

CS421 - Yoshii - HW 2B (based on week4) --

## Implementing a Scanner in Two Different Ways - Programming

DUE: Week 6 Friday before midnight (11:55)

TOTAL: 30 pts

**\*\* Name: \*\*** Alec Guilin

### DFA Implementation as Functions [15 pts] Getting Ready for the Scanner Project

**\*\* State of the program:** <required to be graded. Explain the state of your program here. – bugs etc,> Program runs and compiles on empress. Output matches the expected output from this document.

Graded on: I will fill this out

Correctness:

Comments:

Test results:

DFA's below [6]:

1. Submit this sheet
2. Submit the source code file `fa.cpp` with comments
3. Submit the test results (`Test1.txt` script or screen dump) from Empress with lines for compiling the file!.

Look at the file `fa.cpp` I have provided. Study it carefully.

Run `my fa.out` with `fain_mytoken.txt` that has:

abbb

a

bb

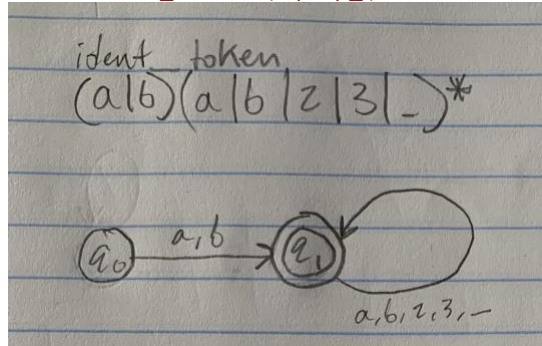
abb to see what it does.

This program accepts `a b+` as mytoken.

**Change this program** (`fa.cpp`) with new DFA functions (follow my **\*\*** comments)

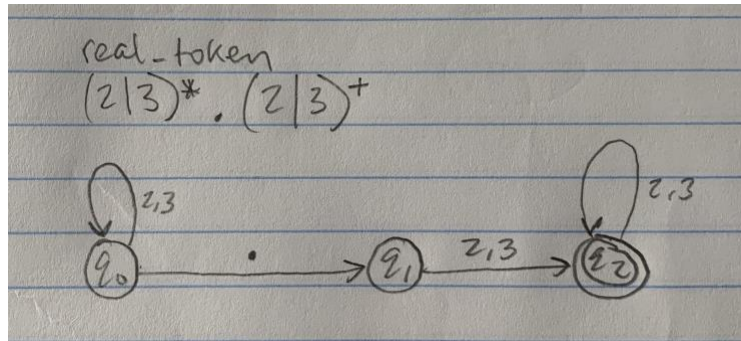
to accept the following tokens: **[2pts per DFA]** Your functions must match your DFA's.

function `ident_token` `l(l|d|_)*` Give the DFA here with state numbers **\*\* 2 states**



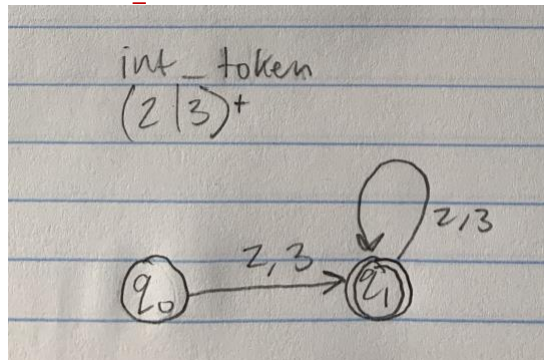
function `real_token` `d+ . d+`

Give the DFA here with state numbers **\*\* 3 states**



function int\_token d^+

Give the DFA here with state numbers \*\* 2 states



Note: I can be either a or b

d can be either 2 or 3

You should not handle other digits and characters.



- Main calls Scanner repeatedly.
- Scanner grabs another word from the input file.
- Scanner calls ident\_token, real\_token and int\_token in this order until one of them returns TRUE.
- Scanner gives back the token type and the word to Main.
- Main has to display the word and the token type.

**Requirements:** Must add REs as comments  
 Do not remove "tracing" messages

**Must test the program** with the input file **fain.txt** containing the following string:

→ **Test1.txt**

ab\_2a - ident  
 a\_b\_2\_a - ident  
 .23 - real  
 23.3 - real  
 23 - int

ab&c - bad  
23.6 - bad  
2a3 - bad  
22..2 - bad  
23. - bad

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**DFA Implementation with a Table [15 pts] – An Alternative Way**

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**\*\* State of the program:** <required to be graded. Explain the state of your program here – bugs etc. > Program runs and compiles on empress. Output matches the expected output from your executable.

**Graded on: I will fill this out**

**Correctness:**

**Comments:**

**Test results:**

**Following the instructions:**

1. Submit the source code file **td.cpp** with comments
2. Submit the test results (**Test2.txt** script or screen dump) from Empress with lines for compiling the file!.

- Read @instructions first
- Using the algorithm in week4a notes, complete **td.cpp**.
- Test using the input files: **dfas.txt** and **trs.txt**. → **Test2.txt**

**ab**  
**abb**  
**aaab**  
**cd**  
**cdd**  
**cccd**

- Run my sample solution **td.out** to determine the output format and error messages.

**Submit 5 files for this HW (fa.cpp, Test1.txt,td.cpp,Test2.txt and assignment sheet)**  
**DOUBLE CHECK WHAT YOU HAVE SUBMITTED.**