Ex No: 7

Date:

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

#### AIM:

To perform arithmetic operations that takes digits,\*, + using lex and yacc.

#### **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:

# 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 liveuser]# vi 518_ex7.1
[root@localhost-live liveuser]# vi 518_ex7.y
[root@localhost-live liveuser]# lex 518_ex7.y
[root@localhost-live liveuser]# capacity of 518_ex7.y
[rootalocalhost-live liveuser]# capacity of 518_ex7.y
[rootalocalhost-live liveuser]# ./a.out
Enter Any Arithmetic Expression which can have operations Addition, Subtraction, Multiplication, Divison, Modulus and Round brackets:
2+3

Result=5
Entered arithmetic expression is Valid
[root@localhost-live liveuser]# ./a.out
Enter Any Arithmetic Expression which can have operations Addition, Subtraction, Multiplication, Divison, Modulus and Round brackets:
4*5

Result=20
Entered arithmetic expression is Valid
```