Exp No: 5

Date:

DESIGN A DESK CALCULATOR USING LEX TOOL

AIM:

To check whether the arithmetic expression using lex and yacc tool.

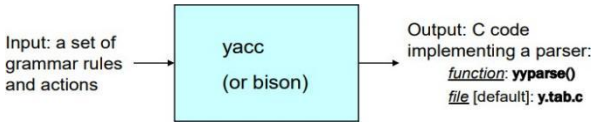
ALGORITHM:

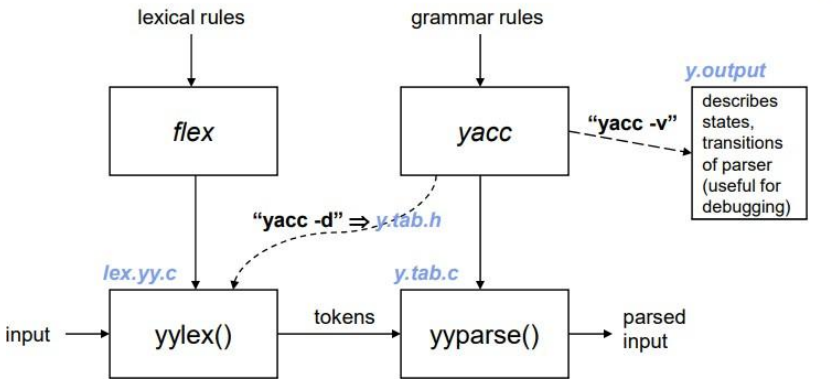
- Using the flex tool, create lex and yacc files.
- In the C include section define the header files required.
- In the rules section define the REGEX expressions along with proper definitions.
- In the user defined section define yywrap() function.
- Declare the yacc file inside it in the C definitions section declare the header files required along with an integer variable valid with value assigned as 1.
- In the Yacc declarations declare the format token num id op.
- In the grammar rules section if the starting string is followed by assigning operator or identifier or number or operator followed by a number or open parenthesis followed by an identifier. The x could be an operator followed by an identifier or operator or no operator then declare that as valid expressions by making the valid stay in 1 itself.
- In the user definition section if the valid is 0 print as Invalid expression in yyerror() and define the main function.

LEX AND YACC WORKING:

Parser generator:

- Takes a specification for a context-free grammar.
- Produces code for a parser.





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PROGRAM:

cdlab5.l:

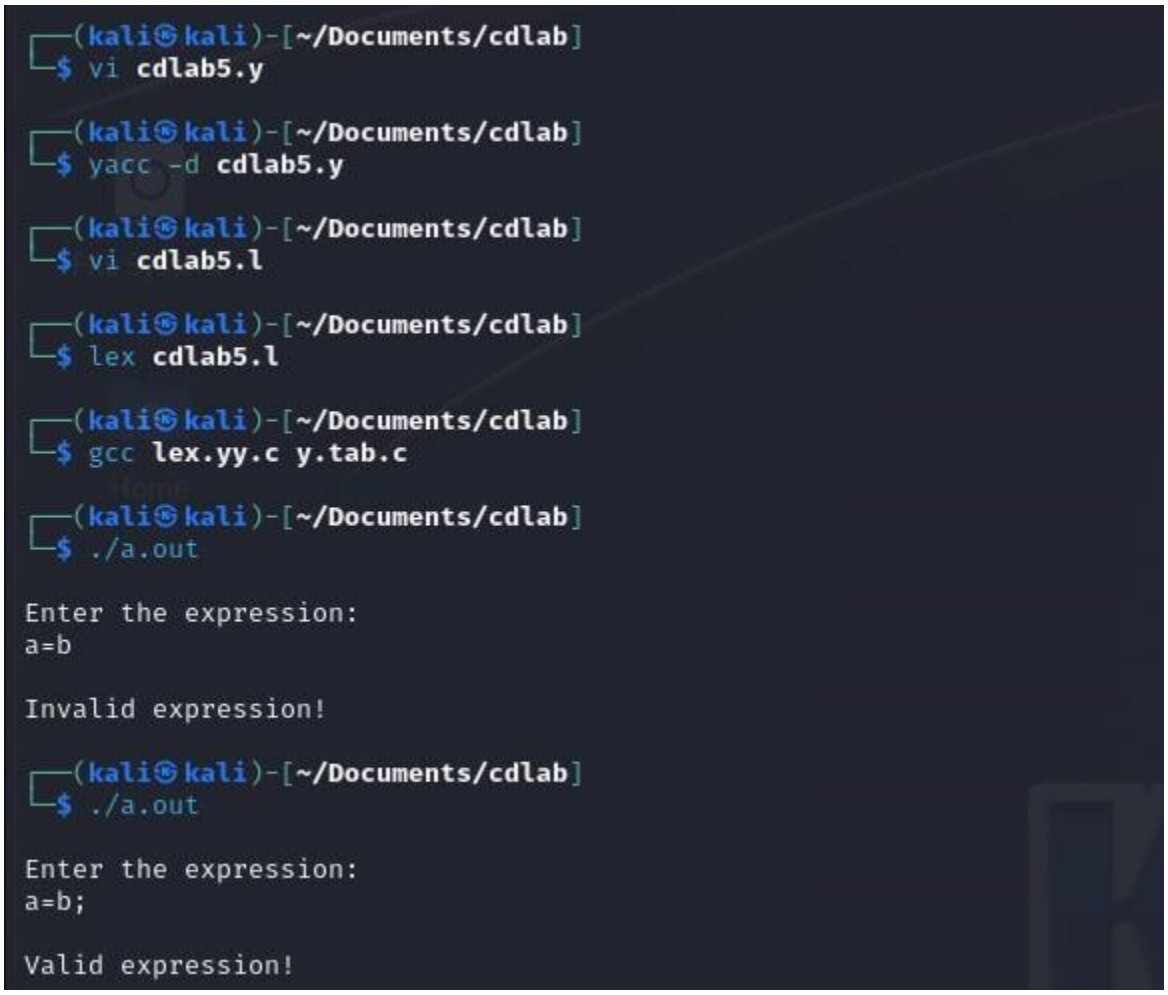
```
%{
   #include "y.tab.h"
%}

%%

[a-zA-Z_][a-zA-Z_0-9]* return id;

[0-9]+(\.[0-9]*)?       return num;

[+/*]                    return op;

.                       return yytext[0];

\n                       return 0;

%%

int
yywrap(){ retur
n 1;
}
```

cdlab5.y:

```
%{

   #include<stdio.h>
   int yylex());
   int yyerror();
   int valid=1;

%}

%token num id op

%%

start : id '=' s ';'

s :     id x

      | num x

      | '-' num x

      | '(' s ')' x

      ;

x :     op s
```

```
    | '-' s
    |
    ;
%%
int
   yyerror(){ va
   lid=0;
   printf("\nInvalid expression!\n");
   return 0;
}
int main(){
   printf("\nEnter the expression:\n");
   yyparse();
   if(valid){
      printf("\nValid expression!\n");
   }}
```

OUTPUT:



RESULT:

Thus, a program to check whether the arithmetic expression using lex and yacc tool is implemented.