Ex No: 7

Date:

EVALUATE EXPRESSION THAT TAKES DIGITS, *, + USING LEX AND YACC

AIM:

Toperformarithmeticoperations that takes digits,*, + usinglexandyacc.

ALGORITHM:

- Define rules in evaluate.l to recognize digits and ignore whitespace, returning tokens for numbers. Utilize yylval to pass token values to parser.
- Break down input into tokens (numbers) in evaluate.l, associating each with its respective value.
- Use parser (evaluate.y) to implement grammar rules for arithmetic expressions, considering precedence and associativity of operators. Generate a result for each expression.
- Implement error handling in evaluate.y to detect invalid expressions. Set a flag if errors occur during parsing.
- After parsing, check if the flag remains unset. If so, indicate that the arithmetic expression is valid; otherwise, display an error message.

PROGRAM:

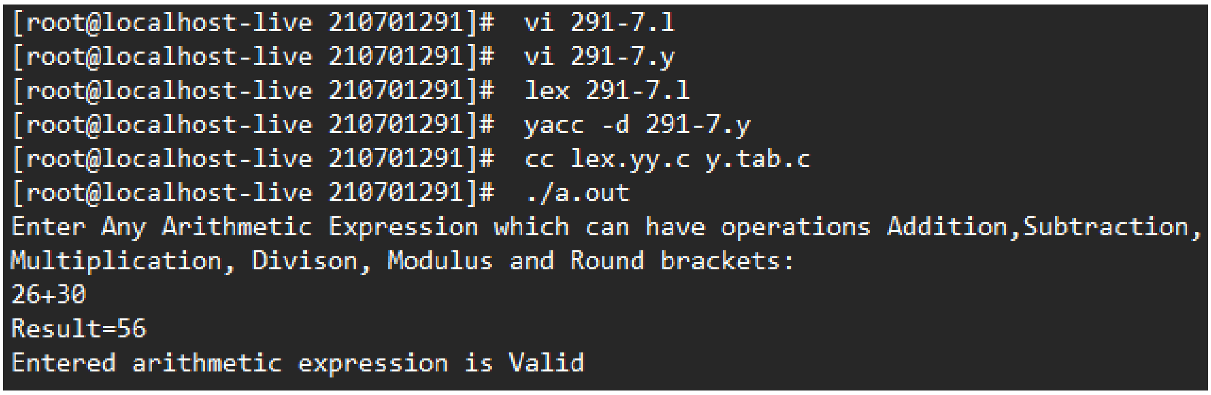
evaluate.l:

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

%%
[0-9]+ {
        yylval=atoi(yytext);
        return NUMBER;
        }
[\t] ;
[\n] return 0;
. return yytext[0];
%%
int yywrap()
{
return 1;
}
```

evaluate.y:

```
%{
        #include<stdio.h>
        int flag=0;

%}
%token NUMBER

%left '+' '-'
%left '*' '/' '%'
%left '(' ')'
%%
ArithmeticExpression: E{
        printf("\nResult=%d\n",$$);
        return 0;
        }
E:E'+'E {$$=$1+$3;}
 |E'-'E {$$=$1-$3;}
 |E'*'E {$$=$1*$3;}
 |E'/'E {$$=$1/$3;}
 |E'%'E {$$=$1%$3;}
 |'('E')' {$$=$2;}
 | NUMBER {$$=$1;}
;
%%

void main()
{
   printf("\nEnter Any Arithmetic Expression which can have operations Addition,
Subtraction, Multiplication, Divison, Modulus and Round brackets:\n");
   yyparse();
  if(flag==0)
   printf("\nEntered arithmetic expression is Valid\n\n");

}
void yyerror()
{
   printf("\nEntered arithmetic expression is Invalid\n\n");
   flag=1;
}
```

OUTPUT:



```
[root@localhost-live 210701291]#  vi 291-7.l
[root@localhost-live 210701291]#  vi 291-7.y
[root@localhost-live 210701291]#  lex 291-7.l
[root@localhost-live 210701291]#  yacc -d 291-7.y
[root@localhost-live 210701291]#  cc lex.yy.c y.tab.c
[root@localhost-live 210701291]#  ./a.out
Enter Any Arithmetic Expression which can have operations Addition,Subtraction,
Multiplication, Divison, Modulus and Round brackets:
26+30
Result=56
Entered arithmetic expression is Valid
```

RESULT: