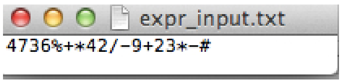
Lab 6: Postfix Evaluation

Read a postfix expression from the given input file, and evaluate the value of the postfix expression using stack ADT.

1. Input

Obtain a postfix expression from the given input file (expr_input.txt). The expression ends with #. A detailed specification of operators and operands is provided below.



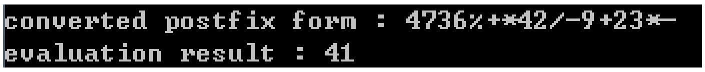
```
4736%+*42/-9+23*-#
```

- Available operators: +, -, *, /, and %
- Operands: single-digit numbers (1, 2, 3, 4, 5, 6, 7, 8, and 9)
- Conditions:
  - The expression should be no more than 100 characters.
  - The delimiter for the end of the expression is '#'.
  - No exception handling is required for checking whether the input file exists.

2. Data structure

```
struct Stack {
    char *key;
    int top;
    int max_stack_size;
};
```

3. Evaluation algorithm



```
converted postfix form : 4736%+*42/-9+23*-
evaluation result : 41
```

- Iteratively obtain tokens until you meet the end of an expression.
- There are two rules for popping and pushing the operands from/to the stack:
  - When you meet an operand (number), push it onto the stack.
  - When you meet an operator, pop two operands from the stack and perform the operation, and push the result back to the stack.

4. Program description

- name: p6.c
- input: a postfix expression in a file
- output: evaluation result in the standard output

Submit to the course website (https://portal.hanyang.ac.kr) your source code and a written report. Your report should include the description of your own implementation.