

Documentation of Regular Expression and Finite Automata
transfer RE to NFA then to DFA with Transition table by
Thompson's construction.

Subject :Compiler

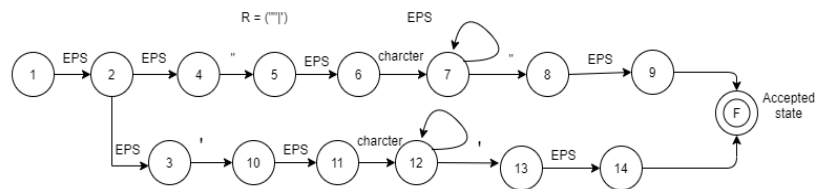
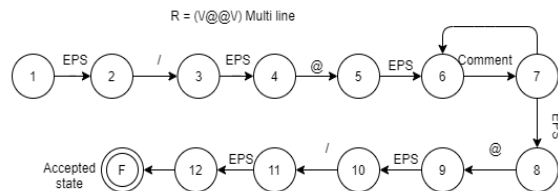
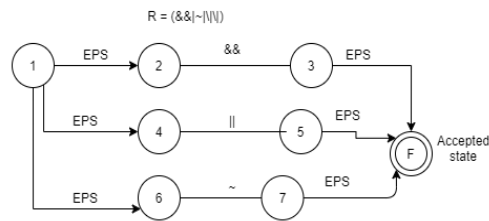
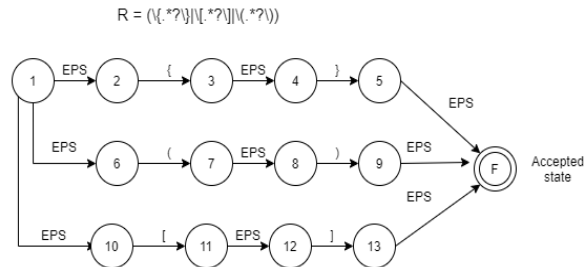
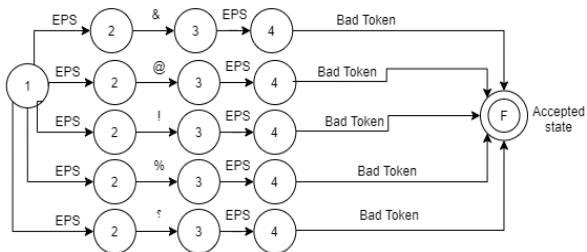
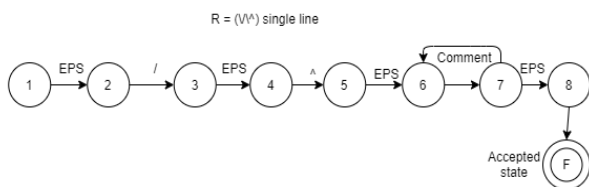
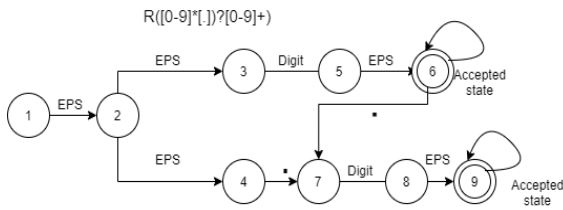
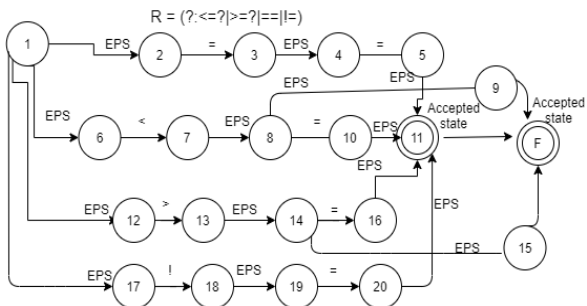
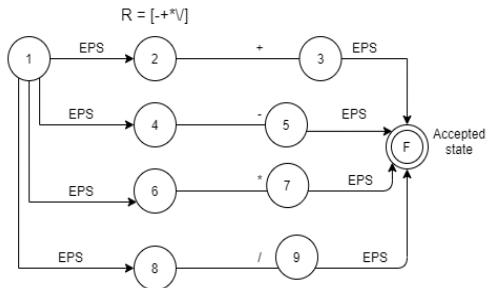
Dr :Amal Aboutabl

