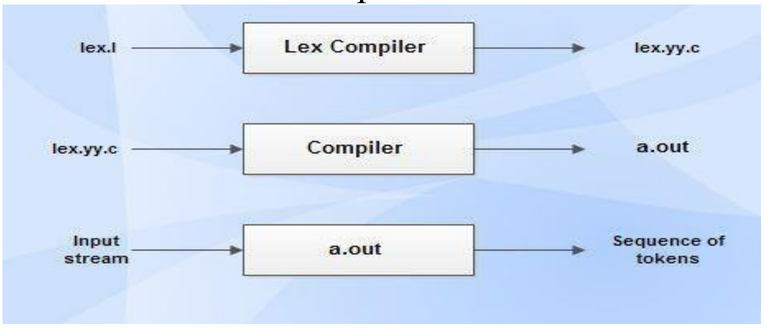
Ex No: 2
Date:

IMPLEMENT A LEXICAL ANALYZER TO COUNT THE NUMBER OF WORDS USING LEX TOOL

AIM:
To implement the program to count the number of words in a string using LEX tool.

STUDY:

Lex is a tool in lexical analysis phase to recognize tokens using regular expression. Lex tool itself is a lex compiler.



- lex.l is an a input file written in a language which describes the generation of lexical analyzer. The lex compiler transforms lex.l to a C program known as lex.yy.c.
- lex.yy.c is compiled by the C compiler to a file called a.out.
- The output of C compiler is the working lexical analyzer which takes stream of input characters and produces a stream of tokens.
- yyval is a global variable which is shared by lexical analyzer and parser to return the name and an attribute value of token.
- The attribute value can be numeric code, pointer to symbol table or nothing.
- Another tool for lexical analyzer generation is Flex.

STRUCTURE OF LEX PROGRAMS:

Lex program will be in following form declarations

%%

7 translation rules

```
%%
auxiliary functions
```

ALGORITHM:

- Define tokens `let` and `dig` using `%token` directive and lexical rules in `yylex()` to recognize them.
- Define grammar rules in BNF form for `sad` and `recld` in the Bison specification.
- Implement semantic actions to print "accepted" for valid inputs and "rejected" for errors.
- In the `main()` function, call `yyparse()` to initiate parsing and prompt user input with "Enter a variable : ".
- During execution, the program scans input, applies grammar rules, and executes semantic actions.
- Handle errors by triggering the `error` rule and calling `yyerror()` to print "rejected" and exit.

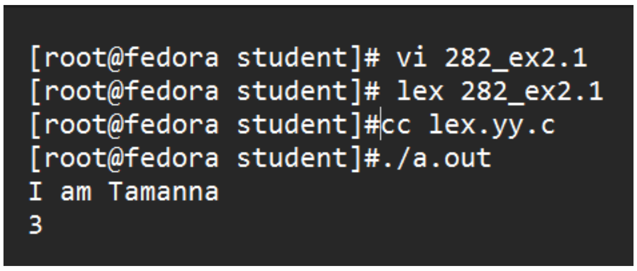
PROGRAM:

```
%{
#include<stdio.h>
#include<ctype.h>
#include<stdlib.h>
%}
%token let dig
%%
sad : let recld '\n' {printf("accepted\n"); exit(0);}
| let '\n' {printf("accepted\n"); exit(0);}
|
|error {yyerror("rejected\n");exit(0);}
;

recld : let recld |
dig recld
```

```
let
| dig
;
%%
yylex(){ char ch;
while((ch=getchar())==' ');
if(isalpha(ch)) return let;
if(isdigit(ch)) return dig;
return ch; } yyerror(char
*s){ printf("%s\n",s);
exit(0); } main(){
printf("Enter a variable : ");
yyparse();
}
```

OUTPUT:



```
[root@fedora student]# vi 282_ex2.1
[root@fedora student]# lex 282_ex2.1
[root@fedora student]#cc lex.yy.c
[root@fedora student]#./a.out
I am Tamanna
3
```

RESULT: