



Midterm 2

Exercise



PA

Matching Point

Subsequence

$S = \text{abcabc}$ $T = \text{abc}$

abcabc

ab**c**abc

abc**a**bc

abc**b**c

[Thought]

If the length of t is N , then we may need N times for-loop instinctively.

abcabc abc

[Problem]

The length of t isn't fixed!!

=> Use recursion to solve

In main function, we call Match(0, 0)

```
void match(int now, int pos){  
    // Once the 'pos' count to len_sub  
    if (pos==len_sub) {  
        // A substring is found  
        count++;  
    }  
    else{  
        for (int i=now; i<len_string; i++) {  
            // for the whole string  
            // if find element of 'sub' in 'string'  
            if (string[i]==sub[pos]) {  
                // keep matching  
                match(i+1, pos+1);  
            } // Skip if not matching, iteration next.  
        }  
    }  
}
```



PB

Transpose

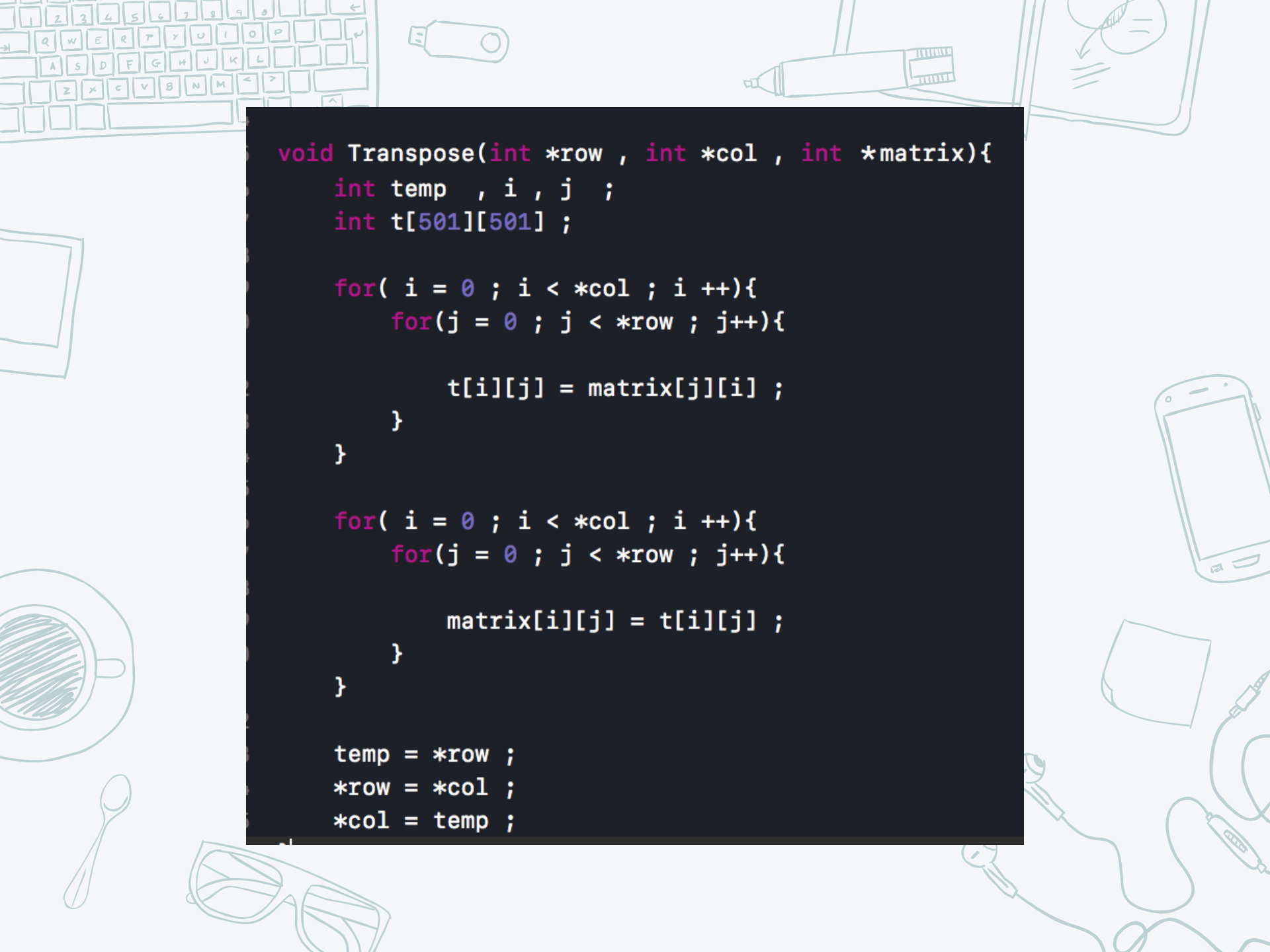
[Question]

Give a matrix and you need to transpose them.

