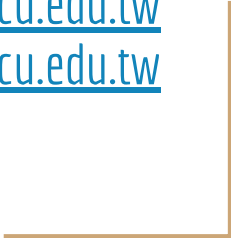




# HW5

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# HW5

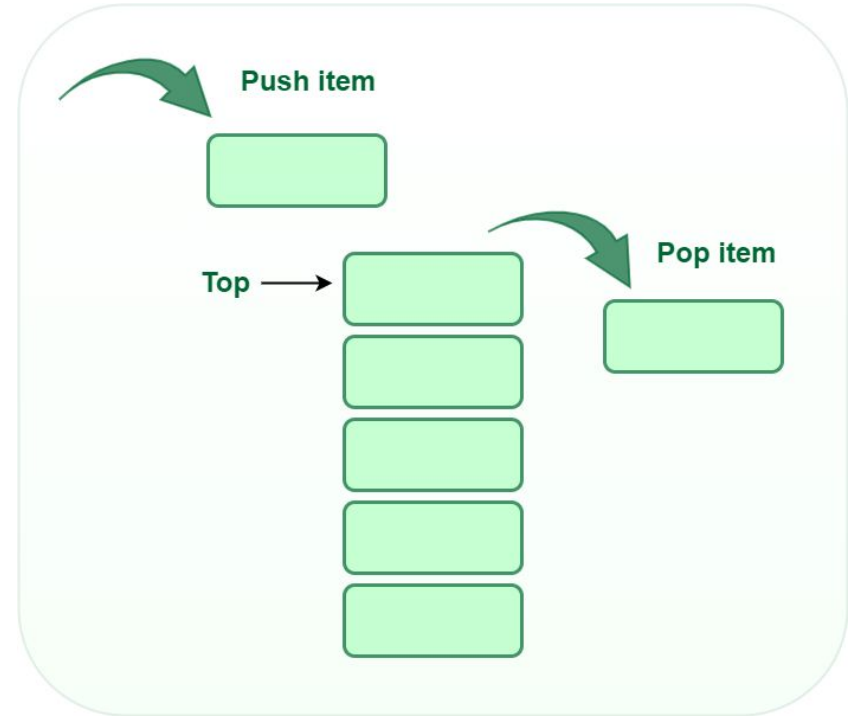
## HW 5 (Due on 10/20)

Matching/Analyzing HTML Tags.

- Check whether a given (simplified) HTML web page is valid
  - By HTML Tag Matching (TB, page. 212-213)
- Output:
  - all the matched tags if the html is valid
  - The first mis-matched tag if the html is invalid
- Assume all matched tags are in the form:
  - `<name>...</name>`

# Stack feature

- LIFO (Last In First Out) or FILO (First In Last Out)
- Use POP to remove top data
- Use PUSH to add data to the top

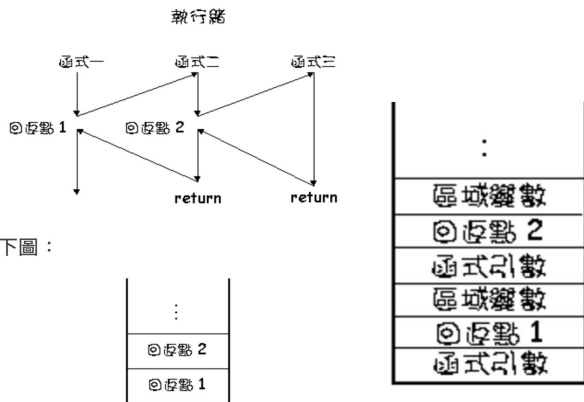


# Scenes

- Make Function Call
- Palindrome
- Valid Parentheses

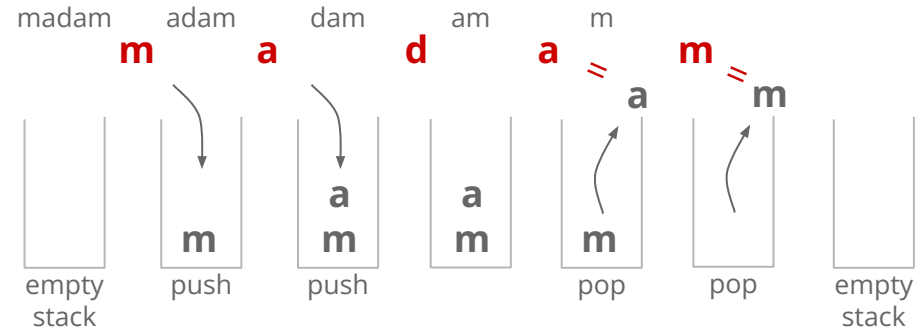
# Make Function Call

- When a **recursive function** is invoked, its parameters are stored in a data structure called activation records. These activation records are **stored in a special stack** called the recursive stack. These activation records are deleted when the function execution is completed.



# Palindrome

- **Push** the **first half of the text** into the stack in sequence, and then **pop** out the **second half of the text** one by one to check if they are the same, and finally the stack must be empty.
- Taking **madam** as an example, the first half of the **ma** is placed in the stack in order (stack = am]), then because **d** is in the middle and ignore, character **a** pops out and found that  $a == a$ , (stack = m]), so continue to the next character **m**, found that  $m == m$ , finished and the stack is empty, so it is a Palindrome.



# Valid Parentheses

- Verify that the parentheses in the string are paired legally.

"()", "{}", "[]" are legal pairs, "(]", "[)" are illegal pairs.

- If there is a left parenthesis, there must be a right parenthesis (the number of parentheses must be even), and **the appearance order of the left parenthesis will be opposite to that of the right parenthesis.**
- The left parenthesis appears first, and the paired right parenthesis will appear last. Use the first in last out feature of Stack.

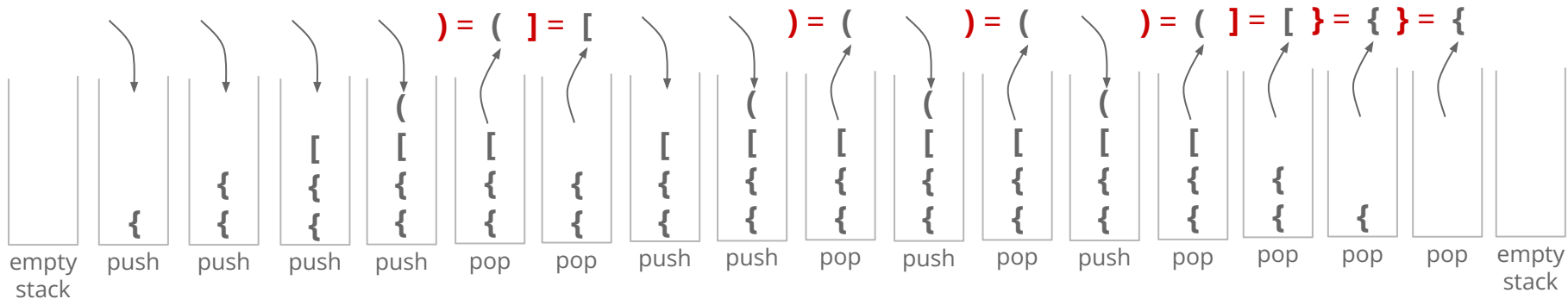
# Valid Parentheses

- If there is a **left** series of parentheses, **push** the left parenthesis into the Stack

If there is a **right** series of parenthesis, **pop** a parenthesis from the Stack and compare whether it is the same series

Finally, check there is a lonely left parenthesis in the Stack. If not, the pairing is successful, and if there is, the pairing fails.

Ex:  $\{ \{ [(3+5) * 2] + [(6-3)*(5+8)/(6+9+1)] \} / 2 \}$





# Some Syntax

- `<div> </div>`

There is no space in `<>`, the open and close tags are separated

- `<style type="text/css">`

There has space in the open tag

- `<meta ~~~~/>`

Skipped directly, because the format is inconsistent, and there are no separate open and close

- `<!doctype ~~~~~>`

Skipped directly, usually it is a comment or !doctype

ps : ~~~~ is ellipsis

# I/O Example

- To do: Check all the tags in the page is correct (matched) or not.

- Input:

- Ex: `http://www.example.com`

- Output:

- Correct

`True`

- Incorrect (print a “False” and then print your stack in one line. Top element should be the rightmost one)

`False div span a`

# Example

input → `http://www.example.com`  
output → `True`

input → `http://soslab.nccu.edu.tw/Welcome.html`  
output → `False ?xml !DOCTYPE html head link !--[if link ![endif]-- !--[if link ![endif]-- style !--  
@import`