Eng : Ahmed Mahmoud Elbadawy

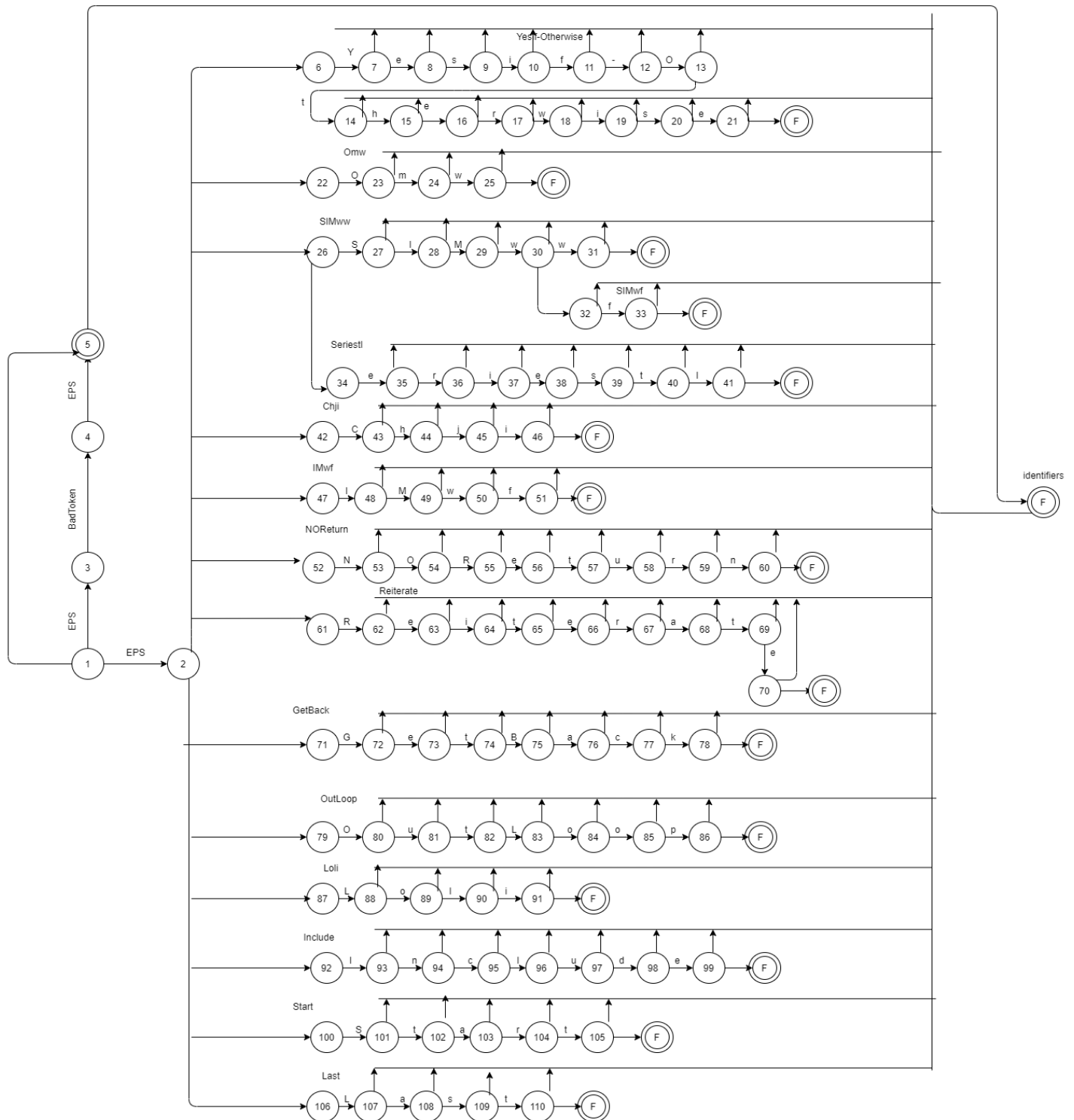
مصطفى محمد مصطفى كمال	20180606
محمد مديح عبدالحميد محمد	20180537
محمد كمال جاد الكريم	20180526
محمد خالد عبدالمجيد صبرى	20180489
يوسف محمد عبدالمجيد محمد	20180719
حبيبہ ياسر عبدالحى	20180188

