Stacks and Queues

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Stacks (Sec. 3.1): Abstract Data Type

**Stack**

- object: a container that holds some elements
- action: push (to the top), pop (from the top)

- last-in-first-out (LIFO): 擠電梯，洗盤子
- very restricted data structure, but important for computers (will discuss some cases later)
in C, the following characters show up in pairs: (), [], {}, ""

    good:  { xxx (xxxxxx) xxxxx"xxxx"x }
    bad:   { xxx (xxxxxx) xxxxx"xxxx"x }

the LISP programming language

    (append (pow (* (+ 3 5) 2) 4) 3)

how can we check parentheses balancing?
for each c in the input do
    if c is a left character
        push c to the stack
    else if c is a right character
        pop d from the stack
        if c does not match d
            return WRONG
    end if
end if
return RIGHT

{ xxx ( xxxxxx } xxxxxx"xxxx"x }