[CSIE 1212]

Data Structure and Algorithms

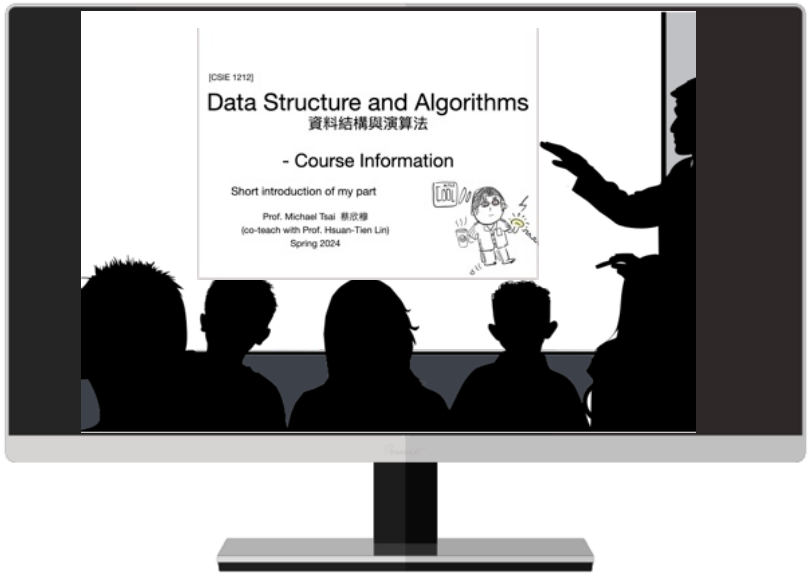
資料結構與演算法

Short introduction of the second half (my part)

Prof. Michael Tsai 蔡欣穆
(co-teach with Prof. Hsuan-Tien Lin)
Spring 2024

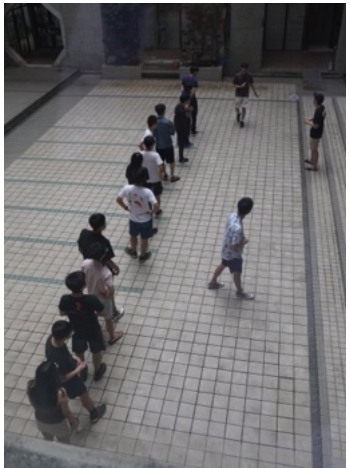
Elements in the Second Half

Learning with Video



Software development team game v2.0

(Biggest) Earth game (ever)



Kahoot! to review before final exam

Kahoot!

Learning with Video (Before Class)

Weekly “Menu”

only 1 prob is graded;
part of activity grade

Part of
programming grade

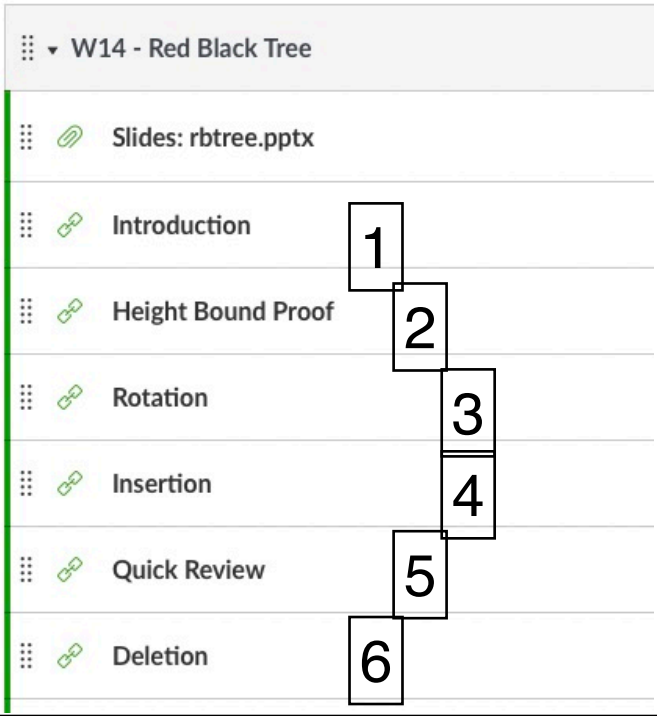
Video clip by subject
(10-30 min / clip)

+

Online quiz problems (easy)
(5-10 min / prob.)

