https://github.com/danielmalancioiu/LFTC

**Lang.lxi File:**

```
%{
#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    [\|][a-zA-Z0-9 ]+[\|]
CHAR_CONST              [\'][a-zA-Z0-9 ][\']

%%

"program"|"var"|"if"|"else"|"for"|"while"|"print"|"arr"|"input"             {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);}

[ \t]+              {}
```

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


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

[+|-]0              {printf("Illegal numeric constant at line %d\n", currentLine);}

[+|-]?[0][0-9]*([.][0-9]*)?                    {printf("Illegal numeric constant at line %d\n", currentLine);}

[\'][a-zA-Z0-9 ]{2,}[\']|[\'][a-zA-Z0-9 ][a-zA-Z0-9 ][\']              {printf("Illegal character constant at
line %d\n", currentLine);}

[\"][a-zA-Z0-9_]+|[a-zA-Z0-9_]+[\"]              {printf("Illegal string constant at line %d\n",
currentLine);}


%%


void main(argc, argv)

int argc;

char** argv;

{

if (argc > 1)

{

    FILE *file;

    file = fopen(argv[1], "r");

    if (!file)

    {

        fprintf(stderr, "Could not open %s\n", argv[1]);

        exit(1);

    }

    yyin = file;

}


yylex();

}
```

**Demo:**

First we need to run the command:

```
PS D:\University UBB\Year 3\Semester 1\LFTC\LFTC\lab-8> flex lang.lxi
```

Which will generate the lex.yy.c file

Then we will run:

```
PS D:\University UBB\Year 3\Semester 1\LFTC\LFTC\lab-8> gcc lex.yy.c
```

Which will generate the a.exe file

Now, to run the executable we use the command:

```
PS D:\University UBB\Year 3\Semester 1\LFTC\LFTC\lab-8> ./a.exe p1.txt
```

Which takes as input the p1.txt file, and generates the following output:

```
Reserved word: program
Separator: [
Reserved word: var
Identifier: a
Operator: =
Number: 10
Reserved word: var
Identifier: b
Operator: =
Number: 20
Reserved word: var
Identifier: c
Operator: =
Number: 30
Reserved word: var
Identifier: sum
Operator: =
Identifier: num1
Operator: +
Operator: +
Identifier: num2
Operator: +
Operator: +
Identifier: num3
Reserved word: var
Identifier: average
Operator: =
Identifier: sum
Operator: /
Operator: /
Number: 3
Reserved word: print
Separator: {
|Identifier: The
Identifier: average
Identifier: of
Identifier: the
Identifier: three
Identifier: numbers
Identifier: is
Separator: :
|Operator: +
Operator: +
Identifier: average
Separator: }
Separator: ]
```