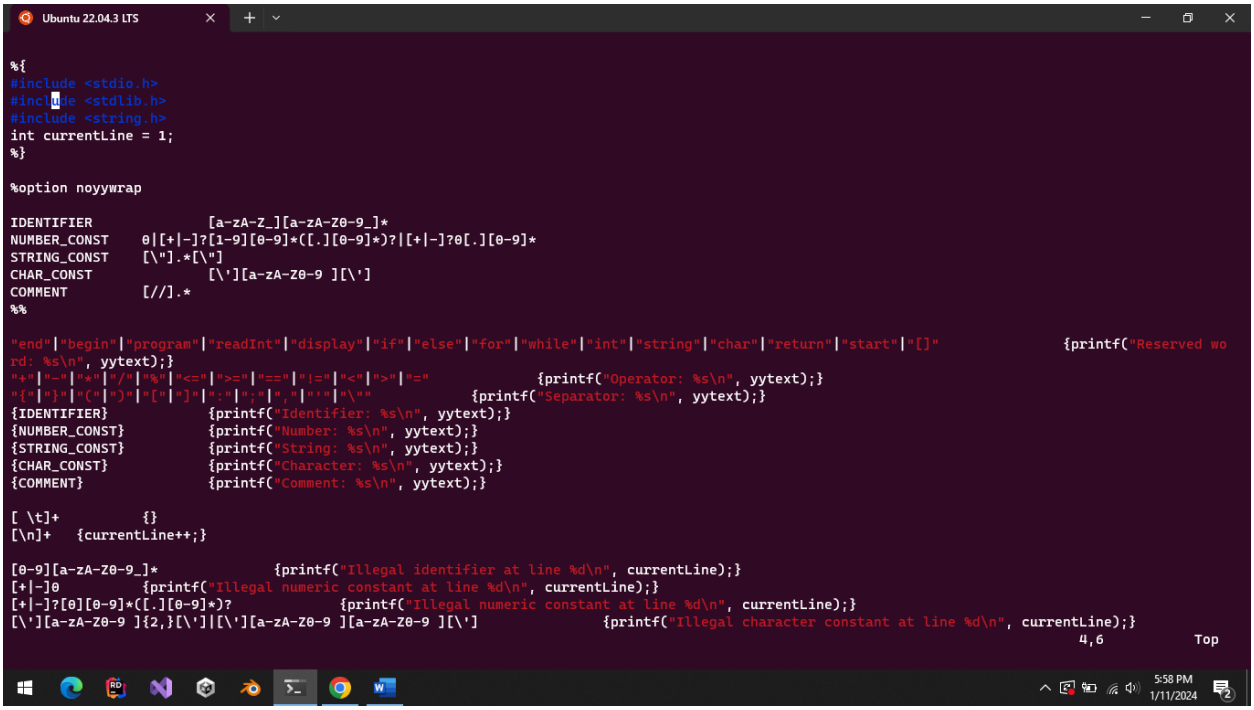
Lex specification

Source code:

https://github.com/davidalexandru1370/LabLFTC/tree/lab9



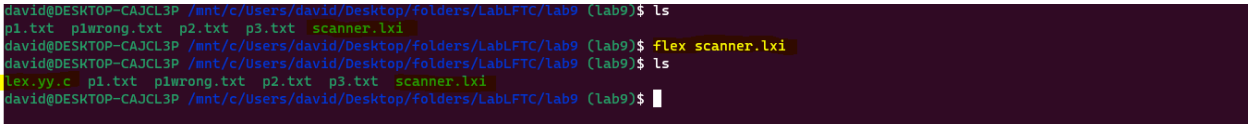
Source code

```
%{
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
int currentLine = 1;
%}

%option noyywrap

IDENTIFIER          [a-zA-Z_][a-zA-Z0-9_]*
NUMBER_CONST   0|[+|-]?[1-9][0-9]*([.][0-9]*)?|[+|-]?0[.][0-9]*
STRING_CONST   [\"].*[\"]
CHAR_CONST          [\'][a-zA-Z0-9 ][\']
COMMENT       [//].*
%%

"end"|"begin"|"program"|"readInt"|"display"|"if"|"else"|"for"|"while"|"int"|"string"|"char"|"return"|"sta
rt"|"[]"            {printf("Reserved word: %s\n", yytext);}
"+"|"-"|"*"|"/"|"%"|"<="|">="|"=="|"!="|"<"|">"|"="          {printf("Operator: %s\n", yytext);}
"{"|"}"|"("|")"|"["|"]"|":"|";"|","|"'"|"\""          {printf("Separator: %s\n", yytext);}
{IDENTIFIER}         {printf("Identifier: %s\n", yytext);}
{NUMBER_CONST}        {printf("Number: %s\n", yytext);}
{STRING_CONST}        {printf("String: %s\n", yytext);}
{CHAR_CONST}         {printf("Character: %s\n", yytext);}
{COMMENT}           {printf("Comment: %s\n", yytext);}

[ \t]+        {}
[\n]+  {currentLine++;}

[0-9][a-zA-Z0-9_]*          {printf("Illegal identifier at line %d\n", currentLine);}
```

To compile this code we are using the following command in unix terminal:

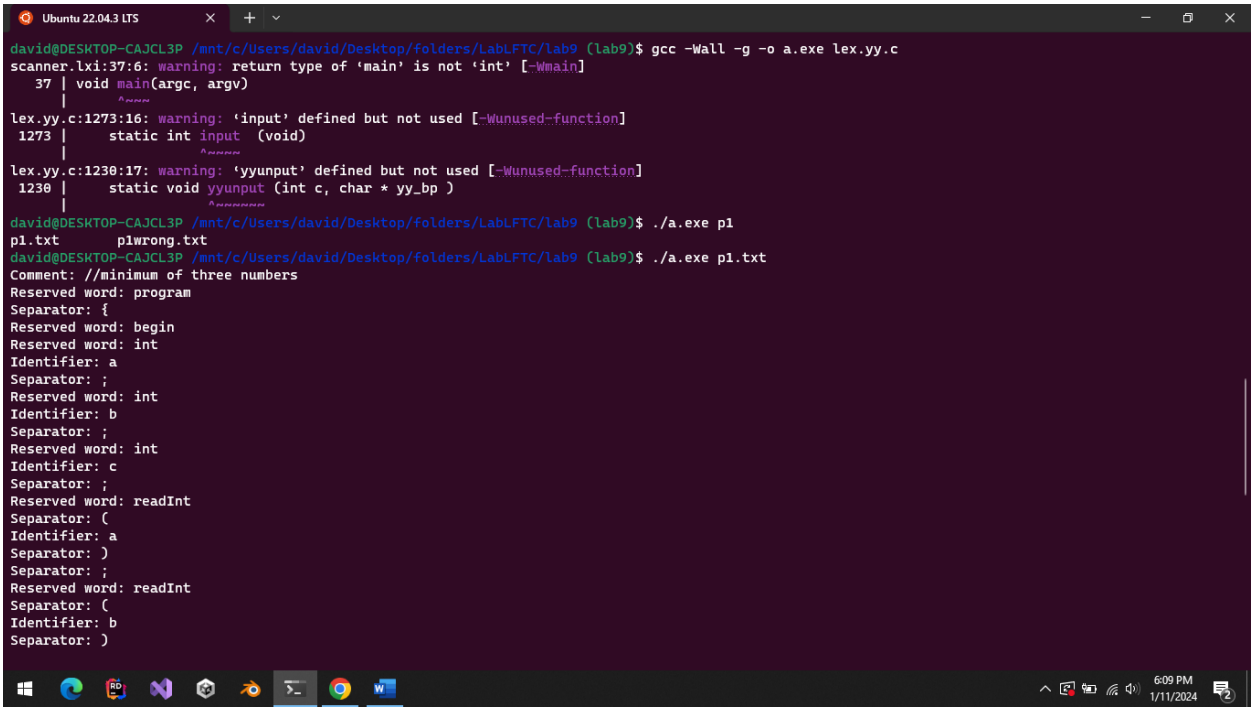
flex scanner.lxi

this command will generate a lex.yy.c file which is the parser for our regexes:



Compiling the lex.yy.c file with the command gcc -Wall -g -o a.exe lex.yy.c will give us an executable called a.exe which is the parser for our defined regexes to which we can pass the p1..p3 program files.

The output of parsing p1 will be the following:


Ubuntu 22.04.3 LTS
david@DESKTOP-CAJCL3P /mnt/c/Users/david/Desktop/folders/LabLFTC/lab9 (lab9)$ gcc -Wall -g -o a.exe lex.yy.c
scanner.lxi:37:6: warning: return type of 'main' is not 'int' [-Wmain]
37 | void main(argc, argv)
| ^~~~
lex.yy.c:1273:16: warning: 'input' defined but not used [-Wunused-function]
1273 | static int input (void)
| ^~~~~
lex.yy.c:1230:17: warning: 'yyunput' defined but not used [-Wunused-function]
1230 | static void yyunput (int c, char * yy_bp)
| ^~~~~~~
david@DESKTOP-CAJCL3P /mnt/c/Users/david/Desktop/folders/LabLFTC/lab9 (lab9)$ ./a.exe p1
p1.txt p1wrong.txt
david@DESKTOP-CAJCL3P /mnt/c/Users/david/Desktop/folders/LabLFTC/lab9 (lab9)$ ./a.exe p1.txt
Comment: //minimum of three numbers
Reserved word: program
Separator: {
Reserved word: begin
Reserved word: int
Identifier: a
Separator: ;
Reserved word: int
Identifier: b
Separator: ;
Reserved word: int
Identifier: c
Separator: ;
Reserved word: readInt
Separator: (
Identifier: a
Separator:)
Separator: ;
Reserved word: readInt
Separator: (
Identifier: b
Separator:)
6:09 PM
1/11/2024