

<https://github.com/911-Abrudan-Rebeca/FLCD/tree/main/Lab8>

## Laboratory 8

Lex file lang.lxi:

```
%{  
  
    #include <stdio.h>  
  
    #include <stdlib.h>  
  
    #include <string.h>  
  
  
    int lines = 1;  
}%  
  
%option noyywrap  
%option caseless  
  
DIGIT [0-9]  
NON_ZERO_DIGIT [1-9]  
INT_CONSTANT [+]?{NON_ZERO_DIGIT}{DIGIT}*|0  
LETTER [a-zA-Z_]  
SPECIAL_CHAR [?:*^+=.!]  
STRING_CONSTANT (\\"{LETTER}|{DIGIT}|{SPECIAL_CHAR})*\\"  
IDENTIFIER {LETTER}({LETTER}|{DIGIT})*  
BAD_IDENTIFIER ({DIGIT})+({LETTER})+({LETTER}|{DIGIT})*  
  
%%  
  
"var"|"int"|"str"|"read"|"print"|"if"|"else"|"do"|"while" {printf("%s - reserved word\\n", yytext);}
```

```
"+"|"-"|"*"|"/"|"=="| "<"| ">"| "<="| ">="| "="| "!="| "%" printf("%s - operator\n", yytext);
```

```
{IDENTIFIER} {printf("%s - identifier\n", yytext);}
```

```
{BAD_IDENTIFIER} {printf("Error at token %s at line %d\n", yytext, lines); exit(1);}
```

```
{INT_CONSTANT} {printf("%s - integer constant\n", yytext);}
```

```
{STRING_CONSTANT} {printf("%s - string constant\n", yytext);}
```

```
"["|"]"|";"|"("|")"|"{"|"}"|"|" ":" {printf("%s - separator\n", yytext);}
```

```
[ \t]+ {}
```

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

```
. {printf("Error at token %s at line %d\n", yytext, lines); exit(1);}
```

```
%%
```

```
int main(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();  
return 0;  
}
```

This lang.lxi file consists of 3 sections:

#### Definitions

(c libraries)

%%

#### Rules

(regular expression and the c statement, both on the same line.

When the lexer finds a pattern matching the regular expression, it executes the c statement)

%%

#### Code

(optional, file opening + error check,

yyin=lexer reads from the file,

yylex() to do the lexical analysis and tokenization)

Command prompt:

First command: flex lang.lxi

This will generate lex.yy.c file

Second command: gcc lex.yy.c

This will generate a.exe

Third command: a.exe p1.txt

This will show us the scanner results. The table with each token and identifier/operator/separator/string constant/integer constant