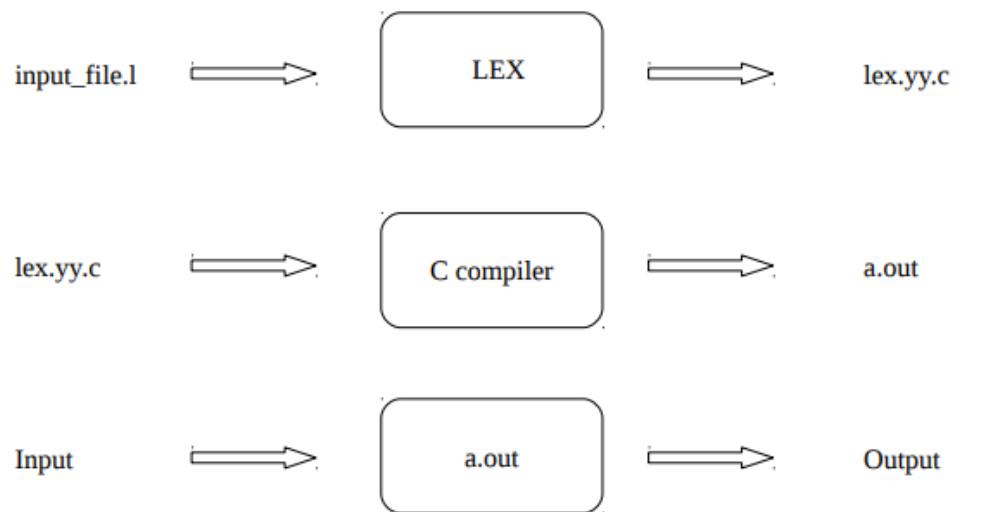


1. Introduction to LEX

LEX is a tool used to generate a lexical analyzer. This document is a tutorial for the use of LEX for SIL Compiler development. Technically, LEX translates a set of regular expression specifications (given as input in `input_file.l`) into a C implementation of a corresponding finite state machine (`lex.yy.c`). This C program, when compiled, yields an executable lexical analyzer.



2. The structure of LEX programs

A LEX program consists of three sections : Declarations, Rules and Auxiliary functions

DECLARATIONS
%%
RULES
%%
AUXILIARY FUNCTIONS

Example of LEX program

\Declarations

```
%{  
#include <stdio.h>  
%}
```

\Rules

Rules in a LEX program consist of two parts:

- i. The pattern to be matched
- ii. The corresponding action to be executed

```
%%  
(go|GO|gO|eat|EAT|eAT) { printf("Verbs: %s\n", yytext); }  
[0-9]+ { printf("NUMBER: %s\n", yytext); }  
[a-zA-Z]+ { printf("WORD: %s\n", yytext); }  
[\t\n]+ ; /* ignore whitespace */  
. { printf("others: %s\n", yytext); }  
%%
```

\Auxiliary functions

```
int main(void)  
{  
    yylex();  
    return 0;  
}
```

```
int yywrap(void)  
{  
    return 1;  
}
```

3. Executing a LEX program

- Save the LEX program as **your_filename.l**
- Follow the commands to compile and execute
 - `flex your_filename.l`
[it will generate yy.lex.c]
 - `gcc yy.lex.c -o your_exe`
[it will generate the output / executable file]
 - `./your_exe`
[it will execute the program]

*While entering the input, after you have finished typing your input, press **ctrl+D** and **Enter**.

References :

1. <https://silcnitc.github.io/lex.html#navintro>
2. <https://cse.iitkgp.ac.in/~bivasm/notes/LexAndYaccTutorial.pdf>