

Ex No: 3

Date:

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 `ywrap`.
- 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:

```

tarun@Ubuntu4:~/210701285$ lex exe3.l          3
tarun@Ubuntu4:~/210701285$ cc lex.yy.c          3
exe3.l: In function 'yylex':
exe3.l:17: warning: format '%d' expects type 'int', but argument 2 has type 'char *'
tarun@Ubuntu4:~/210701285$ ./a.out
;
; others
if
if keywords
main()
main() Function
void
void return type
var
var Identifier

```

RESULT: