Ex No: 3
Date: 13/02/24

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

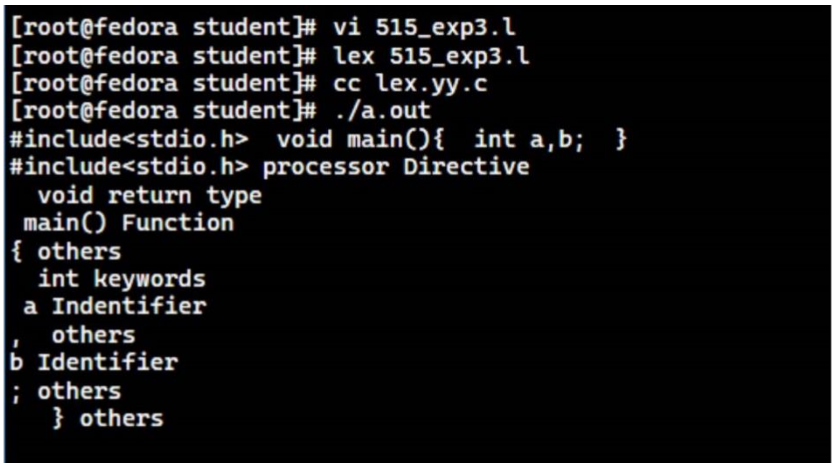
- Define patterns for C keywords, identifiers, operators, and end statements using regular expressions. Use %option noyywrap to disable the default behavior of yywrap.
- Utilize regular expressions to match patterns for C keywords, identifiers, operators, and end statements. Associate each pattern with an action to be executed when matched.
- Define actions to print corresponding token categories for matched patterns. Handle special cases like function declarations, numeric literals, and processor directives separately.
- Open the input file (sample.c in this case) for reading. Start lexical analysis using yylex() to scan the input and apply defined rules.
- Increment a counter (n) each time a newline character is encountered. Print the total number of lines at the end of the program execution.

PROGRAM

```
%option  noyywrap
letter [a-zA-Z] digit
[0-9]  id  [_|a-zA-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);
{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);

%%
int main()
{
        yyin=fopen("sample.c","r");
yylex();
        printf("No of Lines %d\n",n);
}
```

OUTPUT



```
[root@fedora student]# vi 515_exp3.l
[root@fedora student]# lex 515_exp3.l
[root@fedora student]# cc lex.yy.c
[root@fedora student]# ./a.out
#include<stdio.h>  void main(){  int a,b;  }
#include<stdio.h> processor Directive
  void return type
 main() Function
{ others
  int keywords
 a Indentifier
,  others
b Identifier
; others
   } others
```

RESULT

To implement the program to identify C keywords, identifiers, operators, end statements like using LEX tool has been executed.