[Concept]

If the matrix being transpose , just change the index of array and change the value in the array.

$$A = \begin{bmatrix} 3 & 1 & 2 \\ 8 & 5 & 4 \end{bmatrix} \quad A^T = \begin{bmatrix} 3 & 8 \\ 1 & 5 \\ 2 & 4 \end{bmatrix}$$



```
void Transpose(int *row , int *col , int *matrix){  
    int temp , i , j ;  
    int t[501][501] ;  
  
    for( i = 0 ; i < *col ; i ++){  
        for(j = 0 ; j < *row ; j++){  
  
            t[i][j] = matrix[j][i] ;  
        }  
    }  
  
    for( i = 0 ; i < *col ; i ++){  
        for(j = 0 ; j < *row ; j++){  
  
            matrix[i][j] = t[i][j] ;  
        }  
    }  
  
    temp = *row ;  
    *row = *col ;  
    *col = temp ;  
}
```

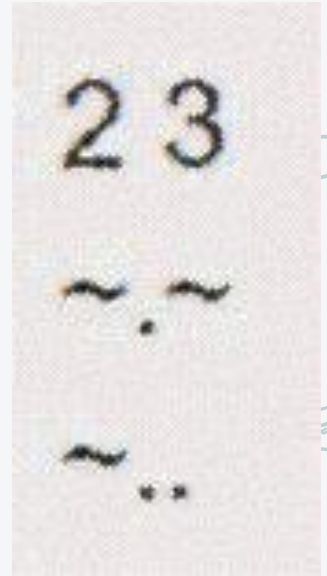


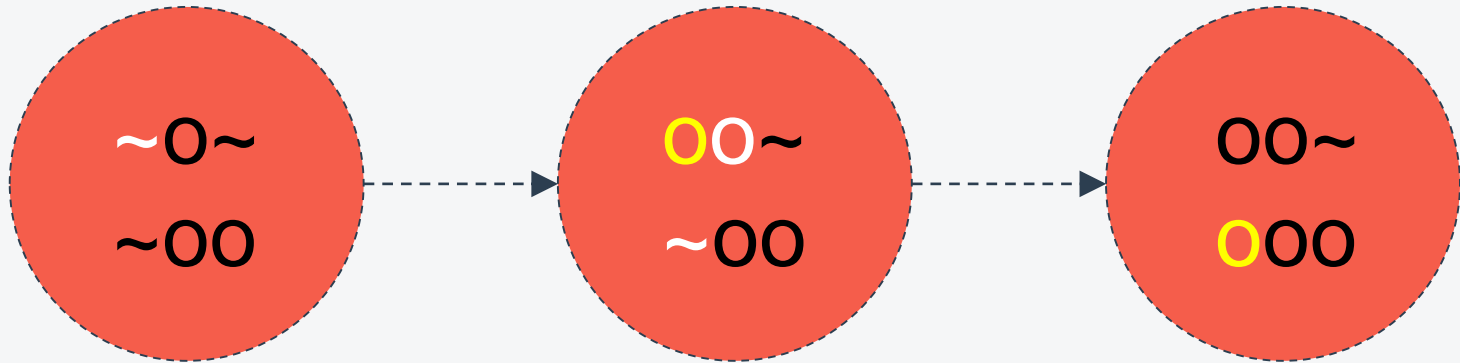

PC

Ponds

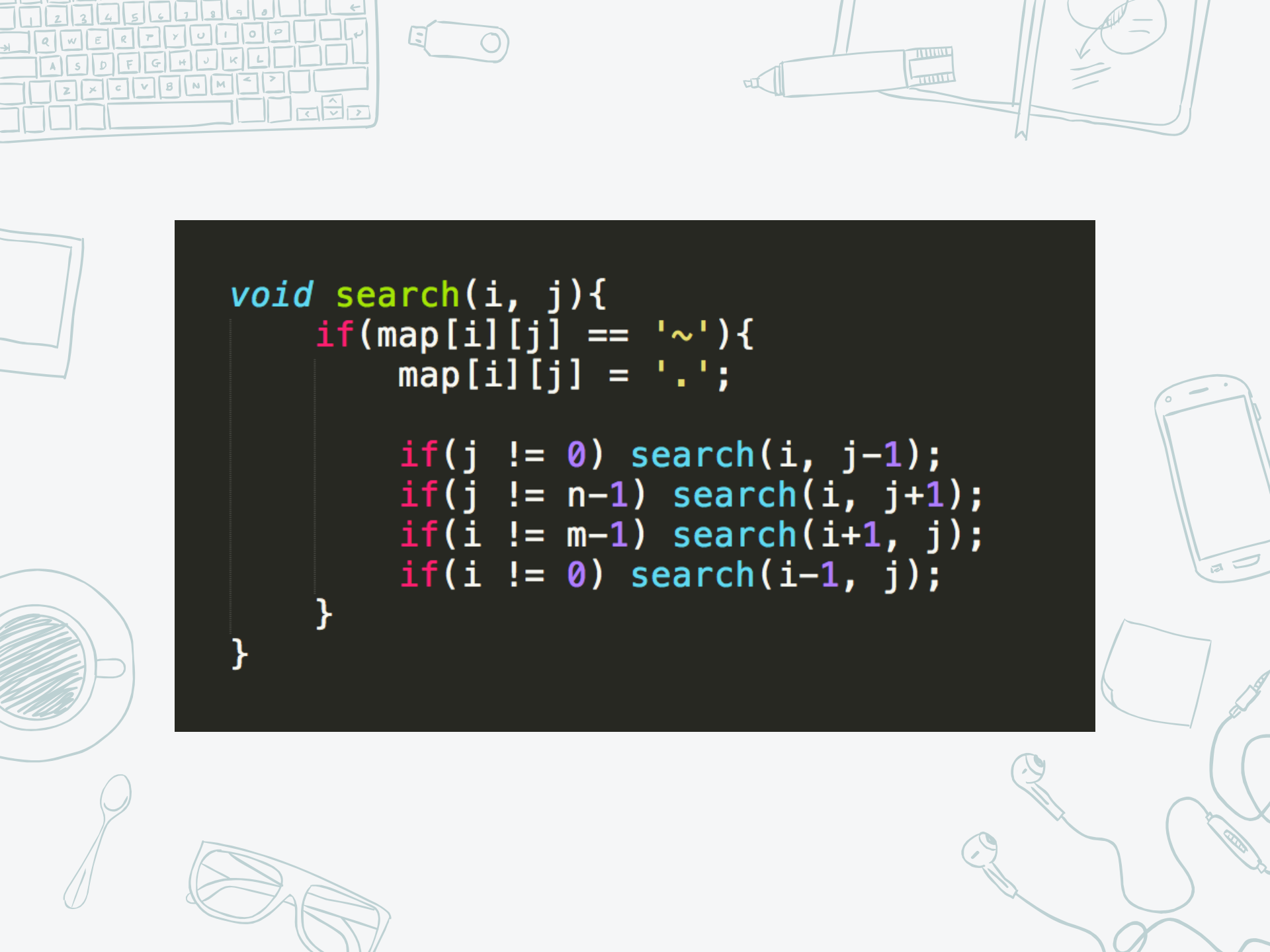
[Thought]

- Find every " ~ " (water) and ones nearby
 - Traverse every water on the map once
- => Mark the water(~) as "." afterwards





1. Find the water in the map by iteration
2. Flip the water into land, search the water nearby and do 2nd step recursively



```
void search(i, j){  
    if(map[i][j] == '~'){  
        map[i][j] = '.';  
  
        if(j != 0) search(i, j-1);  
        if(j != n-1) search(i, j+1);  
        if(i != m-1) search(i+1, j);  
        if(i != 0) search(i-1, j);  
    }  
}
```



PD

Fire!

3 4

~~..

^^^.

e...

'e' stands for the current position of eccioa.

'.' stands for the regular road he can pass through.

'^' stands for lava he cannot pass through.

'~' stands for water. (There may be multiple of them)


Output

If eccioa can stay alive, please print **"Alive!"**, otherwise please print **"Dead!"**.

[Thought]

- Find "e" first
- Find a path from "e" to "~", recursively visiting "." around
- How to determine if there isn't?

=> Mark the road "visited" once you've gone there



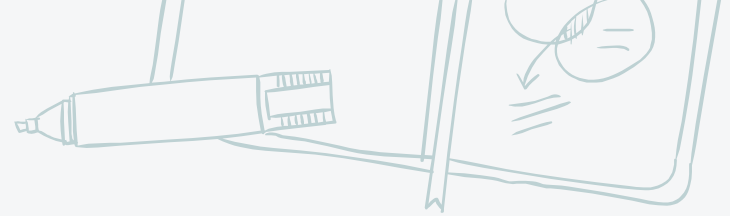
```
char map[1001][1001];
int map_visited[1001][1001] = {0};

int find_water(int x, int y)
{
    // check the (x, y) within the boundary and unvisited
    if(x < m && y < n && x >= 0 && y >= 0 && map_visited == 0){
        if(map[x][y] == '~')    return 1;
        else if(map[x][y] == '^')    return 0;
        else{
            map_visited = 1;
            return find_water(x+1, y) || find_water(x-1, y) || find_water(x, y+1) || find_water(x, y-1);
        }
    }
    else    return 0;
}
```

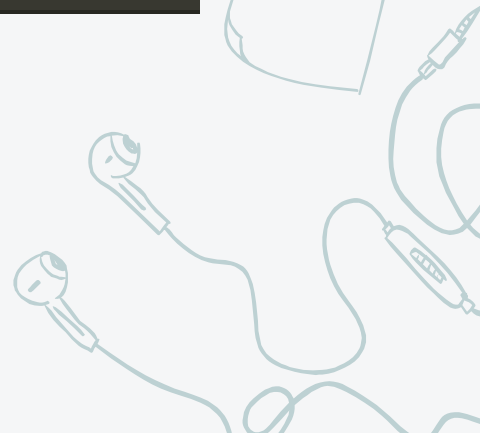
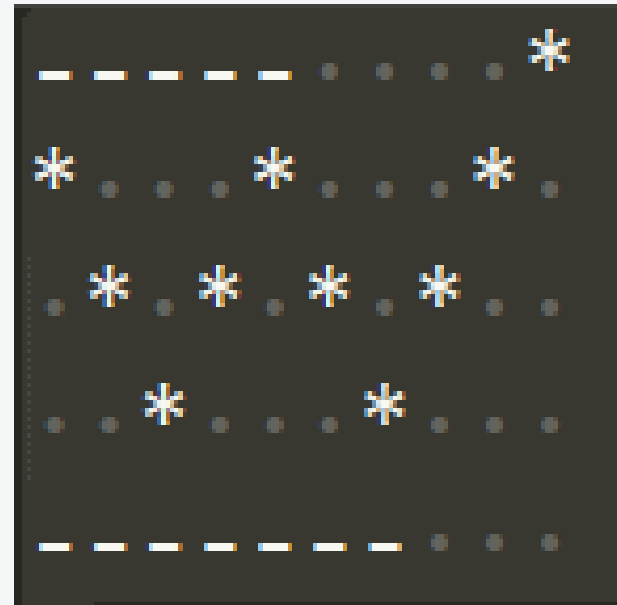



PE

Shooting Star

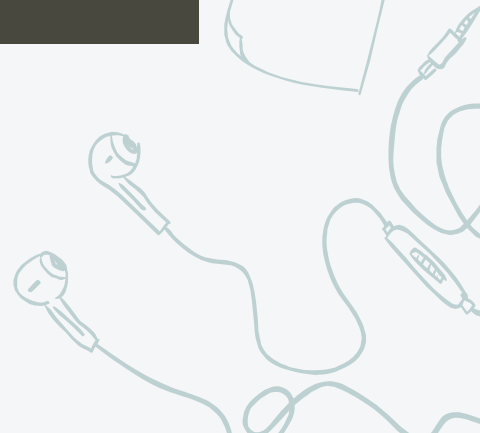


5 7 3
—
1
|d





$$\begin{array}{r} 874 \\ \hline 4 \\ \hline u \end{array}$$



Thought

**Loop
(For/While)**

Recursion

Recursive Way

```
void up(int i, int j)
{
    if(i>1){
        // Changing i, j to correct position
        i--;
        j++;
        board[i][j]='*';
        up(i,j);
    }
    else if(j>=ceiling)
        board[i-1][j+1]='*';
    else
        down(i,j);
}
```

You can implement down() by yourself



Boundary?

