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CS323 Programming Assignments

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2. Assignment Number [1]

3. Due Date [2 March, 2024]

4. Submission date [2 March, 2024]

5. Executable File name [ratlexer.py]

6. Names of the test case files -

	input test file	output test file
test 1.	[test1.rat24s]	[tokenized_test1.txt]
test 2.	[test2.rat24s]	[tokenized_test2.txt]
test 3.	[test3.rat24s]	[tokenized_test3.txt]

7. Operating System [Windows]

To be filled out by the Instructor:

Comments and Grade:

CS323 Documentation

1. Problem Statement

The project assigned was to build a lexical analyzer for the source code of Rat24S, using a finite state machine(FSM). The lexer() should return a record, one field for the token and another field the actual “value” of the token(lexeme). The main program should read a file containing the source code of Rat24S to generate tokens and write out the results to an output file.

2. How to use your program

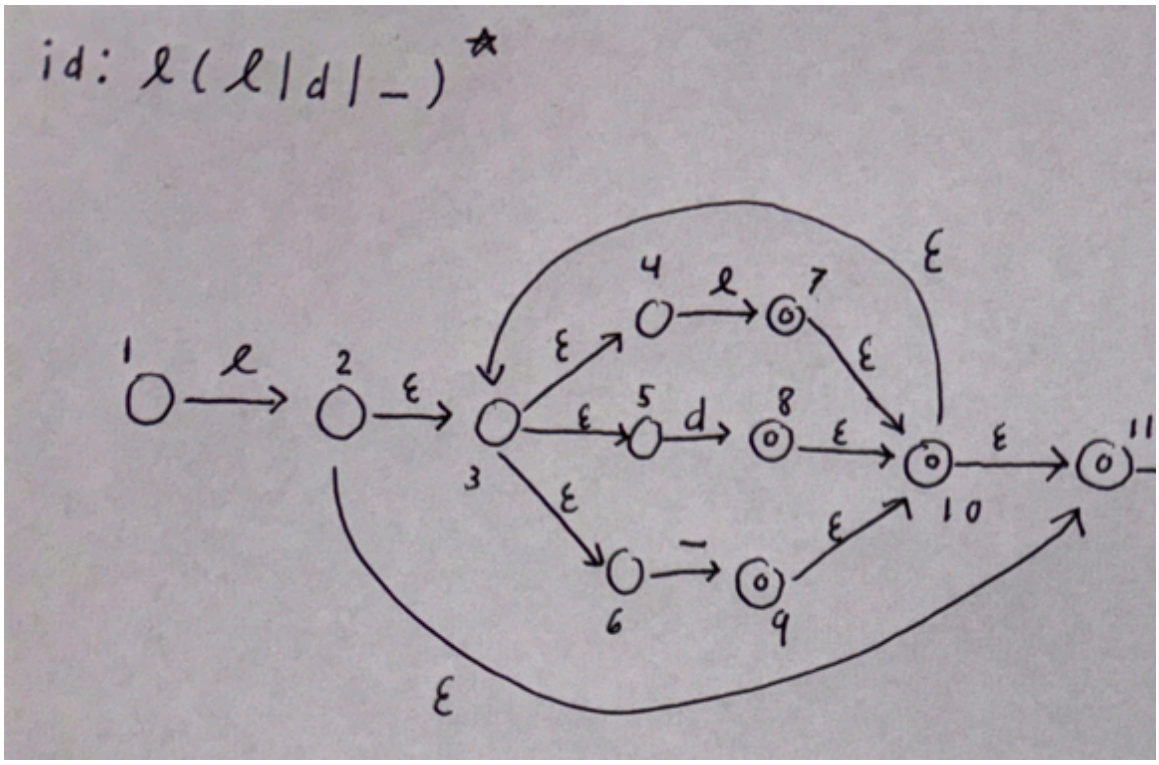
To execute the program, run ratlexer.py with python3 and a test case in the terminal. Directions are also in ReadMe.md in the Github repository.

