**CS323 Project 2:Lexical Syntax (RAT20F)**

**1.** **Problem Statement**

Write a syntax analyzer that parses an entire program if it is syntactically correct. If a syntax error occurs, the parser should generate a meaningful error message such as token, lexeme, line number, and error type etc. The parser should print to an output file the tokens, lexemes, and the production rules used. The RAT20F grammar must be rewritten to perform any left-factorizations and remove any left-recursions.

**2.** **How to use your program**

Step1) Click on Parser.exe

Step2) Enter the input file you want to open. (Ex. If you want to open “test.txt”, type in “test”. **No .txt is needed**) The input file has to be in the same directory with lexersyntax.exe. Program would output an output file titled with output followed by the input file that was specified.

Step3) Either type in another file that you would want to open or type in “Quit” to exit the program.

**3.** **Design of your program**

Each production in the RAT20F grammar is implemented as their own function. Some functions accept records in order to verify them either within themselves or within a child function. If the program fails to find the expected lexeme, it calls the Syntax\_Error function. This function will print an error message stating that the program failed to find an expected lexeme and lexeme it received instead. It will then exit the program. To produce the desired output file, the lexer function was changed to print the token and the lexeme of every completed record it found.

**4.** **Any Limitation**

*Unfortunately, we encountered a difficulty in which the program once it encounters an error the output will stop printing to the output file.*

**5.** **Any shortcomings**

*Shortcomings included were the difficulties in allowing the output file to be printed out correctly as well as the time constrain of accomplishing this task in a timely manner. It does run but close once it reaches the end of the file but the output file should have all the correct information to display per text file. We also realized after submitting that our exe file did not give authorization to run on another computer, we ended up fixing that and now the new file Parser.exe instead of lexersyntax.exe can now be run properly.*