<Case 1> Ceiling

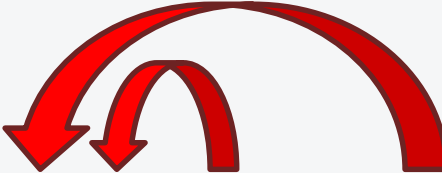
<Case 2> Floor

<Case 3> End of Shooting star



PF

Prefix Notation


$$((5+2)*3)$$

*+523 **END**

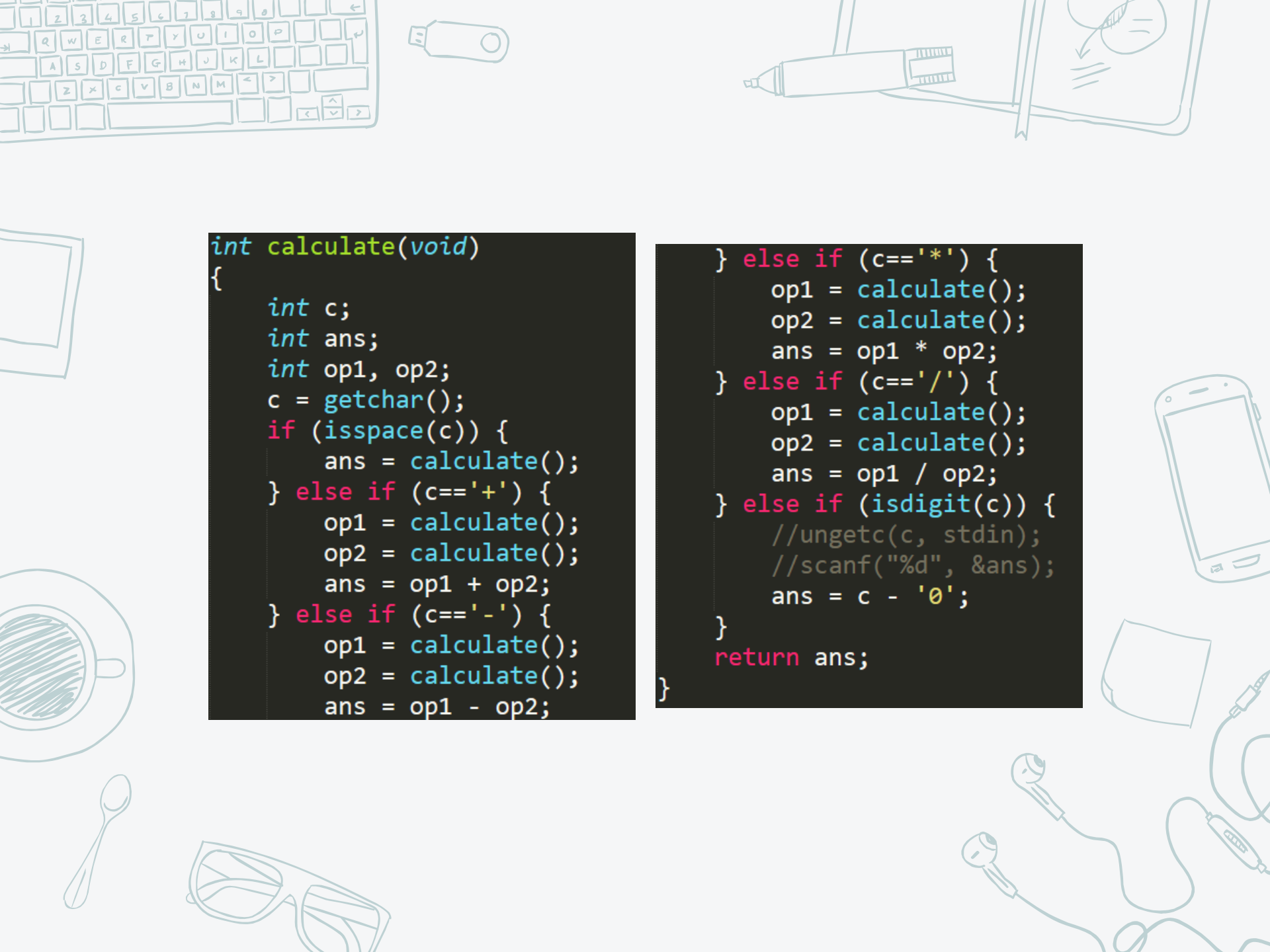


Operator

POP
POP



Operand



```
int calculate(void)
{
    int c;
    int ans;
    int op1, op2;
    c = getchar();
    if (isspace(c)) {
        ans = calculate();
    } else if (c=='+') {
        op1 = calculate();
        op2 = calculate();
        ans = op1 + op2;
    } else if (c=='-') {
        op1 = calculate();
        op2 = calculate();
        ans = op1 - op2;
    }
}
```

```
    } else if (c=='*') {
        op1 = calculate();
        op2 = calculate();
        ans = op1 * op2;
    } else if (c=='/') {
        op1 = calculate();
        op2 = calculate();
        ans = op1 / op2;
    } else if (isdigit(c)) {
        //ungetc(c, stdin);
        //scanf("%d", &ans);
        ans = c - '0';
    }
    return ans;
}
```

↓ ↓ ↓ ↓ ↓ ↓
*+523=

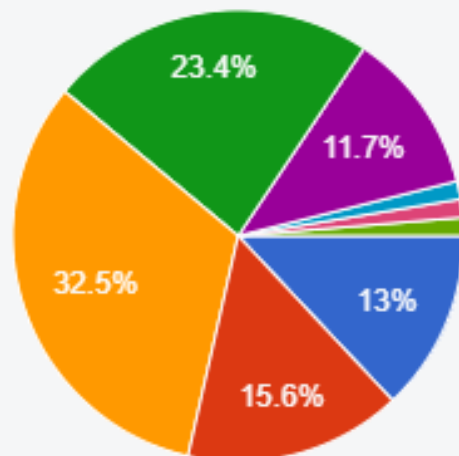
Cal () → ~~op~~²¹1 = Cal () → op1 = Cal () → 5
op2 = Cal () → op2 = Cal () → 2
ans = op1*op2 → ~~ans~~²¹1 = op1+op2 → 7
return ans return ans

Reply for Google Forms

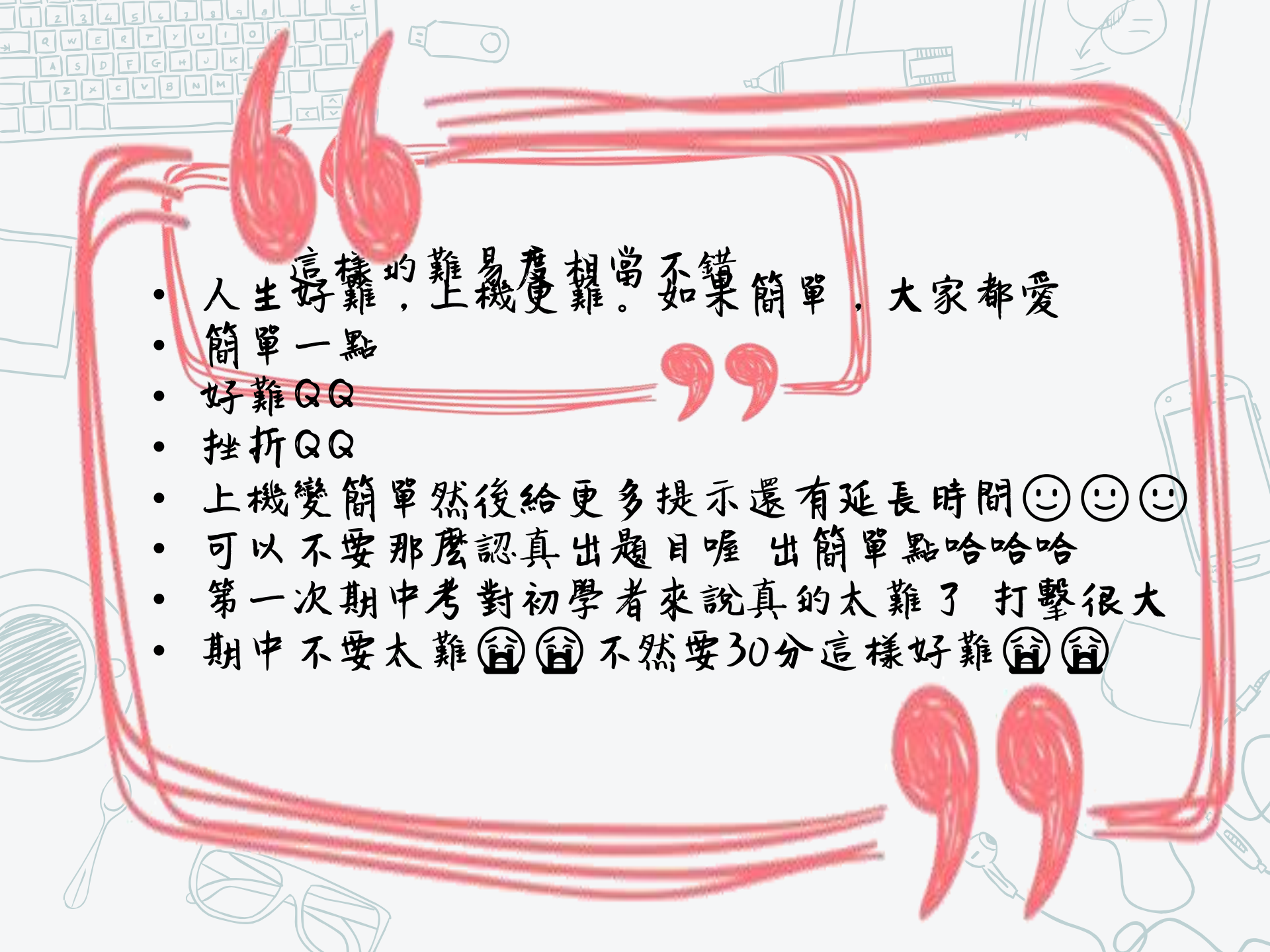


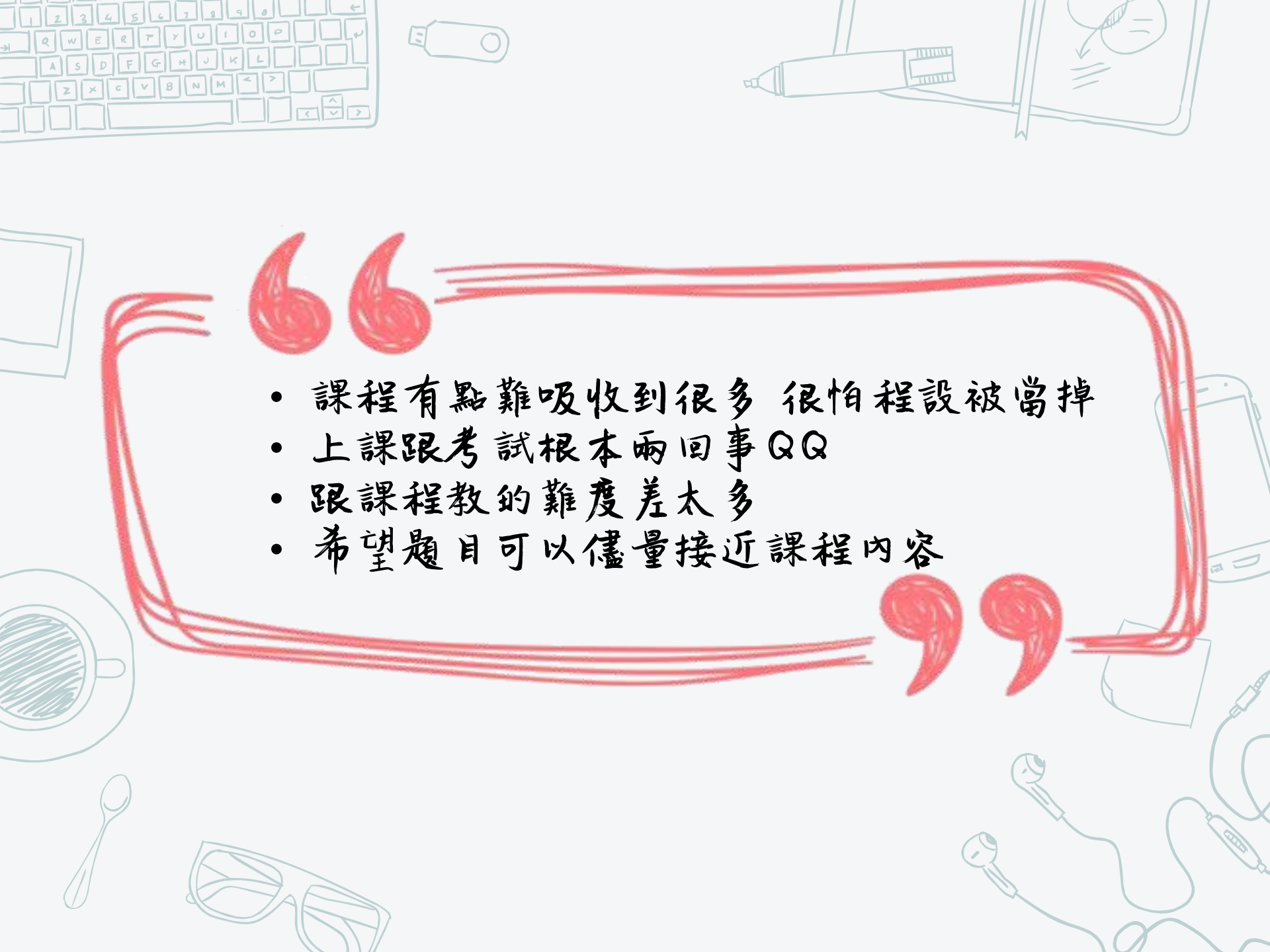
覺得現在Lab的難易程度

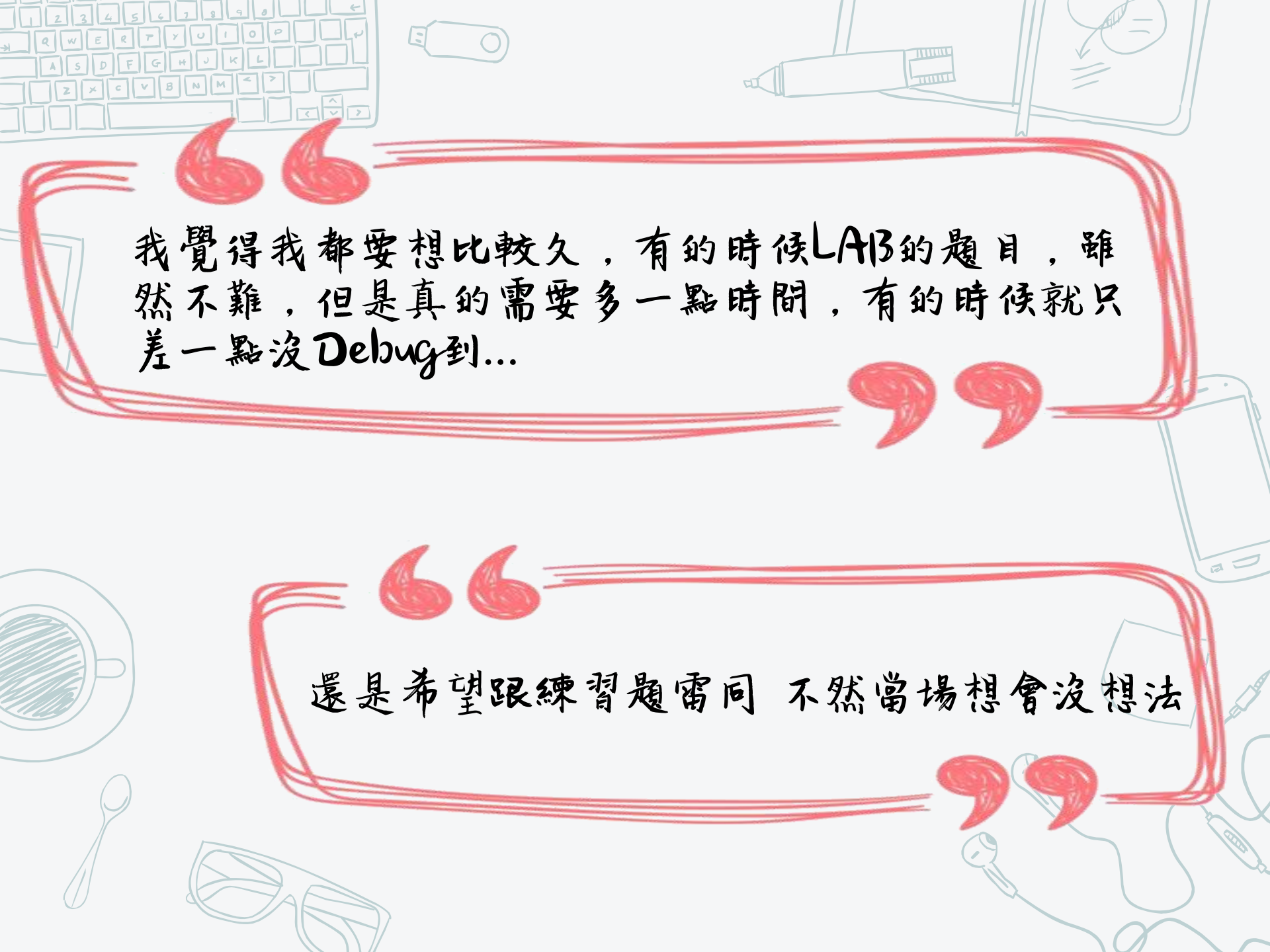
77 則回應



- 一塊小蛋糕 (常常AC或差一兩筆就選這個吧不用謙虛)
- 給我多點時間我一定打得出來
- 題目還行但當場我發揮的不好
- 有一兩題我一點想法都沒有
- 超難.....我只能看著螢幕發呆.....
- 有些題目有些想法，但不知道該怎麼打會比較好，有些沒想法的題目想...
- 遞迴太難根本不知道怎麼寫Q
- 我喜歡蛋糕啦但程設好難

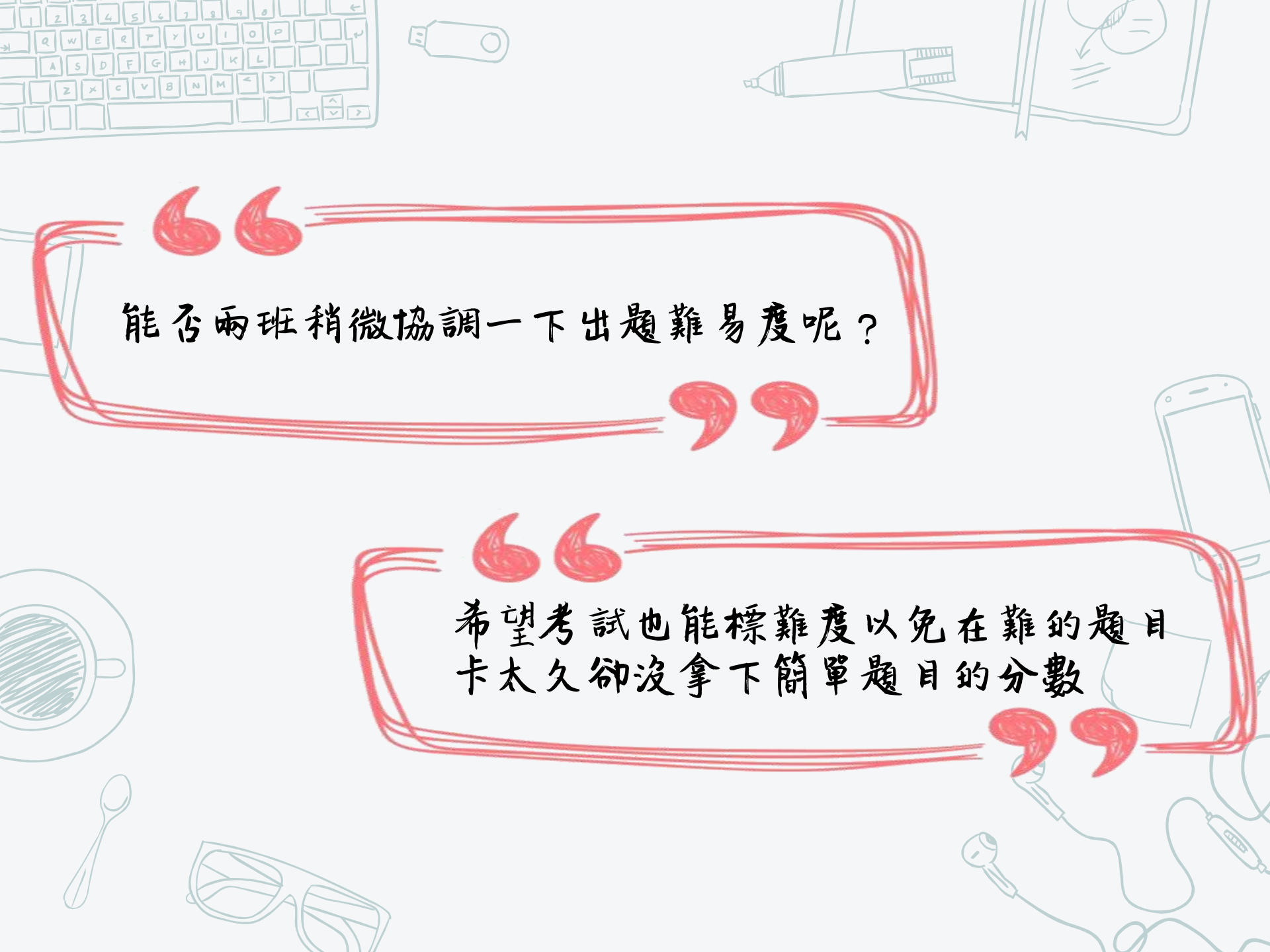
- 
- 人生好難，上機更難。如巢簡單，大家都愛
- 簡單一點
- 好難QQ
- 挫折QQ
- 上機變簡單然後給更多提示還有延長時間😊😊😊
- 可以不要那麼認真出題目喔 出簡單點哈哈
- 第一次期中考對初學者來說真的太難了 打擊很大
- 期中不要太難😞😞 不然要30分這樣好難😞😞

