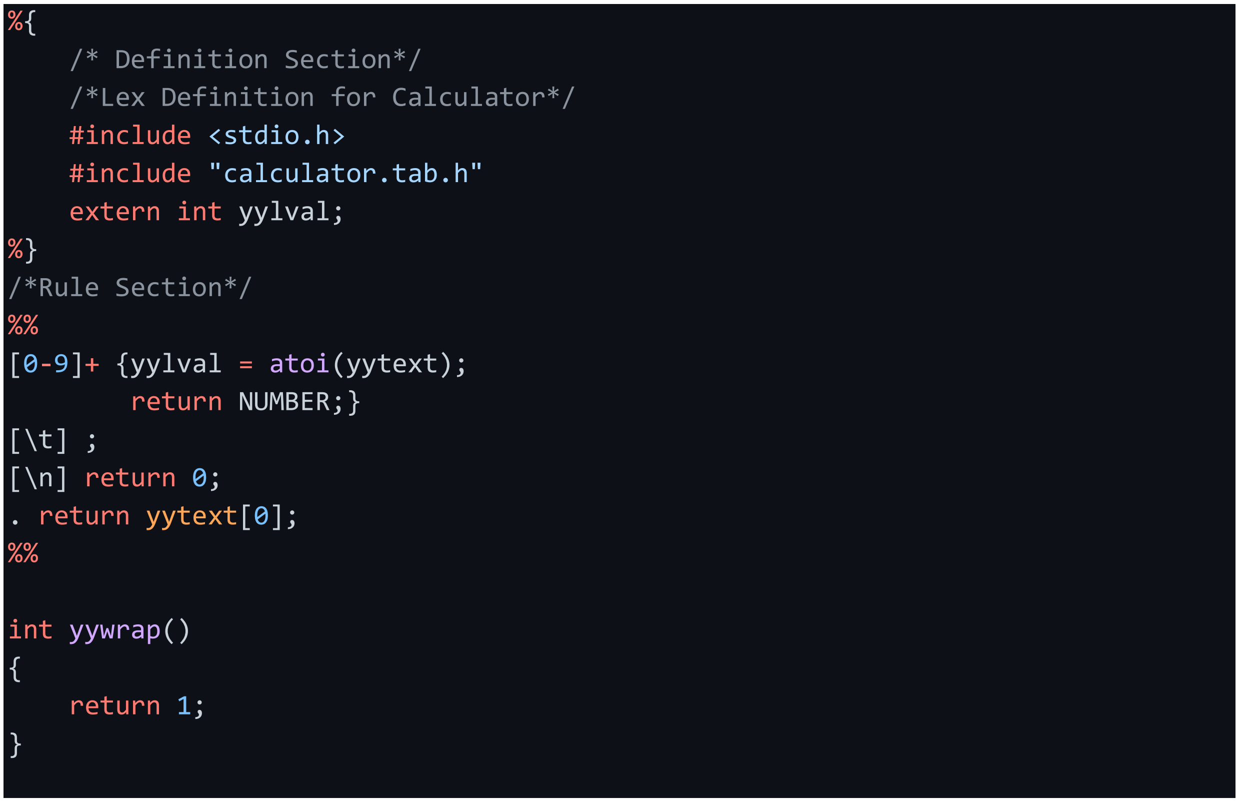
Practical - 5
Roll No - 18BCE107
Aim - To implement a calculator in YACC.

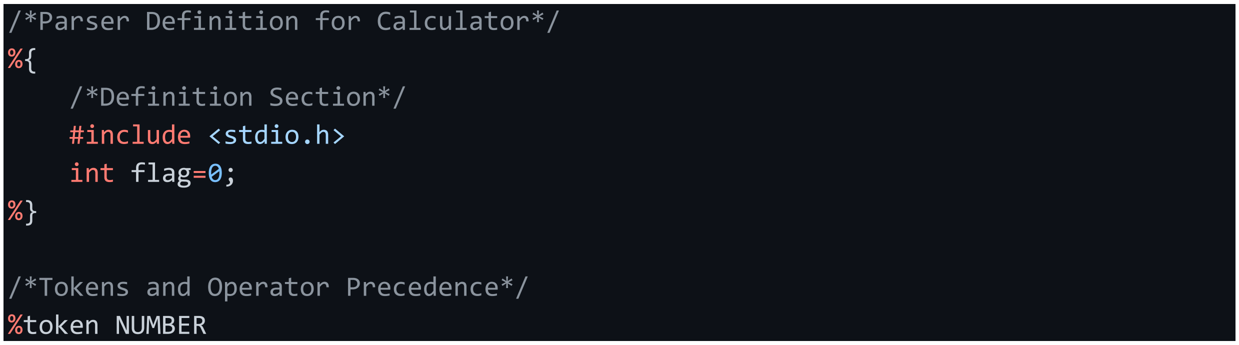
Code: -

calculator.l file:

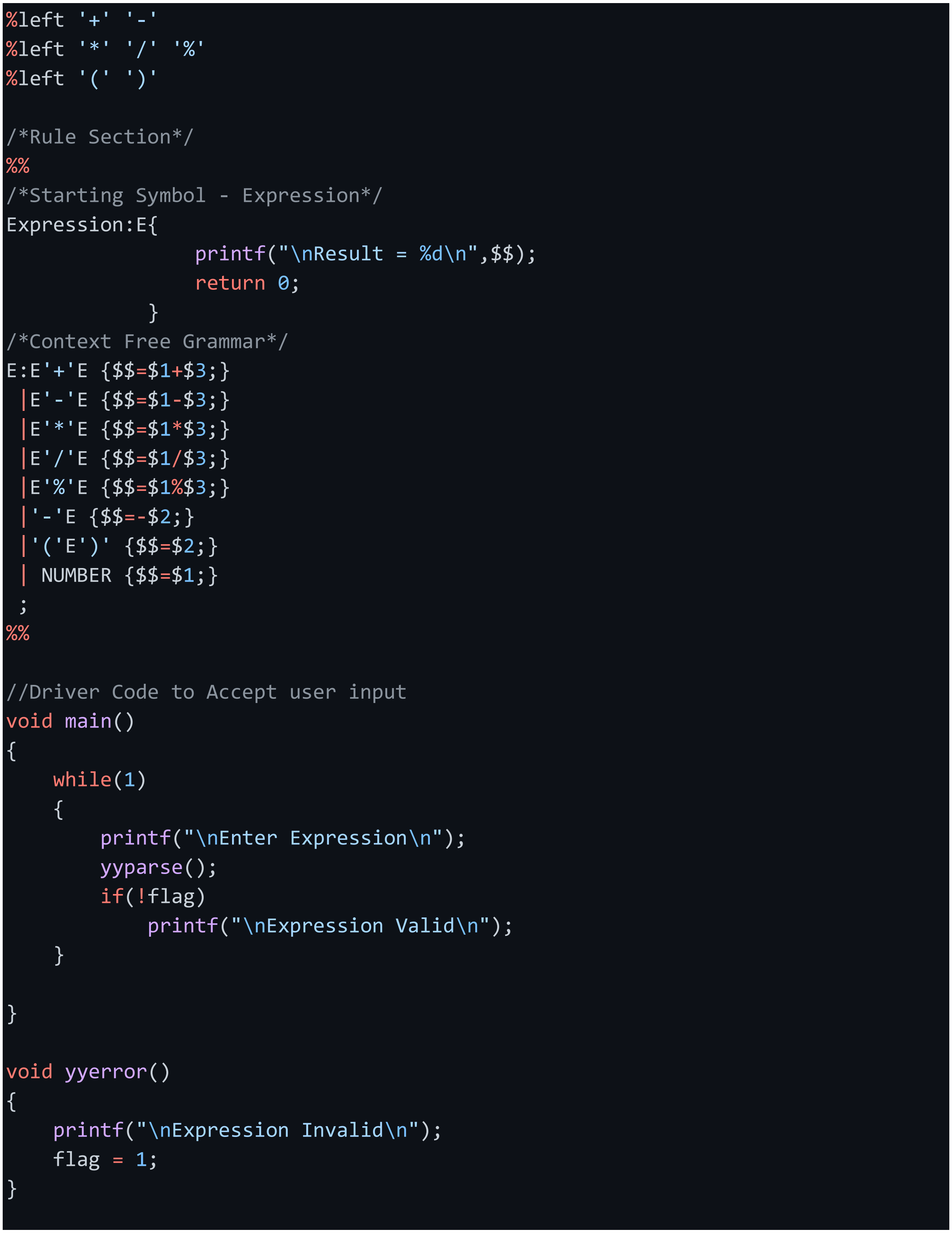


```
%{
    /* Definition Section*/
    /*Lex Definition for Calculator*/
    #include <stdio.h>
    #include "calculator.tab.h"
    extern int yylval;
%}
/*Rule Section*/
%%
[0-9]+ {yylval = atoi(yytext);
        return NUMBER;}
[\t] ;
[\n] return 0;
. return yytext[0];
%%

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

calculator.y file:

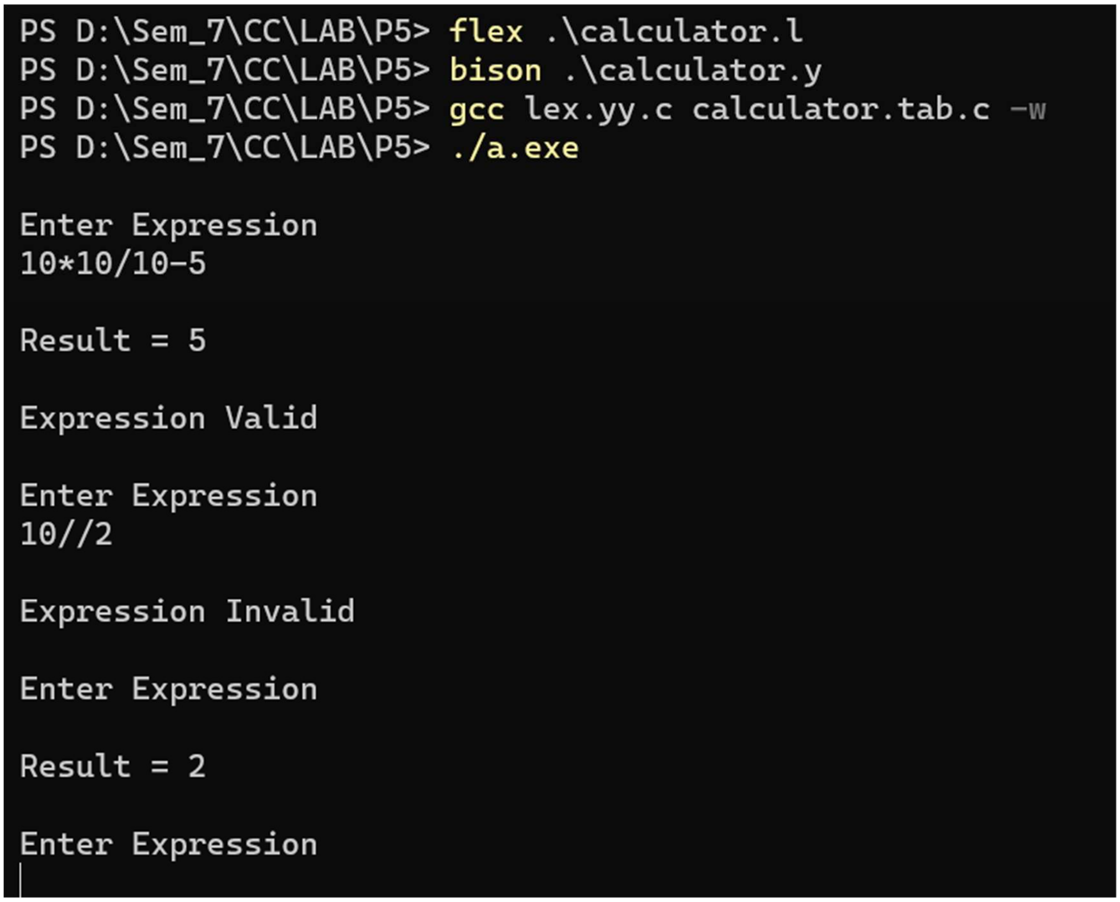