EX:

python3 ratlexer.py test1.rat24s

3. Design of your program

Identifier:

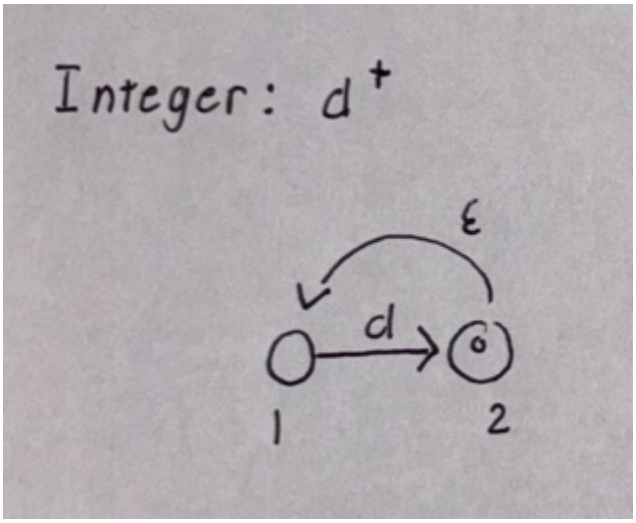


	ℓ	d	_	ε	ε-closure
1	{2}	{ }	{ }	{ }	{1}
2	{ }	{ }	{ }	{3,11}	{ 2,3,4,5,6,11}
3	{ }	{ }	{ }	{4,5,6}	{3,4,5,6}
4	{7}	{ }	{ }	{ }	{4}
5	{ }	{ 8}	{ }	{ }	{5}
6	{ }	{ }	{9}	{}	{6}
7	{ }	{ }	{ }	{10}	{3,7,10,11}
8	{ }	{ }	{ }	{10}	{3,8,10,11}
9	{ }	{ }	{ }	{10}	{3,9,10,11}
10	{ }	{ }	{ }	{3,11}	{3,10,11}
11	{ }	{}	{ }	{ }	{11}

	ℓ	d	_
[1] = 1	ε-closure(2) =>[2,3,4,5,6,11]	[ ]	[ ]
[2,3,4,5,6,11] = 2	(7) => [3,7,10,11]	(8) => [3,8,10,11]	(9) => [3,9,10,11]
[3,7,10,11] = 3	[ ]	[ ]	[ ]
[3,8,10,11] = 4	[ ]	[ ]	[ ]
[3,9,10,11] = 5	[ ]	[ ]	[ ]
[] = 6	[ ]	[ ]	[ ]

	ℓ	d	-
1	2	6	6
2	3	4	5
3	6	6	6
4	6	6	6
5	6	6	6
6	6	6	6

Integer:

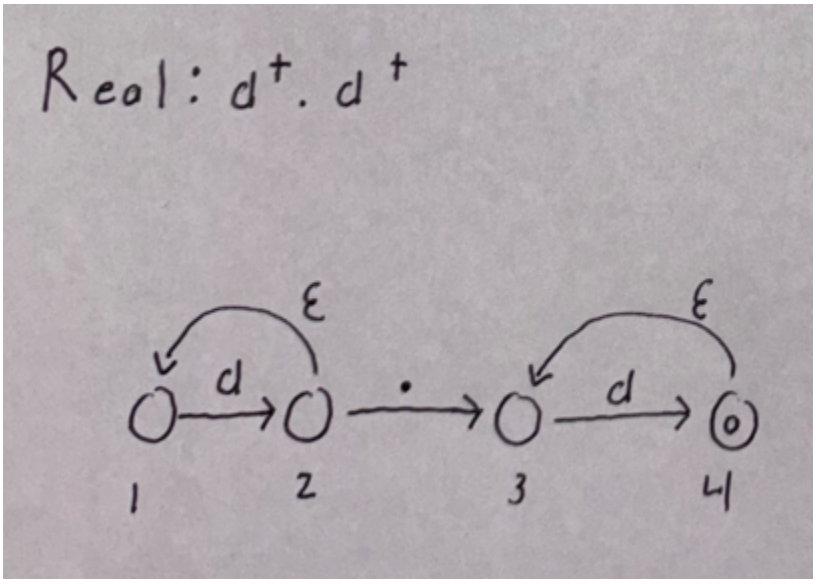


	d	ε	ε-closure
1	{2}	{ }	{1}
2	{ }	{1}	{1,2}

	d
[1]=1	ε-closure(2)=> [1,2]
[1,2]=2	[1,2]

	d
1	2
2	2

Real:



	d	.	ε	ε-closure
1	{2}	{ }	{ }	{1}
2	{ }	{3}	{1}	{1,2}
3	{4}	{ }	{}	{3}
4	{ }	{ }	{3}	{3,4}

	d	.
[1]=1	ε-closure(2)=>[1,2]	[ ]
[1,2]=2	(2)=>[1,2]	(3)=>[3]

[3]=3	(4)=>[3,4]	[ ]
[3,4]=4	(4)=>[3,4]	[ ]
[ ]=5	[ ]	[ ]

	d	.
1	2	5
2	2	3
3	4	5
4	4	5
5	5	5

4. Any Limitation

None

5. Any shortcomings

None