Ex No: 3
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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
```

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```
                                                    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 701_exp3.l
[root@fedora student]# lex 701_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 Identifier
,  others
b Identifier
; others
   } others
```

RESULT:
The program to identify C keywords, identifiers, operators, end statements like[], {} using LEX tool has been implemented successfully.

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