NFA for all Table

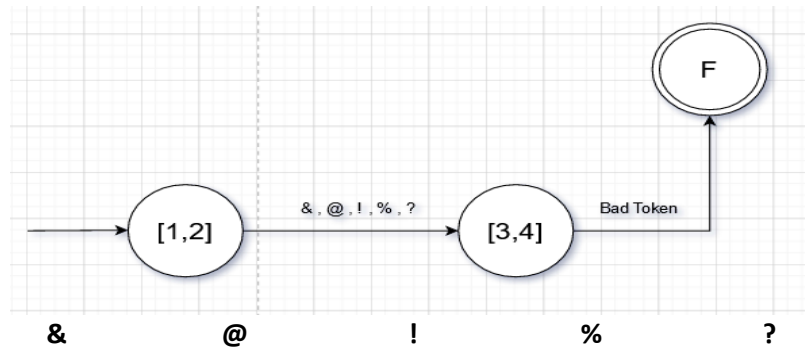
1-operation:



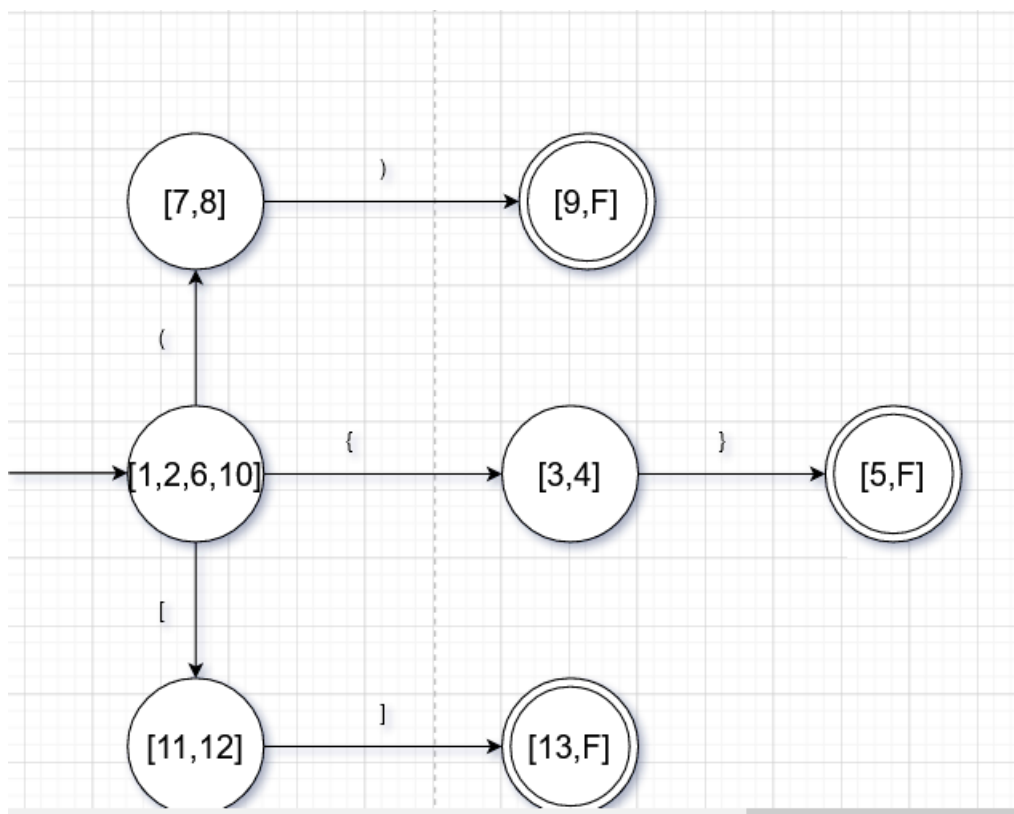
2-Lexeme Tokens:



DFA for ALL & Transition table :

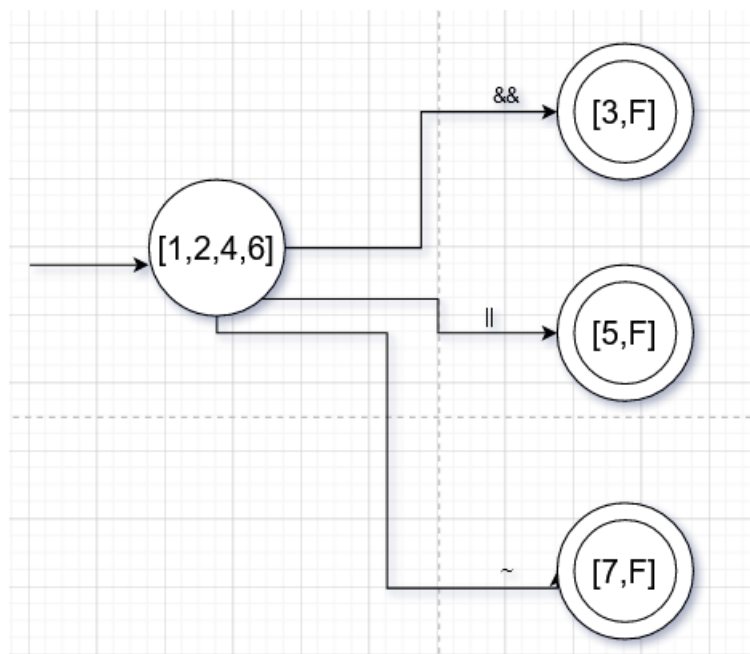


	&	@	!	%	?	Bad Token
$[1,2]$	$[3,4]$	$[3,4]$	$[3,4]$	$[3,4]$	$[3,4]$	\emptyset
$[3,4]$	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset

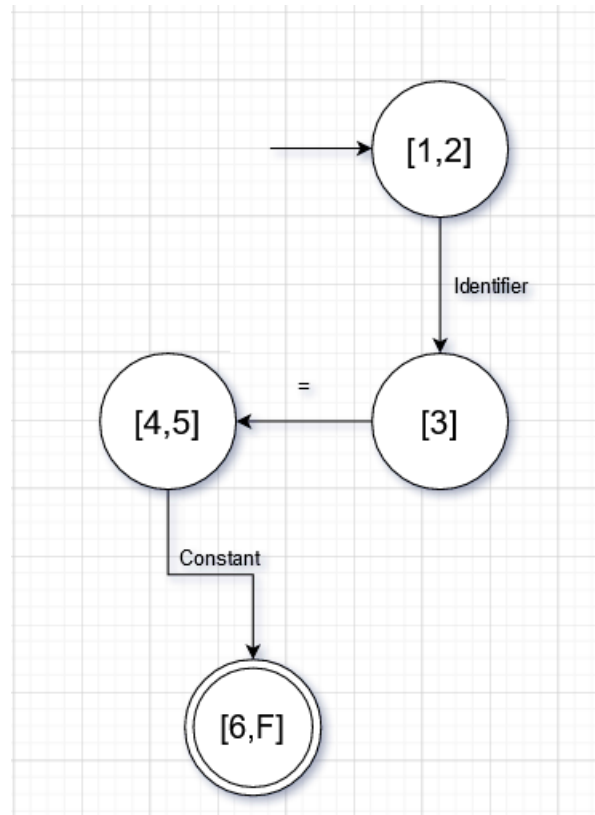


	{	}	()	[]
$[1,2,6,10]$	$[3,4]$	\emptyset	$[7,8]$	\emptyset	$[11,12]$	\emptyset

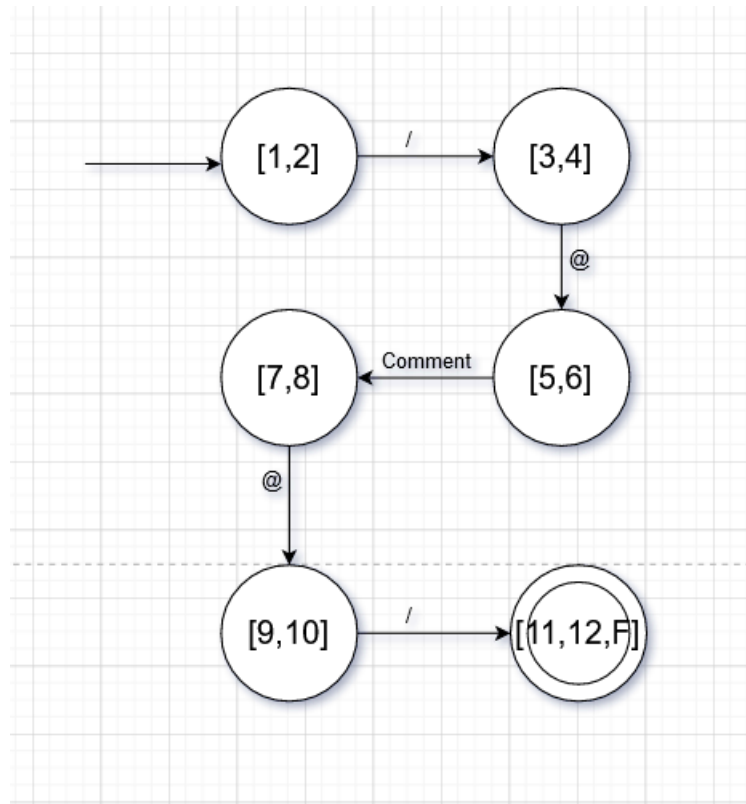
<i>[3,4]</i>	\emptyset	$[5,f]$	\emptyset	\emptyset	\emptyset	\emptyset
<i>[7,8]</i>	\emptyset	\emptyset	\emptyset	$[9,f]$	\emptyset	\emptyset
<i>[11,12]</i>	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	$[13,f]$
<i>[5,f]</i>	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset
<i>[9,f]</i>	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset
<i>[13,f]</i>	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset



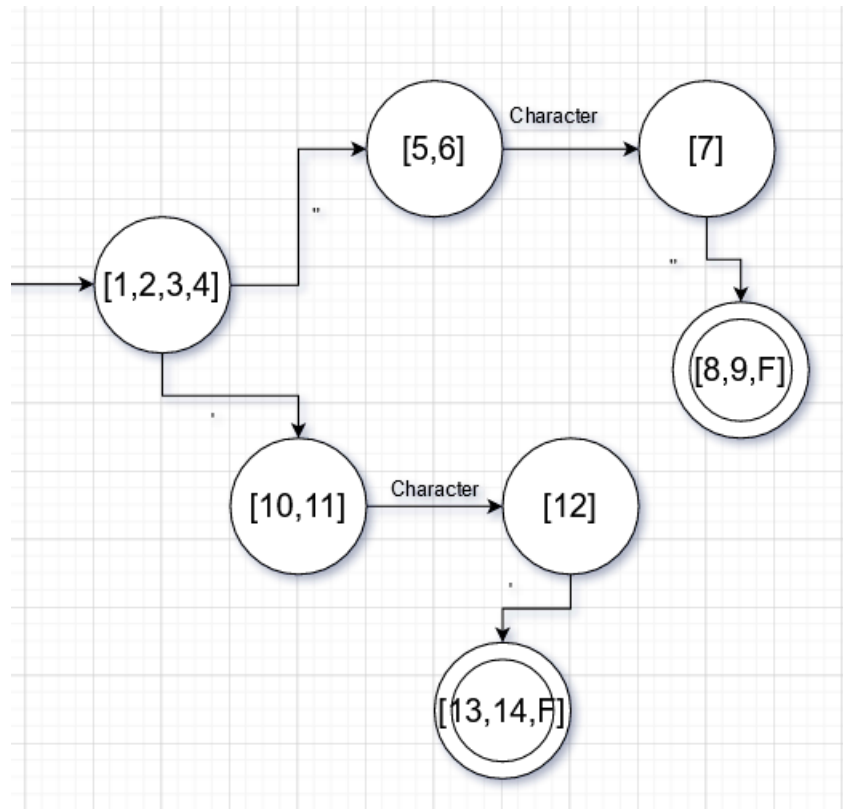
	&&	 	~
<i>[1,2,4,6]</i>	$[3,f]$	$[5,f]$	$[7,f]$
<i>[3,4]</i>	\emptyset	\emptyset	\emptyset
<i>[7,8]</i>	\emptyset	\emptyset	\emptyset
<i>[11,12]</i>	\emptyset	\emptyset	\emptyset



