DEVELOP A LEXICAL ANALYZER TO RECOGNIZE TOKENS USING LEX TOOL

AIM:

To implement the program to identify C keywords, identifiers, operators, end statements like [], {} using LEX tool.

ALGORITHM:

1. Initialize a variable n to count the number of lines.
2. Define patterns for letters, digits, identifiers, arithmetic operators (AO), relational operators (RO), preprocessor directives (pp), and other symbols.
3. Define actions to perform when a pattern is matched and display the corresponding pattern type.
4. Open the file "sample.c" for reading and invoke lexical analysis with yylex().
5. Count the number of newline characters encountered and store it in n.
6. Display the number of lines, n.

PROGRAM:

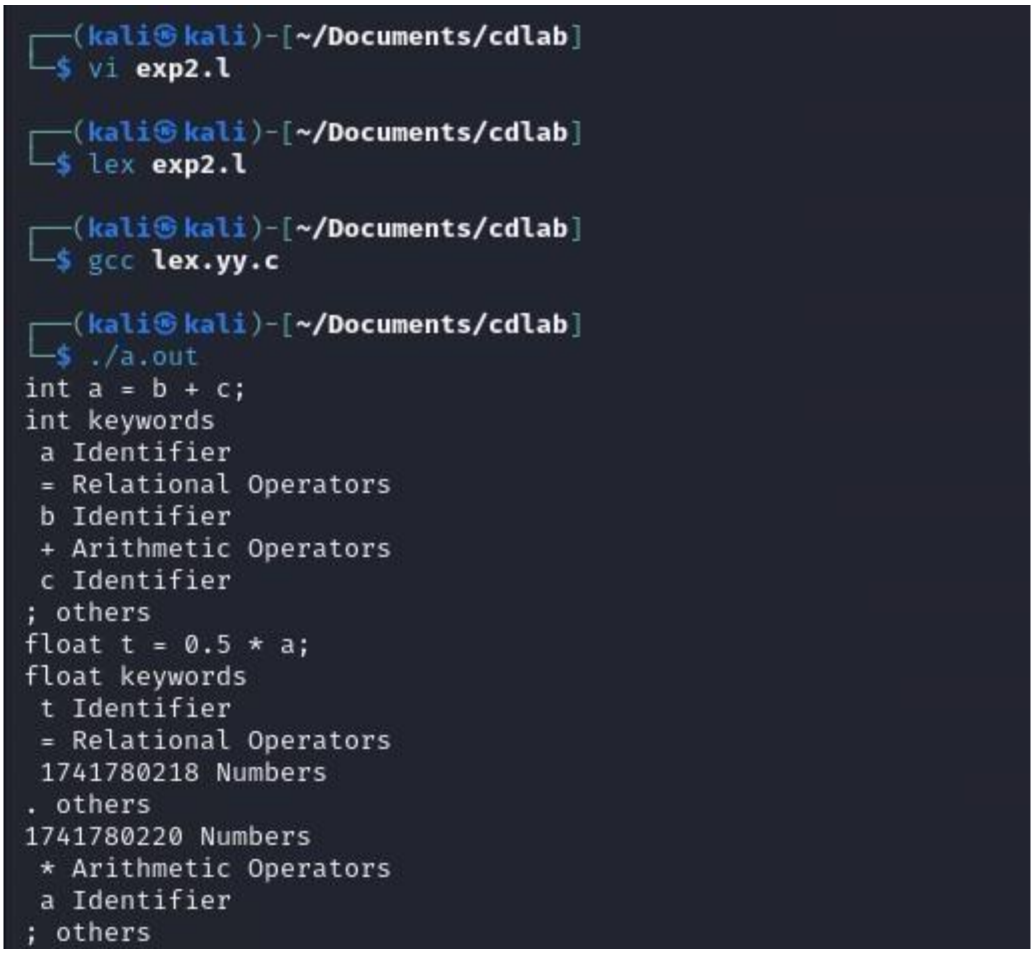
```
%option noyywrap letter
        [a-zA-Z]
digit [0-9] id [_|azA-Z]
AO  [+|-|/|%|*]  RO  [<|>|<=|>=|==]
pp
[#]
%{
int n=0;
%}
%%
"void"                          printf("%s return type\n",yytext);
{letter}*[(][)]                 printf("%s Function\n",yytext);
 "int"|"float"|"if"|"else" printf("%s keywords\n",yytext);
"printf"                        printf("%s keywords\n",yytext);
{id}({id}|{digit})*        printf("%s Identifier\n",yytext);
```

Exp No:

Date:

```
{digit}{digit}*                    printf("%d Numbers\n",yytext);
 {AO}                                      printf("%s                    Arithmetic
                                           Operators\n",yytext);
 {RO}                                      printf("%s                    Relational
                                           Operators\n",yytext);
 {pp}{letter}*[<]{letter}*[.]{letter}[>] printf("%s processor
 Directive\n",yytext);
[\n]                                          n++;
"."|","|"}"|"{"|";"                    printf("%s others\n",yytext);
 %%
```

OUTPUT:



```
┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ vi exp2.l

┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ lex exp2.l

┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ gcc lex.yy.c

┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ ./a.out
int a = b + c;
int keywords
 a Identifier
 = Relational Operators
 b Identifier
 + Arithmetic Operators
 c Identifier
; others
float t = 0.5 * a;
float keywords
 t Identifier
 = Relational Operators
 1741780218 Numbers
. others
1741780220 Numbers
 * Arithmetic Operators
 a Identifier
; others
```

RESULT:

Thus, a c program is implemented to identify C keywords, identifiers, operators, end statements like [], {} using LEX tool.

Roll Number: 210701113

Name: Kavin chakravrthy