```
/*Parser Definition for Calculator*/
%{
    /*Definition Section*/
    #include <stdio.h>
    int flag=0;
%}

/*Tokens and Operator Precedence*/
%token NUMBER
```



```
%left '+' '-'
%left '*' '/' '%'
%left '(' ')'

/*Rule Section*/
%%
/*Starting Symbol - Expression*/
Expression:E{
                printf("\nResult = %d\n",$$);
                return 0;
            }
/*Context Free Grammar*/
E:E'+'E {$$=$1+$3;}
 |E'-'E {$$=$1-$3;}
 |E'*'E {$$=$1*$3;}
 |E'/'E {$$=$1/$3;}
 |E'%'E {$$=$1%$3;}
 |'-'E {$$=-$2;}
 |'('E')' {$$=$2;}
 | NUMBER {$$=$1;}
 ;
%%

//Driver Code to Accept user input
void main()
{
    while(1)
    {
        printf("\nEnter Expression\n");
        yyparse();
        if(!flag)
            printf("\nExpression Valid\n");
    }

}

void yyerror()
{
    printf("\nExpression Invalid\n");
    flag = 1;
}
```

Output: -



```
PS D:\Sem_7\CC\LAB\P5> flex .\calculator.l
PS D:\Sem_7\CC\LAB\P5> bison .\calculator.y
PS D:\Sem_7\CC\LAB\P5> gcc lex.yy.c calculator.tab.c -w
PS D:\Sem_7\CC\LAB\P5> ./a.exe

Enter Expression
10*10/10-5

Result = 5

Expression Valid

Enter Expression
10//2

Expression Invalid

Enter Expression

Result = 2

Enter Expression
```