	Identifier	=	Constant
<i>[1,2,4,6]</i>	[3]	∅	∅
<i>[3]</i>	∅	[4,5]	∅
<i>[4,5]</i>	∅	∅	[6,f]
<i>[6,f]</i>	∅	∅	∅

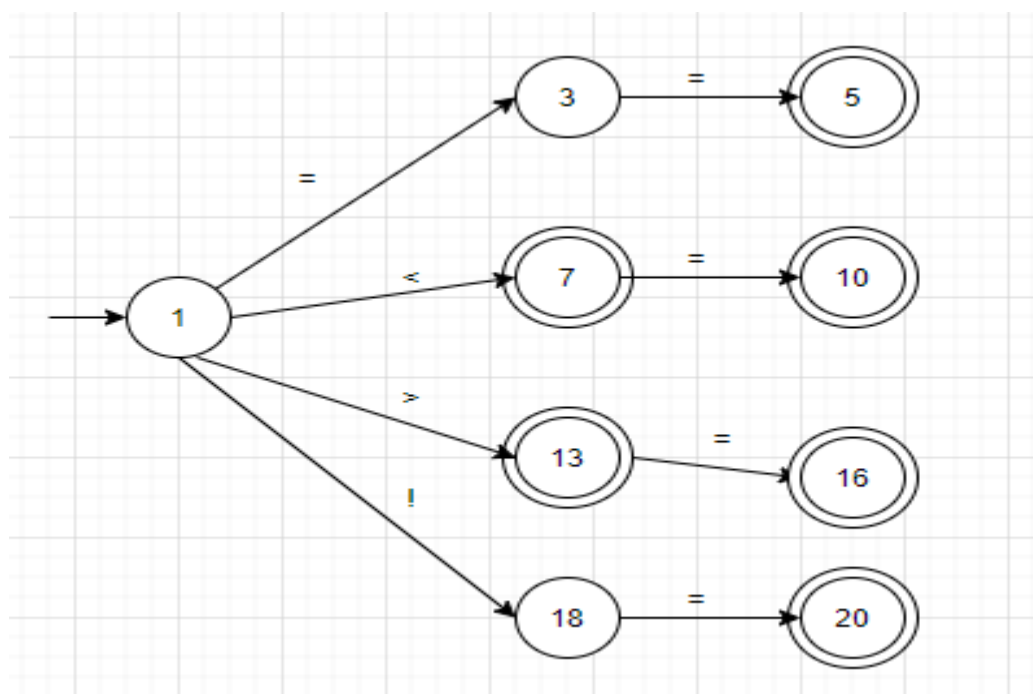


	/	@	Comment	@	/
[1,2]	[3,4]	∅	∅	∅	∅
[3,4]	∅	[5,6]	∅	∅	∅
[5,6]	∅	∅	[7,8]	∅	∅
[7,8]	∅	∅	∅	[9,10]	∅
[9,10]	∅	∅	∅	∅	[11,12,f]
[11,12,f]	∅	∅	∅	∅	∅



	"	'	Character	'	"
[1,2,4]	[5,6]	[10,11]	∅	∅	∅
[5,6]	∅	∅	[7]	∅	∅
[7]	∅	∅	∅	∅	[8,9,f]
[8,9,f]	∅	∅	∅	∅	∅
[10,11]	∅	∅	[12]	∅	∅

