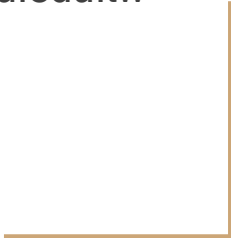




HW5

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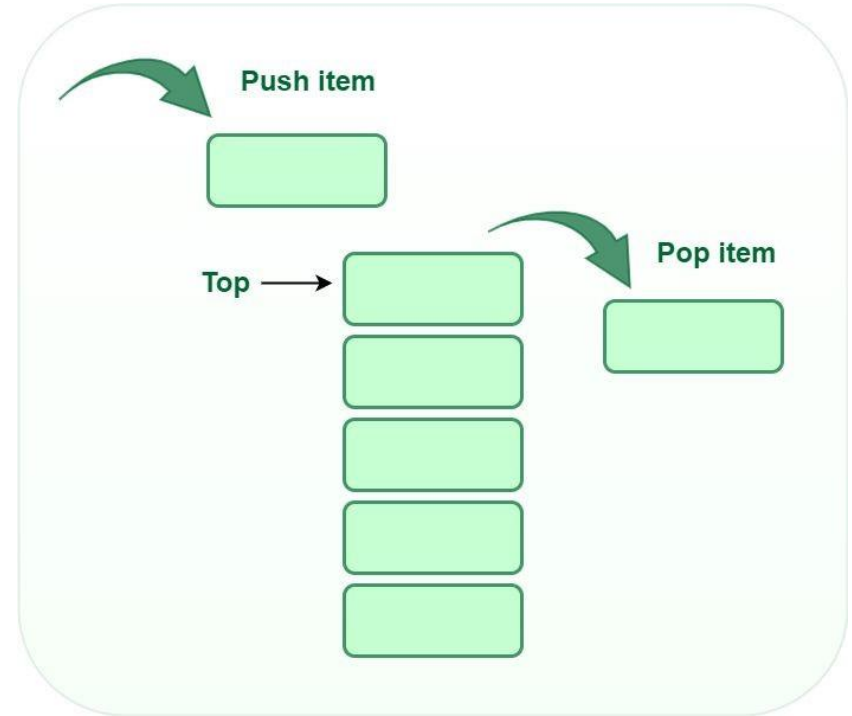
HW5

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)
- Use POP to remove top data
- Use PEEK to get top data (without remove it)
- Use PUSH to add data to the top

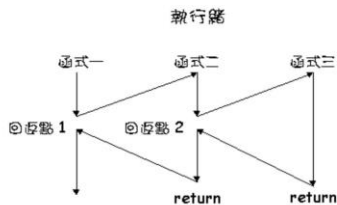


Scenes

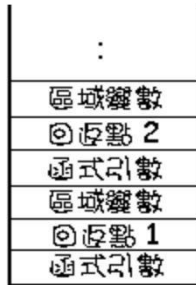
- Make Function Call
- Palindrome
- Valid Parentheses

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.

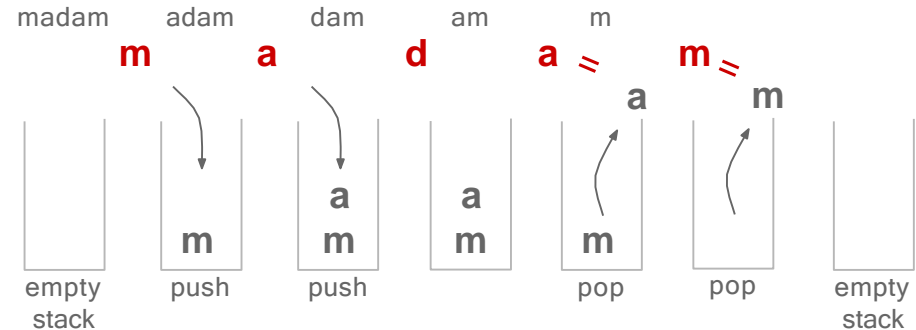


這些回返點每個執行緒會將之記錄在一個堆疊上，如下圖：



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.

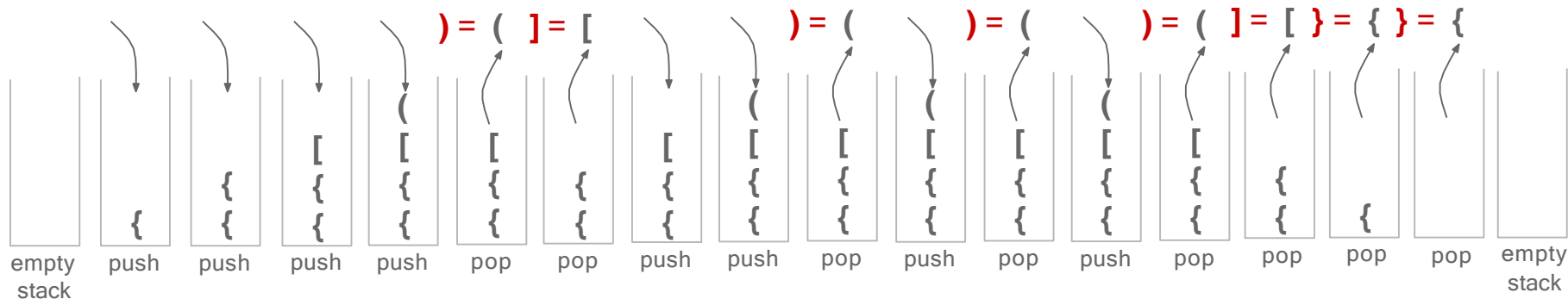
Valid Parentheses

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



Valid Parentheses

```
15         m.matches();  
16  
17         sc.close();  
18     }  
19 Syntax error, insert "}" to complete ClassBody
```

```
Syntax error, insert ")" to complete Expression
```

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 first doesn’t match one)

False div span a

Example

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

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