EXP 1 : LEXICAL ANALYZER

AIM: To write a program to implement a lexical analyzer

ALGORITHM:

1. Start
2. Get the input program from the file program.txt
3. Read the program line by line and check if each word in a line is a keyword, identifier, math operator, numerical value, other symbol.
4. For each lexeme, read and generate a token as:
   (a) if the lexeme is a keyword then the token is ~~identifier~~. the keyword itself.
   (b) if lexeme is an identifier then token is identifier.
   (c) in the same way, the math operator, logical operator, numerical values and other symbols are printed on the console.
5. The stream of tokens generated are displayed in the console output.
6. Stop

PROGRAM:

```
#include <stdio.h>
#include <string.h>
#include <ctype.h>
using namespace std;

int isKeyword(char buffer[]) {
    char keywords[32][10] = {"auto", "break", "case",
    "const", "continue", "default", "do", "double", "else",
```

```
"enum", "extern", "float", "for", "goto", "if", "int",
"long", "return", "short", "signed", "sizeof", "static",
"struct", "switch", "typedef", "union", "unsigned", "void",
"volatile", "while" };

int i, flag=0;
for(i=0; i<32; i++)
  { if strcmp(keywords[i], buffer)==0)
      { flag=1;
        break; }
  }
return flag;
}

int main() {
 char ch, buffer[15], b[30], logical op>[]="><",
 math_op[]="+-*/=",
 number="0123456789", other[]=",;\(){}[]"!";
if stream fin("prog.txt");
 int i, j=0;
if(!fin.is_open()) {
  cout<<"error in opening the file\n";
 exit(0);
}
while(!fin.eof()) {
   ch=fin.get();
for(i=0; i<6; ++i) {
    if(ch==operators[i])
       cout<<ch<<"is operator in";
     }
if(isalnum(ch)) {
   buffer[j++]=ch;
}
```

```
else if ((ch==' ' || ch=='\n') && (j!=0)) {
    buffer[j]='\0';
    j=0;
if (isKeyword(buffer)==1)
   cout << buffer << " is keyword";
else
  cout << buffer << " is identifier \n";
}}
fin.close();
  return 0;
}
```

OUTPUT :

```
void is keyword
main is keyword
int is keyword
a is identifier
b is identifier
c is identifier
c is identifier
= is identifier
a is identifier
b is identifier
+ is operator
```

proj.txt

```
void main()
{ int a, b, c;
   c=a+b;
}
```

RESULT :

The implementation of lexical analyzer in C++ was compiled, executed and verified successfully.