EX 5: DESK CALCULATOR USING YACC

Aim:

To write Lex program to recognize relevant tokens required for the YACC parser to implement Desk Calculator.

Code:

ex5.l:

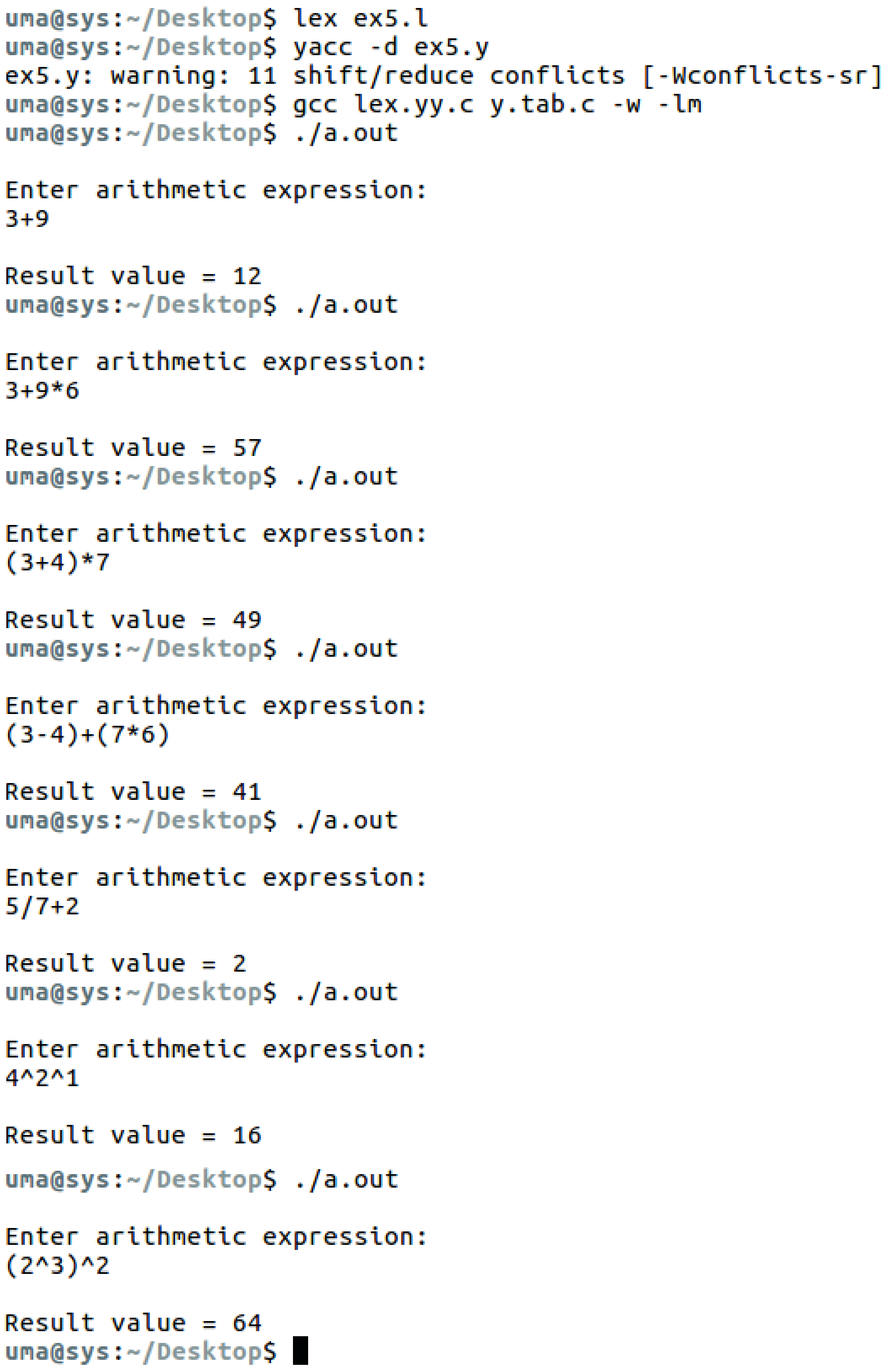
```
%{
/* Definition section */
#include<stdio.h>
#include "y.tab.h"
extern int yylval;
%}

/* Rule Section */
%%
[0-9]+ {
                    yylval=atoi(yytext);
                    return NUMBER;

          }
[\t] ;

[\n] return 0;

. return yytext[0];

%%

int yywrap()
{
return 1;
}
```

ex5.y:

```
%{
/* Definition section */
#include<stdio.h>
#include <math.h>
int flag=0;
%}

%token NUMBER

%left '+' '-'

%left '*' '/' '%'
```

```
%left '(' ')'

/* Rule Section */
%%

E: Op{

            printf("\nResult value = %d\n", $$);

            return 0;

            };
Op:Op'+'Op {$$=$1+$3;}

|Op'-'Op {$$=$1-$3;}

|Op'*'Op {$$=$1*$3;}

|Op'^'Op {$$=pow($1,$3);}

|Op'/'Op {$$=$1/$3;}

|Op'%'Op {$$=$1%$3;}

|'('Op')' {$$=$2;}

| NUMBER {$$=$1;}

;

%%

//driver code
void main()
{
printf("\nEnter arithmetic expression:\n");
yyparse();
}

int yyerror(char *e)
{
printf("\nEntered arithmetic expression is Invalid\n\n");
flag=1;
}
```

OUTPUT:



```
uma@sys:~/Desktop$ lex ex5.l
uma@sys:~/Desktop$ yacc -d ex5.y
ex5.y: warning: 11 shift/reduce conflicts [-Wconflicts-sr]
uma@sys:~/Desktop$ gcc lex.yy.c y.tab.c -w -lm
uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
3+9

Result value = 12
uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
3+9*6

Result value = 57
uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
(3+4)*7

Result value = 49
uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
(3-4)+(7*6)

Result value = 41
uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
5/7+2

Result value = 2
uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
4^2^1

Result value = 16

uma@sys:~/Desktop$ ./a.out

Enter arithmetic expression:
(2^3)^2

Result value = 64
uma@sys:~/Desktop$ █
```