+

Mini homework
(programming)

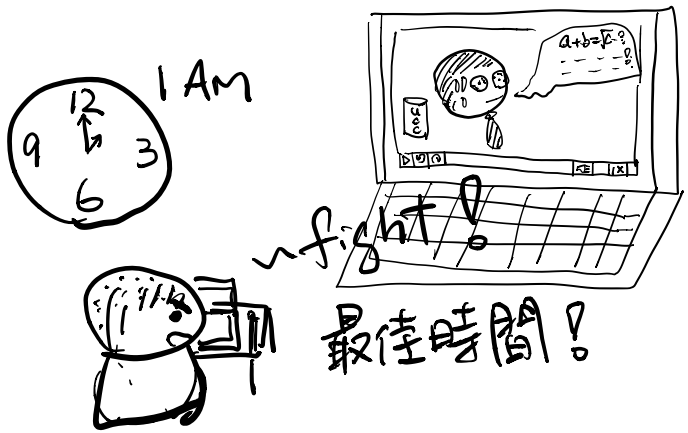


Assigned on Tuesdays
for each week

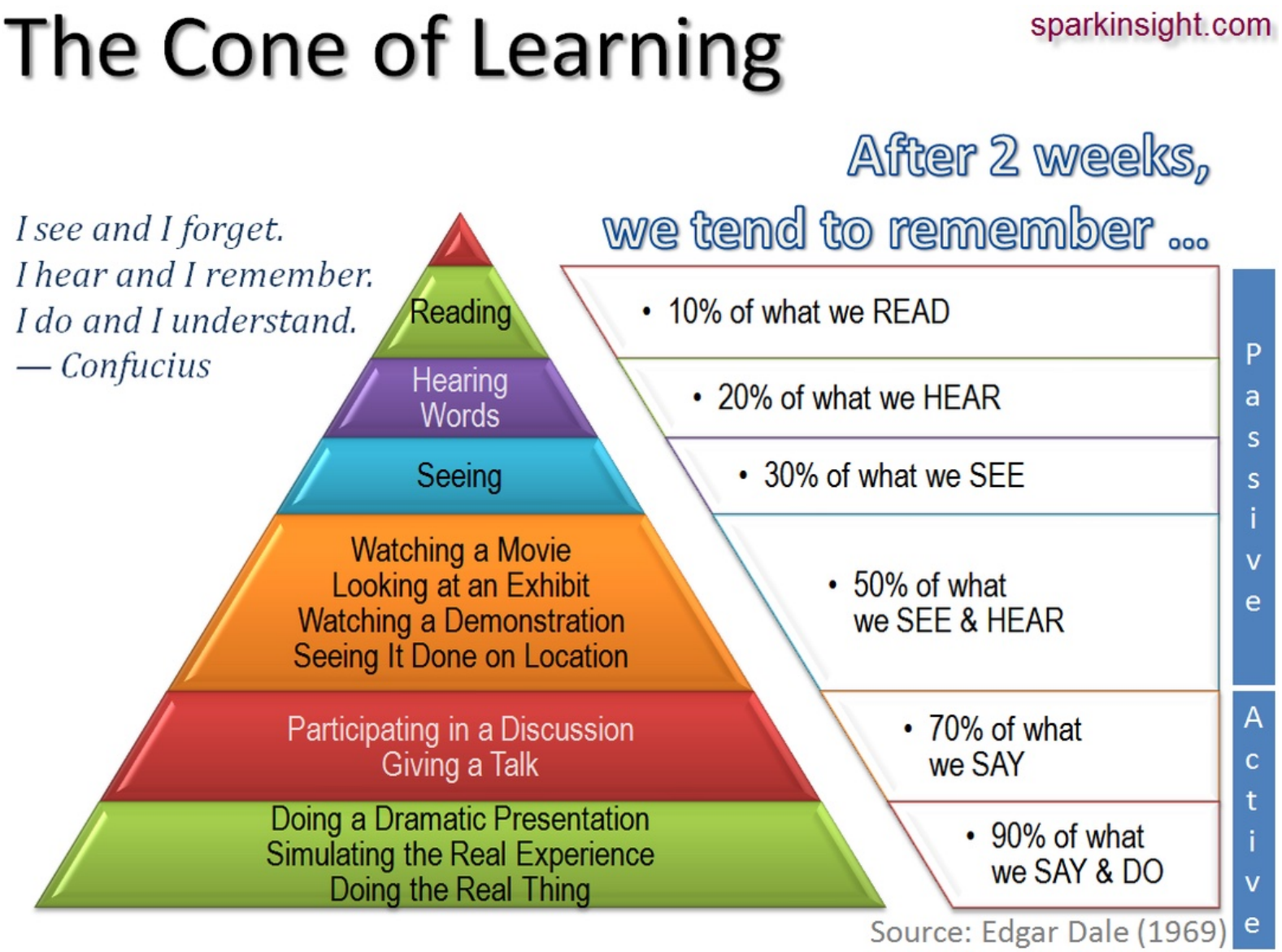
Suggestion:
Finish before next class

Why Learn with Video?

