**CS421 - Krell - HW 2B (based on week4) --**

**Implementing a Scanner in Two Different Ways - Programming**

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

**TOTAL: 100 pts [6.422 % of total semester grade]**

**You must answer everywhere you see \*??\***

**Name: \*??\* Zachary Mekaelian**

**This assignment includes 2 programs, fa.cpp and td.cpp.**

**They can be found in empress at**

**/cs/cs421LK/CS421Progs/HW2B\_Scanners/Prog1**

**/cs/cs421LK/CS421Progs/HW2B\_Scanners/Prog2**

**or in Cougar Courses in folders Empress Files – HW2B Scanner Prog1 (fa.cpp) and**

**Empress Files – HW2B Scanner Prog2 (td.cpp)**

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**DFA Implementation as Functions [50 pts] Getting Ready for the Scanner Project**

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**\*??\* State of the program: <required to be graded. Explain the state of your program here. – bugs etc,>**

**The program has no known bugs and functions as intended.**

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:

cddd

cd

ccdd

dd to see what it does.

This program accepts c d^+ 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 DFAs.

function ident\_token l ( l | d | \_ )^\* **Give the DFA here with state numbers \*??\*** Diagram

Description automatically generated

function real\_token d^\* . d^+ **Give the DFA here with state numbers \*??\***

A picture containing text, clock

Description automatically generated

function int\_token d^+ **Give the DFA here with state numbers \*??\***

A picture containing text, clock

Description automatically generated

see next page for valid characters for **l** and **d**

**Note:** **l can be either ‘c’ or ‘d’ (l for letter)**

**d can be either ‘8’ or ‘9’ (d for decimal)**

**You should not handle any other digits and characters.**

**Word from fain.txt**

**Main calls Scanner calls FA-functions**

* 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 which contains the following strings:**

cd\_8c - ident

c\_d\_8\_c - ident

.89 - real

89.9 - real

89 - int

cd&e - bad

89.6 - bad

8c9 - bad

88..8 - bad

89. - bad

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**DFA Implementation with a Table [50 pts] – An Alternative Way**

Output the results to **Test1.txt, u**se **/cs/recordhw\_LK** to create the test results file

**\*??\* State of the program: <required to be graded. Explain the state of your program here – bugs etc. >**

**The program has no known bugs and functions as intended.**

**See next page for td.cpp**

**Next the transition demo program (td.cpp)**

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 week4b notes, complete **td.cpp**.
* Test using the input files: **dfas.txt** and **trs.txt**. , output to **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 this assignment sheet)**

**DOUBLE CHECK WHAT YOU HAVE SUBMITTED.**