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.
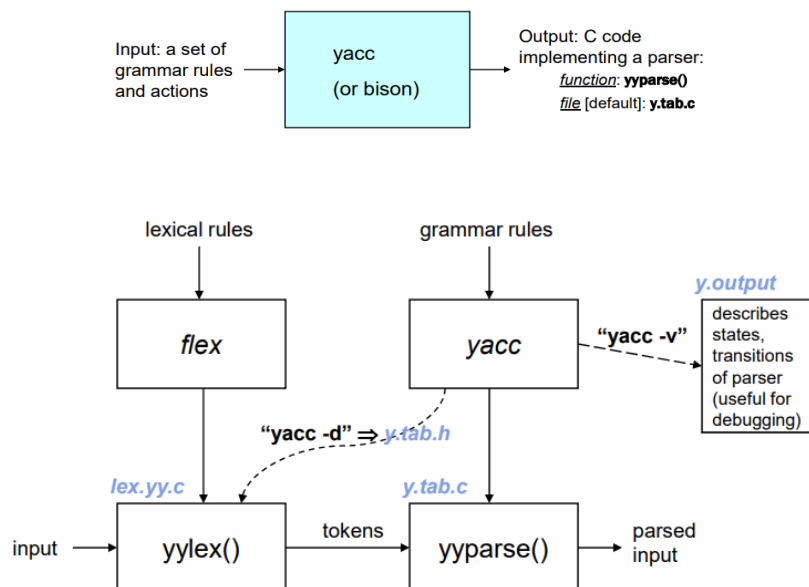
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PROGRAM:

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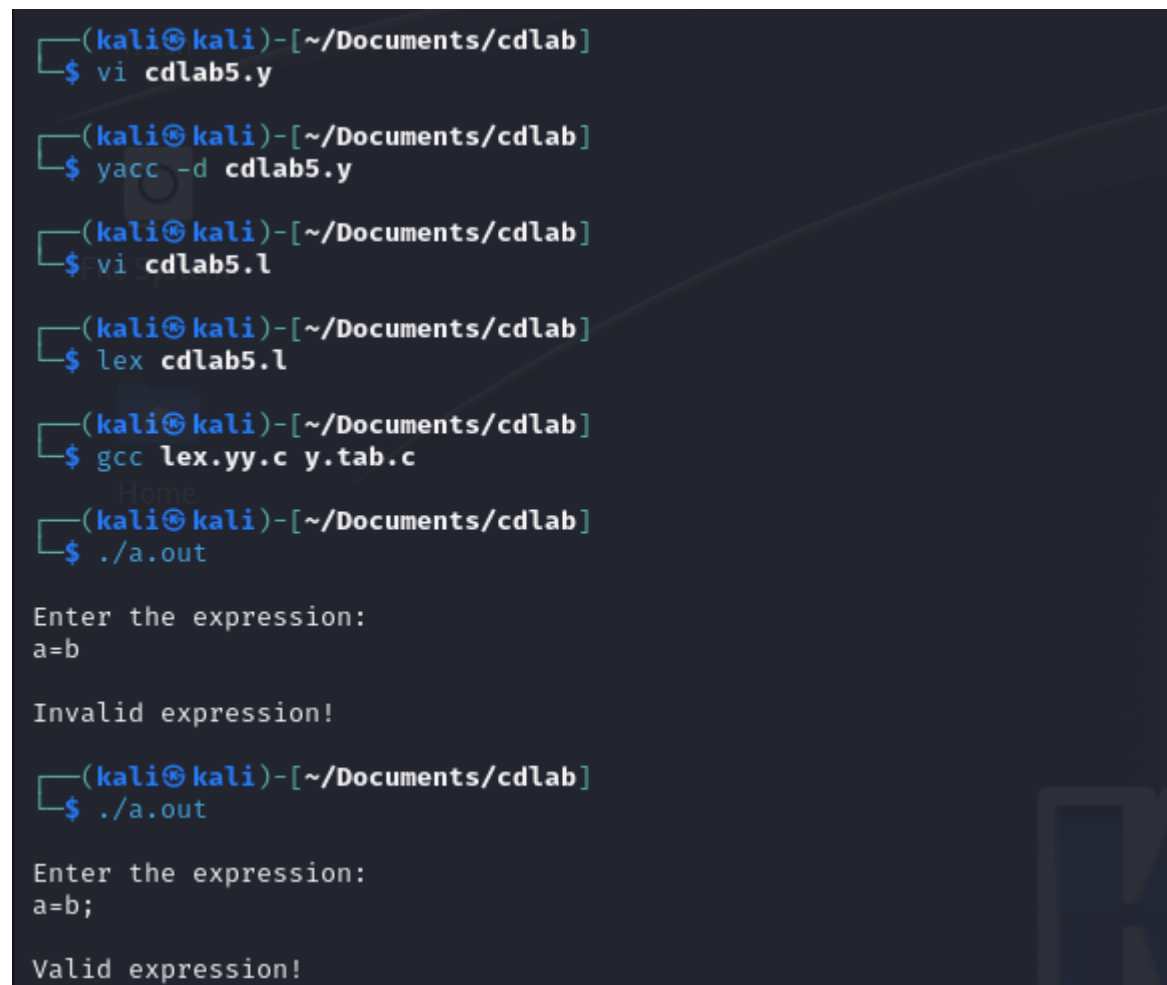
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```
    | '-' s
    |
    ;
%%
int yyerror(){
    valid=0;
    printf("\nInvalid expression!\n");
    return 0;
}
int main(){
    printf("\nEnter the expression:\n");
    yyparse();
    if(valid){
        printf("\nValid expression!\n");
    }}
```

OUTPUT:

RESULT:

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

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