Regular scanner vs Lex

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***Abstract*— This paper will try to determine if the use of lex is faster than a c code implementation for a basic scanner**

I. INTRODUCTION

When trying to create a compiler one of the first steps to be able to make one is to generate a lexical analyzer which purpose is to scan through an input set of characters and be able to classify them.

II. PROBLEM

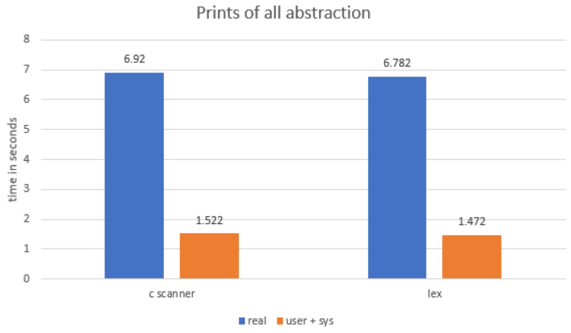
While creating a basic scanner is quite simple in a c code, because the scanner is one of the fundamentals and it has to interpret the input as whole, optimization is something that is very critical in this part as a little bit of difference in time can affect performance of the compiler in production use. Lex offers a way to generate a scanner that can do the same as a c code and more by using regular expressions. The main issue to discuss is if lex really offers an advantage over a plain c code.

III. SOLUTION

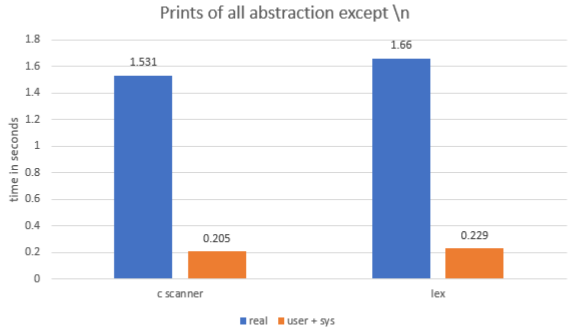
In order to prove this it is necessary to test the time it takes to process a file in which both do the same level of analysis and abstraction. The analyzed input will be a set of randomly generated code snippets that are analyzed by both. Time command will be used to know how much total time as well as CPU time (user + sys) it takes for each one to execute with the same input.

IV. RESULTS

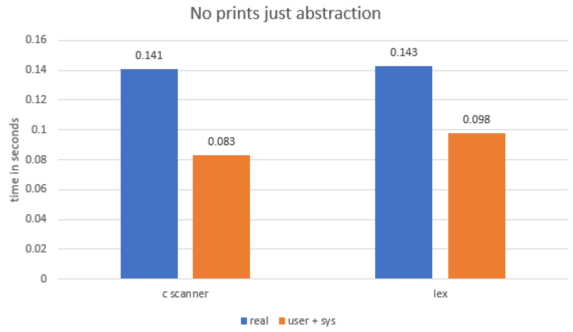
A. Execution with prints to console



B. Execution with prints to console without line breaks



C. Execution with no prints



V. CONCLUSIONS

As seen in the graphics we can conclude that the time difference of lex and a c code is almost non-existent to the point where lex takes a tiny amount of time more. While this is true the power and ease of use of lex makes it a better option to use especially when doing more than a scanner as using it paired with YACC allows to develop a more efficient basis for the compiler than doing it all in c.

References

[1] Hubert, B. (2004, September 20). Lex and YACC primer/HOWTO. Retrieved February 23, 2019, from https://ds9a.nl/lex-yacc/cvs/lex-yacc-howto.html