```
#include <stdio.h>
#include <stdlib.h>

int parseExpr();
int parseTerm();
int parseFactor();

char *x;
void main()
{
    // input string
    //x = "2*3+4*5";
    //x = "k2*3+4*5";        //test 2 - for error message
    //x = "8/2-1*3";         //test 3 - for / and -
    //x = "8/(4-2)";         //test 4 - for ()
    //x = "8*(4-2)+7";       //test 5 - for checking whole logic

    // read input
    printf("Please enter a math expression\n");
    fflush(stdout);
    char y[30];

    scanf("%s",y);
    x = y;

    printf("The input expression : %s\n", x);

    int result = parseExpr();

    // result of math exp
    printf("**Parsing successful! \n");
    printf("result = %d\n", result);
}
// +
int parseExpr(){

    printf("Enter Expression : digit is %c\n", *x);
    int product1 = parseTerm();

    while (*x == '+' || *x == '-'){
        char c = *x;


        ++x;
        int product2 = parseTerm();

        if(c=='+'){
            printf("product1 + product2 : %d + %d = %d \n", product1, product2,
                   product1 + product2);
            product1 = product1 + product2;
        }
        else if(c=='-'){
            printf("product1 - product2 : %d + %d = %d \n", product1, product2,
                   product1 - product2);
            product1 = product1 - product2;
        }
    }

    return product1;
```

```
}
// *
int parseTerm(){
    printf("Enter Term : digit is %c\n", *x);
    int factor1 = parseFactor();

    while (*x == '*' || *x == '/'){
        char c = *x;
        ++x;
        int factor2 = parseFactor();

        if(c=='*'){
            printf("factor1 * factor2 : %d * %d = %d\n", factor1, factor2, factor1
*

factor2);
            factor1 = factor1 * factor2;
        }
        else if(c=='/'){
            printf("factor1 / factor2 : %d * %d = %d\n", factor1, factor2,
factor1 /

factor2);
            factor1 = factor1 / factor2;
        }
    }
    return factor1;
}
// num
int parseFactor(){
    printf("Enter Factor: digit is %c\n", *x);

    if(*x == '('){
        x++;

        if(*x >= '0' && *x <= '9'){
            int y = *x - '0';
            x++;

            int z;
            switch (*x) {
                case '-':
                    x++;
                    int z = y- (*x - '0');
                    x= x + 2;
                    return z;
                case '+':
                    x++;
                    z = y + (*x - '0');
                    x= x + 2;
                    return z;
            }
        }
    }
    else if (*x >= '0' && *x <= '9'){

        int y = *x - '0';
        x++;
        return y;
```

```
    }else{
        printf("Error: Invalid digit fount: %c",*x);

        exit(1);
    }

}
```