16)={44}=S7	δ(S0,/)=S7		
	Sig(17)={19}=S9	δ(S0,=)=S9		
	Sig(18)={19}=S9	δ(S0,!)=S9		
SO =	Sig(20)={22,44}=S10	δ(S0,>)=S10		
1,2,3,4,7,11,12,13,14,15,16,17,18,20,21,23,25,27,28,29,30,31,32,33,34,35,40	Sig(21)={22,44}=S10	δ(S0,<)=S10		
	Sig(23)={24}=S11	δ(S0,)=S11		
	Sig(25)={26}=S12	δ(S0,&)=S12		
	Sig(27)={44}=S7	δ(S0,'!)=S7		
	Sig(28)={44}=S7	δ(S0,'(')=S7		
	Sig(29)={44}=S7	δ(S0,')')=S7		
	Sig(30)={44}=S7	δ(S0,=)=S7		
	Sig(31)={44}=S7	δ(S0,;)=S7		
	Sig(32)={44}=S7	δ(S0,char)=S7		
	Sig(33)={33,34,44}=S13	δ(S0,Let)=S13		
	Sig(34)={33,34,44}=S13	δ(S0,_)=S13		
	Sig(35)={36}=S14	δ(S0,/)=S14		
	Sig(40)={41}=S16	δ(S0,/)=S16		
S1 = {2}	Sig(2)={2,44}=S2	δ(S1,0-9)=S2		
S2 = {2,44}	Sig(2)={2,44}=S2	δ(S2,0-9)=S2		
S3 = {4}	Sig(4)={4,5}=S4	δ(S3,0-9)=S4		
S4 = {4,5}	Sig(4)={4,5}=S4	δ(S4,0-9)=S4		
34 - (4,3)	Sig(5)={6}=S19	δ(S4,.)=S19		
	Sig(8)={8,9,10}=S5	δ(S5,0-33)=S5		
S5 = {8,9,10}	Sig(9)={8,9,10}=S5	δ(S5,35-255)=S5		
	Sig(10)={44}=S7	δ(S5,34)=S7		
S6 = {12}	Sig(12)={44}=S7	δ(S6,+)=S7		
S7 = {44}				
S8 = {14}	Sig(14)={44}=S7	δ(S8,-)=S7		
S9 = {19}	Sig(19)={44}=S7	δ(S9,=)=S7		
S10 = {22,44}	Sig(22)={44}=S7	δ(S10,=)=S7		
S11 = {24}	Sig(24)={44}=S7	δ(S11,)=S7		
S12 = {26}	Sig(26)={44}=S7	δ(S12,&)=S7		
S13 = {33,34,44}	Sig(33)={33,34,44}=S13			
	Sig(34)={33,34,44}=S13	· · · · · · · · · · · · · · · · · · ·		
S14 = {36}	Sig(36)={37,38}=S17	δ(S14,*)=S17		
S16 = {41]	Sig(41)={42,43}=S18	δ(S16,/)=S18		
S17 = {37,38}	Sig(37)={37,38}=S17	δ(S17,char)=S17		
	Sig(38)={39}=S21	δ(S17,*)=S21		
	Sig(42)={42,43}=S18	δ(S18,char)=S18		
S18 = {42,43}	0: /40\ (\			
	Sig(43)={44}=S7	δ(S18,\n)=S7		
S19 = {6}	Sig(6)={6,44}=S20	δ(S19,0-9)=S20		

- Se obtuvo el autómata (En este caso un Autómata Finito No Determinista):



(La imagen original del autómata se adjunta en la carpeta del proyecto)

- Se hizo una tabla para convertir el AFnD en AFD

Q/E		0-9		34	0-33	35-255	+	•	1	-	1	>	<		&	()	- ;	char	Let		\n
Q0	\$1,\$3,\$7,\$8=Q1	52,54=Q2		55=Q3			56,57=Q4	\$7#Q5	\$7,\$14,\$16#Q6	\$7,\$9=Q7	57,59+Q7	S1=Q8	S10=Q8	S11=Q9	S12=Q10	S7 = Q5	S7 = Q5	57=Q5	57#Q5	S13+Q11	S13=Q11	
Q1={\$1,\$3,\$7,\$8}	57=Q5	52,54+Q2																				
Q2={S2,S4}		52,54+Q2	S19=Q12																			
Q3={S5}				57=Q5	SS=Q3	S5=Q3																
Q4={S6,S7}							57#Q5															
Q5={S7}																						
Q6={\$7,\$14,\$16}								S17=Q13	S18=Q17													
Q7={\$7,\$9}										57#Q5												
Q8={S10}										57=Q5												
Q9={S11}														57=Q5								
Q10={S12}															57#Q5							
Q11={S13}																				\$13+Q11	513=Q11	
Q12={S19}		S20+Q15																				
Q13={S17}								S21=Q16											S17=Q13			
Q15={S20}		S20+Q15																				
Q16=(S21)									\$7#Q5													
Q17=(S18)																			S18=Q17			57#Q5
																				,		

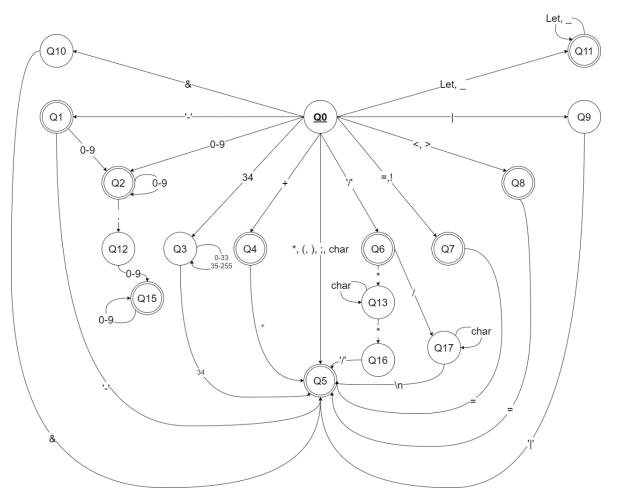
(Debido al tamaño de la tabla, la misma se adjunta a la carpeta del proyecto)

- Se hizo una tabla de transiciones:

	Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q0		-	0-9	34	+	*, (,), ;, char	/	97,1	<,>		&	Let, _						
Q1			0-9			-												
Q2			0-9															
Q3				0-33, 35-255		34												
Q4						+												
Q5																		
Q6														٠				/
Q7						=												
Q8						-												
Q9																		
Q10						&												
Q11												Let, _						
Q12																0-9		
Q13														char			•	
Q15																0-9		
Q16						/												
Q17						\n												char

(Debido al tamaño de la tabla, la misma se adjunta a la carpeta del proyecto)

- Se obtuvo el Autómata Finito Determinista



(La imagen original del autómata se adjunta en la carpeta del proyecto)

DEFINICIÓN FORMAL

$$A = \{Q, \Sigma, \delta, q0, F\}$$

 $Q = \{Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q15, Q16\}$

 $\Sigma = \{-, +, '.', 0-9, \&, |, <, >, =, ;, /, *, (,), ;, CHAR, 34, 0-33, 35-255, Let, _\}$

Q0 = q0

 $F = \{Q1, Q2, Q4, Q5, Q6, Q7, Q8, Q11, Q15\}$

Función de Transición Extendida:

$$\delta(Q0, .) = Q1$$
 $\delta(Q0, 0-9) = Q2$
 $\delta(Q0, 34) = Q3$
 $\delta(Q0, +) = Q4$
 $\delta(Q0, *) = Q5$
 $\delta(Q0, '(') = Q5$
 $\delta(Q0, ')') = Q5$
 $\delta(Q0, char) = Q5$
 $\delta(Q0, char) = Q5$
 $\delta(Q0, char) = Q7$
 $\delta(Q0, char) = Q1$
 $\delta(Q1, char) = Q1$
 $\delta(Q1, char) = Q2$
 $\delta(Q1, char) = Q2$
 $\delta(Q2, char) = Q2$
 $\delta(Q2, char) = Q1$
 $\delta(Q3, char) = Q3$
 $\delta(Q3, 35-255) = Q3$

$$\begin{split} &\delta(Q4,\,+) = Q5 \\ &\delta(Q6,\,^*) = Q13 \\ &\delta(Q6,\,/) = Q17 \\ &\delta(Q7,\,=) = Q5 \\ &\delta(Q8,\,=) = Q5 \\ &\delta(Q9,\,|) = Q5 \\ &\delta(Q10,\,\&) = Q5 \\ &\delta(Q11,\,Let) = Q11 \\ &\delta(Q11,\,_) = Q11 \\ &\delta(Q12,\,0\text{-}9) = Q15 \\ &\delta(Q13,\,char) = Q13 \\ &\delta(Q13,\,^*) = Q16 \\ &\delta(Q15,\,0\text{-}9) = Q15 \\ &\delta(Q16,\,/) = Q5 \\ &\delta(Q17,\,\langle n) = Q5 \\ &\delta(Q17,\,char) = Q17 \end{split}$$