CPSC 323 Project #1

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Problem Statement

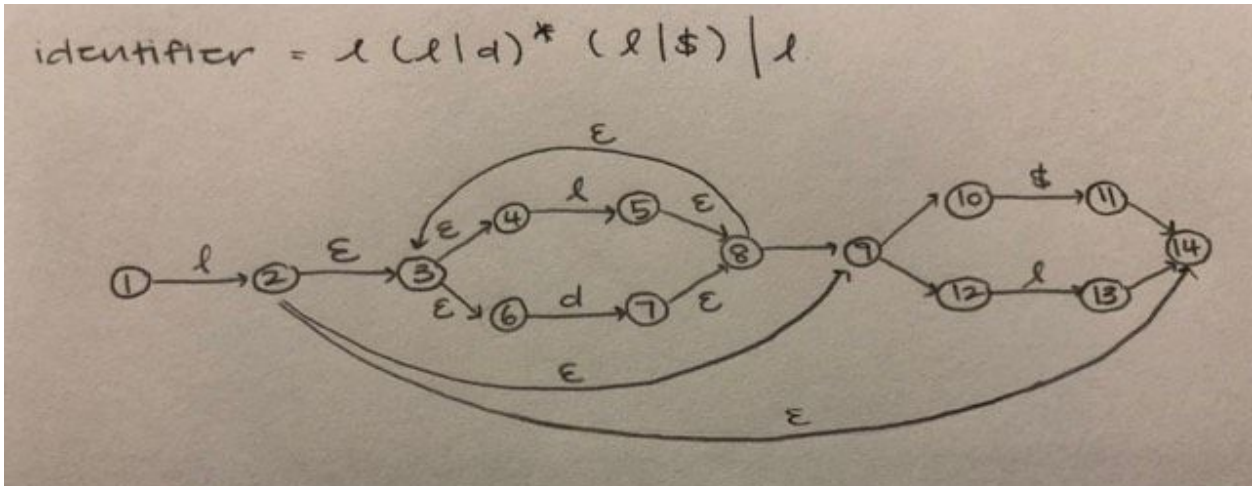
We created a lexical analyzer (lexer) using FSMs for identifiers, integers and reals. The procedure returns a record of the token and the “value” of the token. The program reads a file containing Rat18S source code and the output is written into a file.

How to use your program

The procedure requires the user to have all the test files and the executable in one folder to run properly. The procedure prompts the user for input file name with the Rat18S source code. The procedure, then, identifies each lexeme and its token and stores the results on an output file.

Design of the program

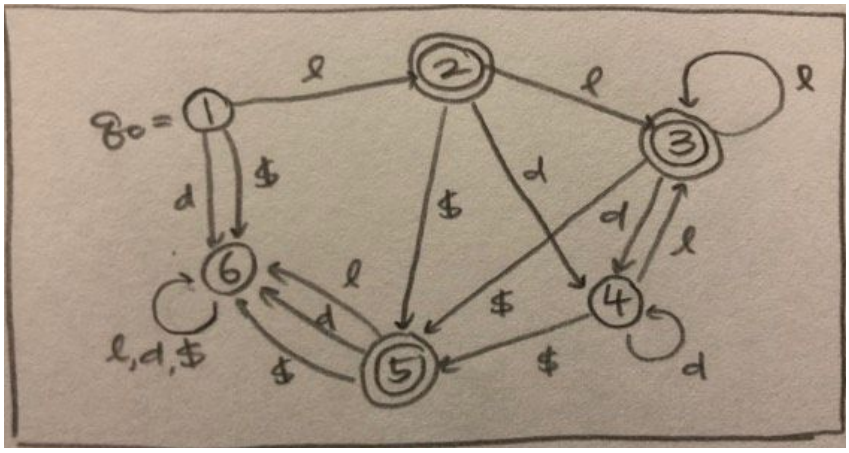
Identifier (l (l | d)* (l | $)) | l



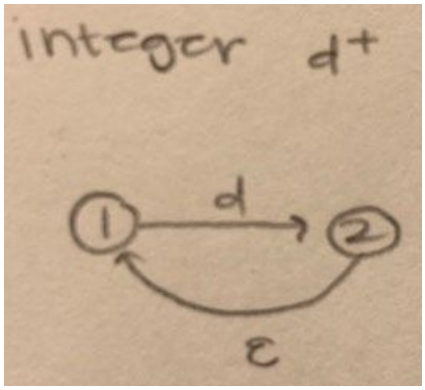
	l	d	$
Q0 = [1]	[2,3,4,6,9,10,12,14]	[ ]	[ ]
[2,3,4,6,9,10,12,14]	[3,4,5,6,8,9,10,12,13,14]	[3,4,6,7,8,9,10,12]	[11,14]
[3,4,5,6,8,9,10,12,13,14]	[3,4,5,6,8,9,10,12,13,14]	[3,4,6,7,8,9,10,12]	[11,14]
[3,4,6,7,8,9,10,12]	[3,4,5,6,8,9,10,12,13,14]	[3,4,6,7,8,9,10,12]	[11,14]
[11,14]	[ ]	[ ]	[ ]

[ ]	[ ]	[ ]	[ ]

	l	d	$
Q0 = [1]	[2]	[6]	[6]
[2]	[3]	[4]	[5]
[3]	[3]	[4]	[5]
[4]	[3]	[4]	[5]
[5]	[6]	[6]	[6]
[6]	[6]	[6]	[6]



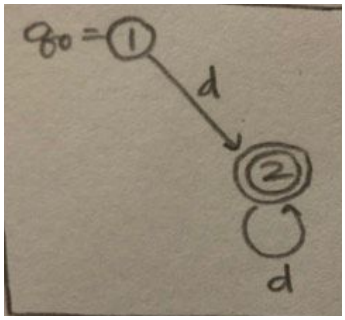
Integer d⁺



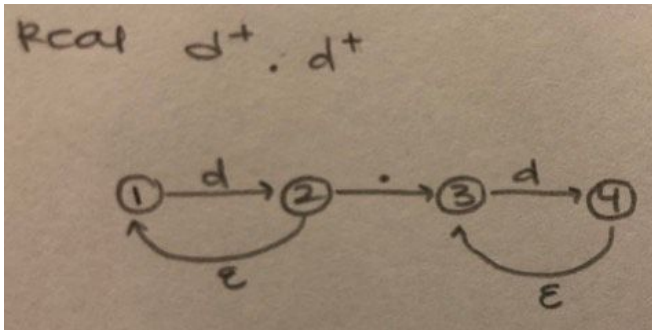
	d
Q0 = [1]	[1,2]

[1,2]	[1,2]

	d
Q0 = [1]	[2]
[2]	[2]



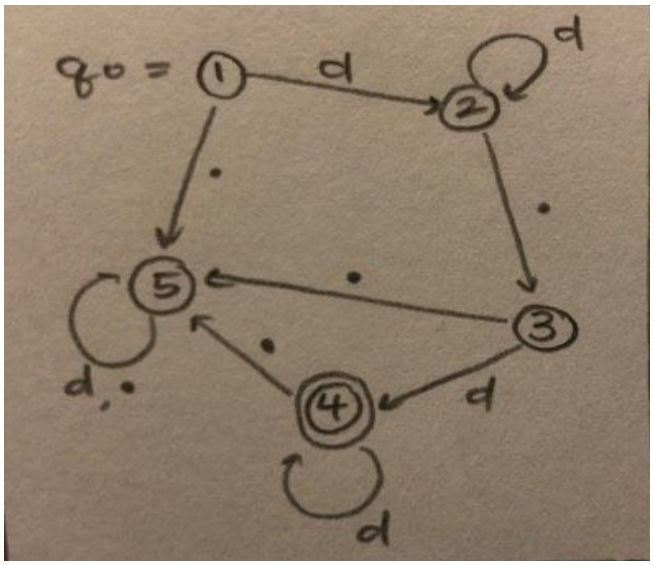
Real $d^+.d^+$



	d	.
Q0 = [1]	[1,2]	[ ]
[1,2]	[1,2]	[3]
[3]	[3,4]	[ ]
[3,4]	[3,4]	[ ]
[ ]	[ ]	[ ]

	d	.

Q0 = [1]	[2]	[5]
[2]	[2]	[3]
[3]	[4]	[5]
[4]	[4]	[5]
[5]	[5]	[5]



The major data structures that we are using are vectors, sets and stacks. Vectors can resize automatically when an element is added or deleted unlike an array in which the size needs to be declared at the beginning of the procedure. Sets let us store values without any particular order unlike arrays and we used the stack to store the comments from test cases.

Any limitations
None

Any shortcomings
None