

Exp No: 5

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DESIGN A DESK CALCULATOR USING LEX TOOL

AIM:

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

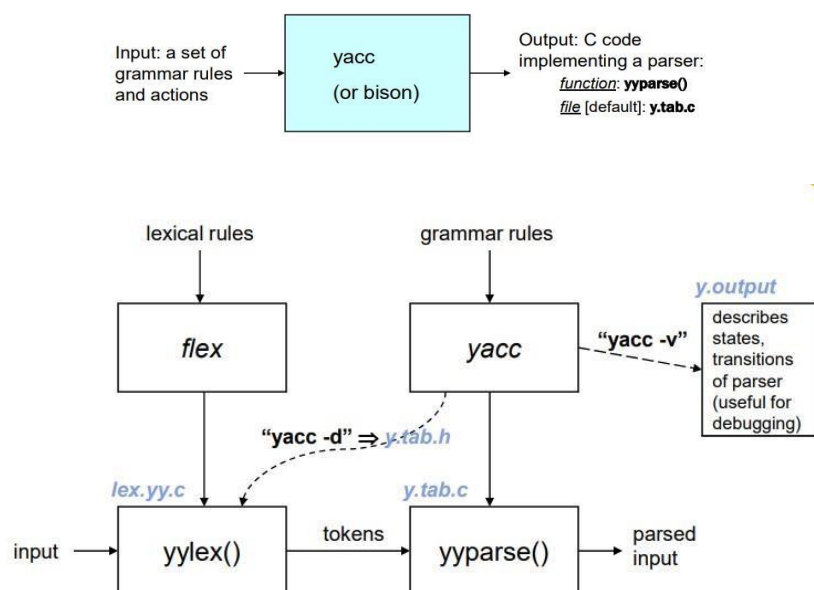
ALGORITHM:

- 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.



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
      | '-' s
      |
;
%%
```

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```

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:

```

(kali㉿kali)-[~/Documents/cdlab]
$ vi cdlab5.y

(kali㉿kali)-[~/Documents/cdlab]
$ yacc -d cdlab5.y

(kali㉿kali)-[~/Documents/cdlab]
$ vi cdlab5.l

(kali㉿kali)-[~/Documents/cdlab]
$ lex cdlab5.l

(kali㉿kali)-[~/Documents/cdlab]
$ gcc lex.yy.c y.tab.c

(kali㉿kali)-[~/Documents/cdlab]
$ ./a.out

Enter the expression:
a=b

Invalid expression!

(kali㉿kali)-[~/Documents/cdlab]
$ ./a.out

Enter the expression:
a=b;

Valid expression!

```

RESULT:

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