CS 4031 Compiler Construction

Assignment 1

Section BCS-6A and BCS-8A

***All assignments can be done in pairs of two**

NOTE: Don't resort to cheating or any form of plagiarism. Submit the assignment on time otherwise there will be a late penalty for every hour.

To Submit: A PDF containing the pictures (of DFA), the actual DFA file and Readme.txt which contains the complete detail of what you have done, the problems you faced and how did you counter that problem. (**Don't zip anything**)

Assignment Details

In this Assignment we shall make a design for Lexical Analyzer Program which will take a sequence of characters and make tokens in some predefined fashion.

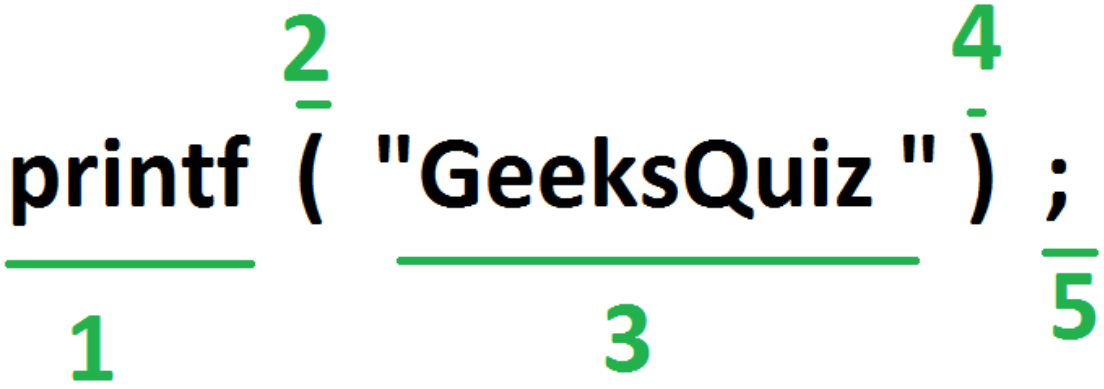

Figure 1: Number representing Tokens

Characters (the source code) is itself meaningless but tokens are not meaningless. A Lexical Analyzer skips (or eat up) whitespaces such as '\n', '\r' and '<space>'. At this stage we don't have to worry about the actual sequence of tokens. Evaluating sequence of tokens is the job of Parser (which will probably be discussed after mid1). The language that we will implement in this course closely resembles c/cpp but with some interesting syntax. Don't worry about coding for this assignment, coding shall be done in next assignment. Whole language syntax will be shared later on. Our Language has many constructs the complete detail is as follows:

Keywords 1. func 2. int 3. char 4. call 5. if 6. elif 7. else 8. for 9. print 10. println 11. return 12. in	**Relational Operators** 1. = (corresponds to equal) 2. >= 3. <= 4. < 5. <= 6. ~=
Assignment Operator 1. <- (corresponds to =)	**Arithematic Operators** 1. + 2. – 3. * 4. / 5. %
Other Constructs 1. Identifiers (a character followed by any number of characters) 2. Numeric Literals (e.g., 12) 3. Character literal (e.g., 'a') 4. String (characters enclosed in double quotes) 5. Comment (# followed by anything till new line ('\n'))	
Block Start and End 1. begin (corresponds to '{') 2. end (corresponds to '}')	**Special Characters** 1. , (Comma) 2. # (Hash) 3. : (Colon) 4. ; (Semi Colon)

Just make a DFA who recognizes all the tokens mentioned above. For this assignment you shall submit only the design of your lexical analyzer. You can use any tool available online to make DFA. You may develop a single DFA that represents whole language. One tool is JFlap which you can download from here.

https://drive.google.com/drive/folders/1sXGHjjCFO783QkkHXeFUyvxN7c8xNfBX?usp=sharing

Plagiarism will not be tolerated in any form. Viva will be taken for every assignment. People who had done their assignment on their own will ace it. People who didn't will not. If you have any queries ask TA. His email is l180968@lhr.nu.edu.pk