Exp No: 5

Date:

DESIGN A DESK CALCULATOR USING LEX TOOL

AIM:

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

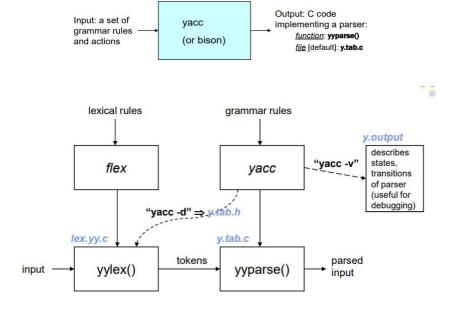
ALGORITHM:

- 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];
             return 0;
\n
%%
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:

```
-(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]

s gcc lex.yy.c y.tab.c
  -(kali@kali)-[~/Documents/cdlab]
_s ./a.out
Enter the expression:
a=b
Invalid expression!
  -(kali®kali)-[~/Documents/cdlab]
Enter the expression:
a=b;
Valid expression!
```

RESULT:

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

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