Assignment - B3

* Title:- Lexical analysis to count number of lines, words and characters.

* Problem statement :- write a program using LEX specifications to implement lexical analysis phase of compiler to count number of words, lines and characters of given input file.

* Theory:-

Regular expressions are used for pattern matching. Two patterns :- "." and "\n" have been defined, with ECHO association. ECHO is a macro that writes code matched by the pattern.

#define ECHO fwrite (yytext, yyleng, 1, yyout).

Variable yytext is a pointer to be matched string (NULL-terminated) and yyleng is the length of matched string. Variable yyout is the output file & defaults to stdout. Function yywrap is called by lex when input is exhausted. Return 1 if you are done or 0 if more processing is required.

⇒ Numbers of lines; characters and words

```
%{
    int counter1=0) counter2=0, counter3=0;
%}
WORD [a-zA-Z]+
%%
"\n"        { counter1++;}
{WORD}({WORD}|[0-9])*     { counter2++; counter3+=yyleng}
```

```
%%
int yywrap()
{ return 1;
  }

Int main () {
     yylex();
     printf ("Number of characters: %d ", counter3);
     printf ("Number of words : %d", counter2);
     printf ("Number of lines : %d", counter1);
   }
```

* Working of LEX:-

1.) A lexical source file is created for the required specification.
2.) LEX.l is run through gcc to get lex.yy.c ;
3.) It is a C program containing recogniser for regular expressions. together with user supplied code.
4.) Finally, lex.yy.c is run through c compiler to produce an object a.out.

* Testcases:-

My name is Ritesh Badaan.
Leo Messi is the best football player ever.
FC Barcelona.

Output:

⇒ No. of characters = 66.
⇒ No. of words = 15.
⇒ No. of lines = 3.

Conclusion:

Hence, I have successfully implemented the lexical program to count number of words, lines and characters.