5compilers-and-interpreters-lab

CST 334 (Operating Systems)
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Lab: Compilers and interpreters lab

In this we'll write a grammar for regular expressions and create a predictive parser. This lab will also prepare you for this week's homework.

1. Consider the most basic form of regular expression that is just a sequence of single alphanumeric characters.

2. Write a grammar for this restricted form of regular expressions. You can use terminal CHAR to mean an alphanumeric character.

3. Transform your grammar to remove left recursion if needed.

4. Login to mlc104 copy directory /home/CLASSES/brunsglenn/cst334/labs/regex-lab to somewhere under your home directory.

5. Run 'make'. It should compile and run the program.

6. Look at files regex.c and charx.c (and their corresponding .h files regex.h and charx.h). These are the "classes" I wrote to capture the syntax tree. You don't have to use them if you don't want. Read them and try to understand them.

    - a 'regex' object captures an entire regular expression. It consists of a character expression (the first element of the regular expression), the remainder of the regular expression (which is itself a regular expression), and an anchor value. See regex.h for possible anchor values.

    - a 'charx' object captures a single character pattern with an optional modifier. See regex.h for possible modifier values.

    - the code in the regex() function of parser.c is there to illustrate how you can use the regex and charx code.

7. Modify parser.c to create a predictive parser based on your BNF.

    - read the parser.c code carefully, especially the regex() function

    - your code must return a regex object

8. Extend your regular expression grammar so it supports '.' (dot). Then extend your parser.

9. Continue extending your grammar so that it supports '*' (star), and '^' (start anchor).

10. If you still have time, implement a match() function in your regex object, that will check whether the regex object matches a string.

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