- **Tailored for personal preferences —> better learning efficiency!**
  - Choose the best time & place to learn
  - Learn at your preferred pace
    - Faster playback rate when you can
    - Skip the easy part or what you already know
    - Repeat the difficult part or pause to think & take note
  - Ask questions with video! (on NTU COOL)



Why Learn with In-Class Activities?



Syllabus, W9-16

Week	Date	Video Topic	Activity / Class
9	4/16	String matching	
10	4/23	Graph	**Software development team game**
11	4/30	Disjoint set	
12	5/7	Red-black tree	
13	5/14	B-tree	**Earth game**
14	5/21	Hash table	Hsin-Mu is out of town; online class
15	5/28	Linear-time sorting	**Kahoot!**
16	6/4	Final exam	

Activity Grade (10%)

- 3% Software development team game
- 4% Earth game
- 3% Kahoot! (Review before final exam)
- 3% 7 With-Video Quizzes

- Total is capped at 10%

Tips

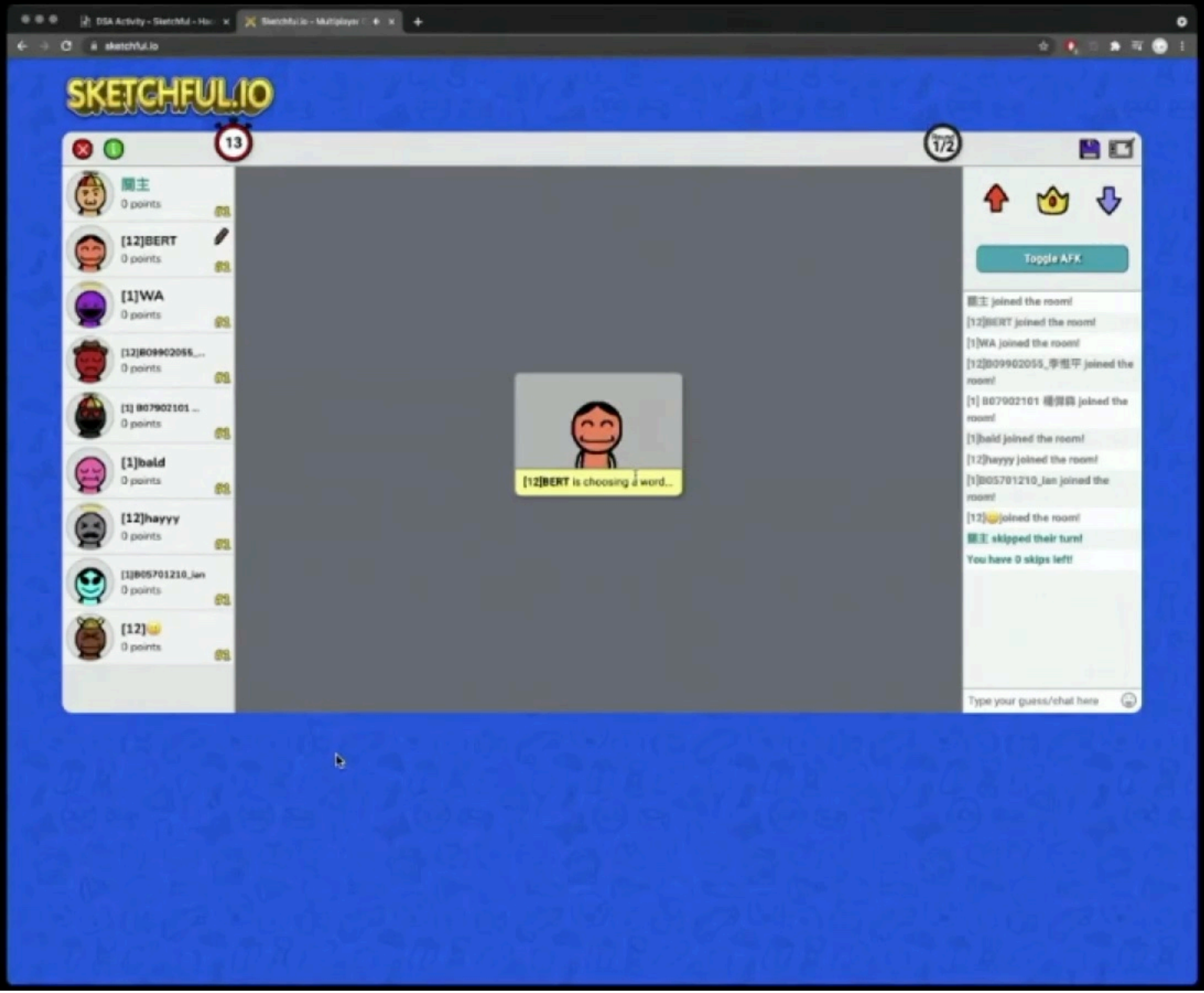
- Visualize to understand.
- Code and add debug messages to trace the code
- Put less emphasis on grades. Re-think your purpose.
- Review and practice things you just learned.
- Alternate between different modes.
  (programming & proofs/calculations)

教授

大藝術家

Final Earth Game

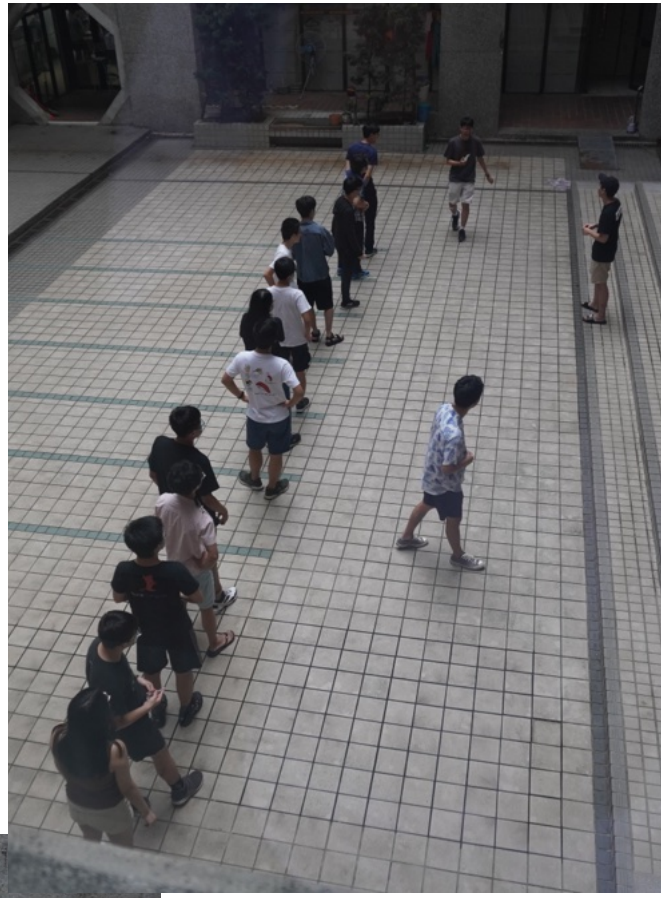
https://sli.do
Event Code #F061



大藝術家

- 捏黏土猜主題
- 主題都是課堂上講過的資料結構或觀念
- 超級比一比

快問快答



- 會出很多道是非題，認為是對的就跳左邊，不對的就跳右邊，錯了就淘汰

1. queue是先出後進的資料結構 (X)
2. 在asymptotic notation中, omega同時代表上界和下界 (X)
3. 在asymptotic notation中, little omega是比omega更下界的下界 (O)
4. complete binary tree的節點數會是2的次方減一 (X)

資料結構與演算法
DSA 2021 Spring
蔡欣穆 教授

Final Earth Game

直播時段請用slido問問題
https://sli.do
Event Code #F061

2021-06-08 15:04:49

Bug City

```
Team 2: Team 13 = 3 : 5

===

#define MAX_NODES 100000

struct TreeNode {
    int data;
    struct TreeNode* left, *right;
};

int inorderTraversal(int ret[], struct TreeNode* root) {
    struct TreeNode* stack[MAX_NODES];
    int s_idx = 0;
    int ret_idx = 1;

    stack[s_idx++] = root;    // push root into stack
    while(s_idx == 0) {
        struct TreeNode* cur = stack[s_idx--];    // pop a TreeNode* out of stack

        if (cur->right || cur->left) {
            if (cur->left)     stack[s_idx++] = cur->left;
            stack[s_idx++] = cur;
            if (cur->right)    stack[s_idx++] = cur->right;
            cur->right = NULL, cur->left = NULL;
        }
        else
            ret[ret_idx++] = cur->data;
    }
    return ret_idx;
}
```

U:--- game All L8