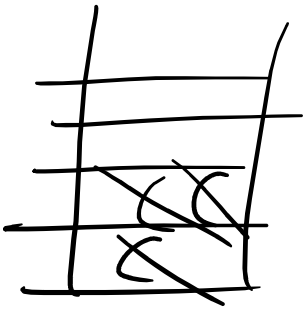
13-01-2026 - Explore data structures such as Stacks, learn about their operations, and use them to solve problems in a variety of domains.

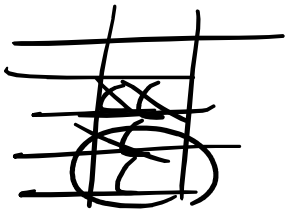
13 January 2026 13:33

=> Applications of Stack:

L> Parenthesis Matching



((a+b)x(c-d))



(((a+b)x(c-d))

exp: |(|(|a|+|b|)|x|(|(|c|-|d|)|)|\0|

0 1 2 3 4 5 6 7 8 9 10 11 12 13

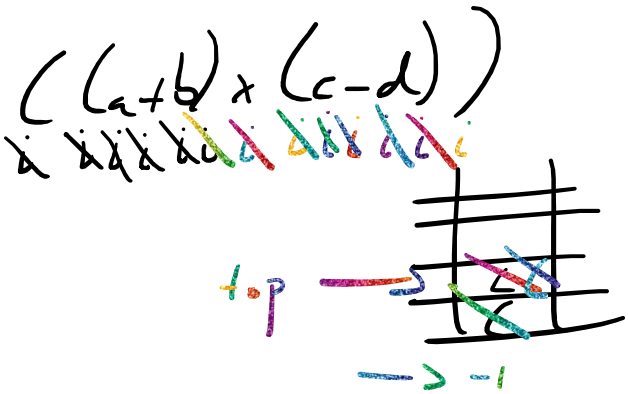
=> Initialization of stack

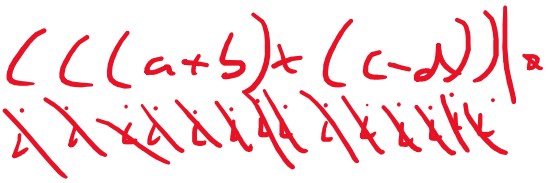
```
struct Stack st {
    st.size = strlen(exp);
    st.top = -1
    st.S = new char [st.size];
```

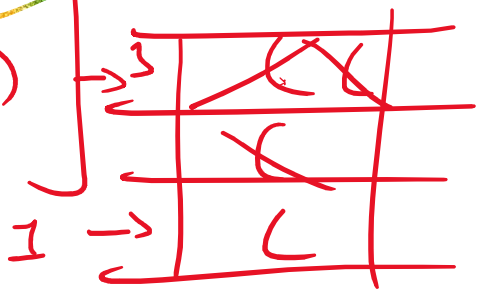
stack ()

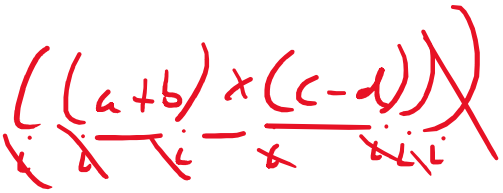
```
=> int isBalance (char *exp) {
    struct Stack st;
    for (i=0; exp[i] != \0 ; i++)
        if (exp[i] == '(')
            push (&st, exp[i]);
        else if (exp[i] == ')') {
            if (isEmpty(&st))
                return false
            pop (&st);
    }
    return isEmpty(&st)? true : false;
```

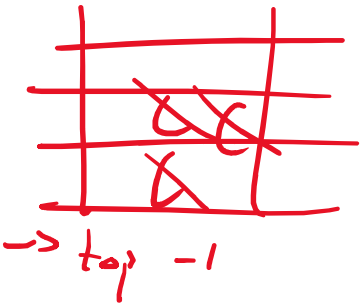
```c
int isBalanced (struct Stack st, char *exp) {
    int i;
    for (i=0; exp[i]!='\0'; i++) {
        if (exp[i] == '(')
            push(&st, exp[i]);
        else if (exp[i] == ')') {
            if (st.top == -1)
                return 0;
            pop (&st);
        }
    }
    if (st.top == -1)
        return 1;
    else
        return 0;
}
```











Infix, Prefix & Postfix:

Infix => a + b

operands

operators

Prefix => + a b (operators before operands)

Prefix => operands)

Postfix => ab+ (Operators after operands)

$$\underset{6}{8} \oplus \underset{5}{3} \times \frac{(\underset{1}{9} - \underset{7}{6})}{} / \underset{3}{2^{\underset{2}{2}}} + \underset{4}{6} / \underset{}{2}$$

1st 8 3 [9 6 -] 2 ^ / x + 6 2 /

2nd 8 3 3 2 ^ / x + 6 2 /

3rd 8 3 3 4 / x + 6 2 /

4th 8 3 0.75 x + [6 2 /]

5th 8 [3 0.75 x] + 3

6th [8 2.66 +] 3

7th - . - -