

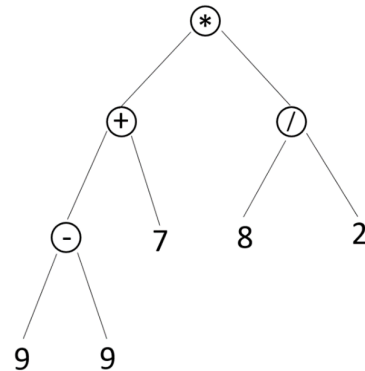
S&T2024 Advanced C Programming Lab 0

Data Structure - Stack Using Link List

21 May 2025 Wednesday 6:50pm

Unzip **AC_Lab0.zip**.

In this laboratory exercise, you will utilize a stack data structure, implemented via a linked list, to evaluate a sequence of postfix expressions. For instance, the expression **99-7+82/*** evaluates to **28**, as demonstrated in the figure.



The input file named as **postfix.inf** contains the postfix expressions as shown.

You should assume that each number in the text file consists of digits ranging from 1 to 9 only. The operators include +, -, *, /. Each expression is delimited by the = character, and a newline character (\n) appears at the end of each line. The total number of expressions is assumed to be unknown but the last expression is delimited by the **X** character.

```
26- =  
18+3+ =  
23+2*75- / =  
15-4+6-2 / =  
99-7+82 / * =  
11+1+3-4+4-4 * =  
X
```

postfix.inf

For example, **26- =** represents the expression $2 - 6 =$, and the result should be **-4**. You can ignore the arithmetic precedence.

You may modify **stack2.c**, which is provided in the zip file. If your program executes correctly, the output on your screen should be as follows:

```
E:\00 S&T-1st\000 Advance C Language\prac0\postfix_link_solution.exe  
26- = -4  
18+3+ = 12  
23+2*75- / = 5  
15-4+6-2 / = -3  
99-7+82 / * = 28  
11+1+3-4+4-4 * = 0
```

Please prepare for this lab session in advance.