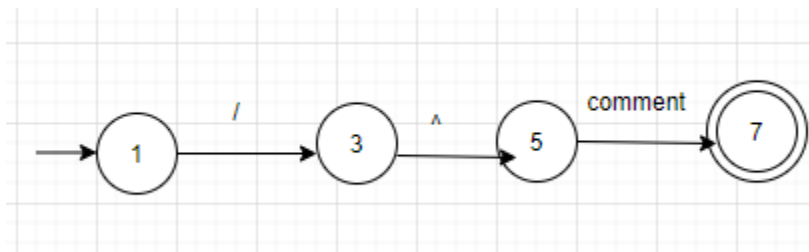
$[12]$	\emptyset	\emptyset	\emptyset	$[13,14,f]$	\emptyset
$[13,14,f]$	\emptyset	\emptyset	\emptyset	\emptyset	\emptyset



State	=	<	>	!	accepted
-------	---	---	---	---	----------

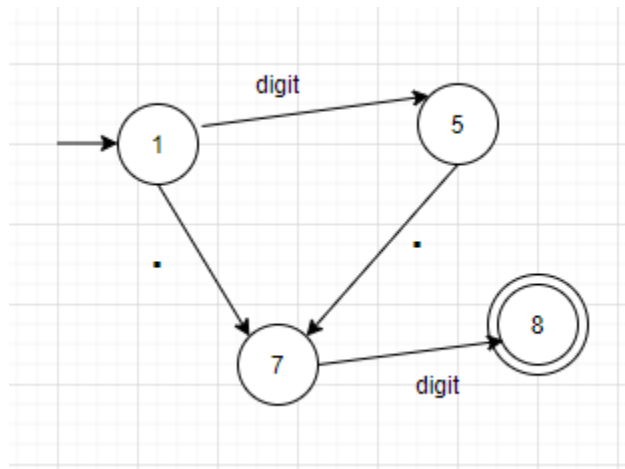
$R = (?<=?|>=?|?==|!=)$

S1	3	s7	s13	s18	No
S3	s5	∅	∅	∅	No
S5	∅	∅	∅	∅	yes
S7	s10	∅	∅	∅	no
S10	∅	∅	∅	∅	Yes
S13	s16	∅	∅	∅	Yes
S16	∅	∅	∅	∅	Yes
S18	s20	∅	∅	∅	No
S20	∅	∅	∅	∅	yes



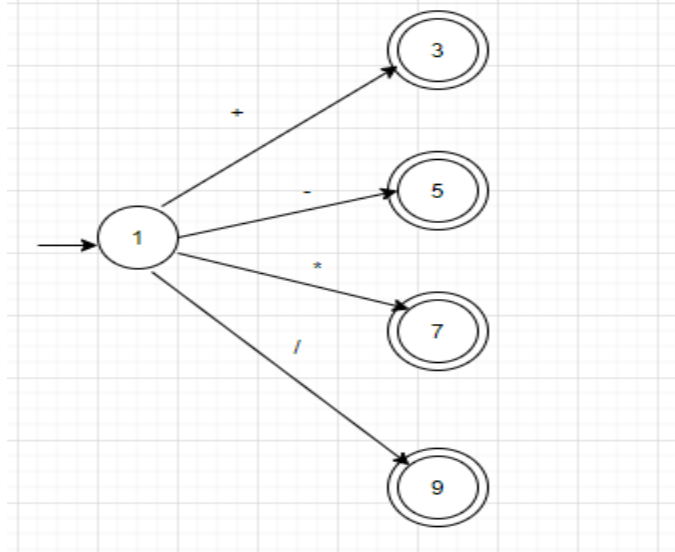
$R=(\backslash|\backslash^)$ single line

state	/	^	comment	accepted
S1	s3	∅	∅	No
S3	∅	s5	∅	No
S5	∅	∅	s7	No
S7	∅	∅	∅	yes



$R = ([0-9]^*[\cdot]?[0-9]^+)$

state	digit	Dot(.)	accepted
S1	s5	s7	No
S5	\emptyset	s7	yes
S7	S8	\emptyset	No
S8	\emptyset	\emptyset	Yes



$R = (-|+|*|/)$

state	+	-	*	/	accepted
S1	S3	S5	S7	S9	No
S3	∅	∅	∅	∅	Yes
S5	∅	∅	∅	∅	Yes
S7	∅	∅	∅	∅	Yes
S9	∅	∅	∅	∅	yes