- 
- “
- 課程有點難吸收到很多 很怕程設被當掉
 - 上課跟考試根本兩回事 QQ
 - 跟課程教的難度差太多
 - 希望題目可以儘量接近課程內容
- ”



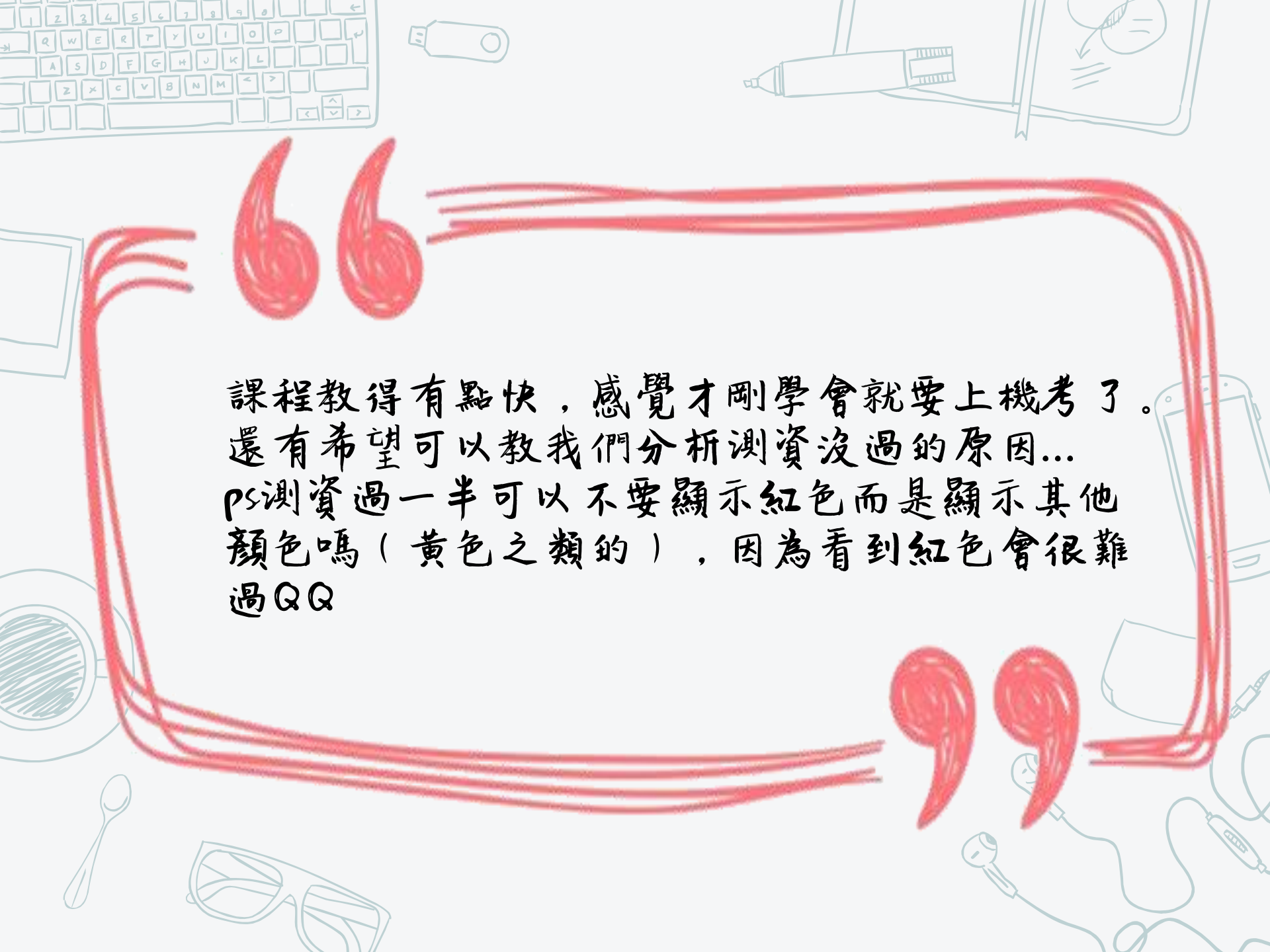
我覺得我都要想比較久，有的時候LAB的題目，雖然不難，但是真的需要多一點時間，有的時候就只差一點沒Debug到...

還是希望跟練習題雷同 不然當場想會沒想法



能否兩班稍微協調一下出題難易度呢？

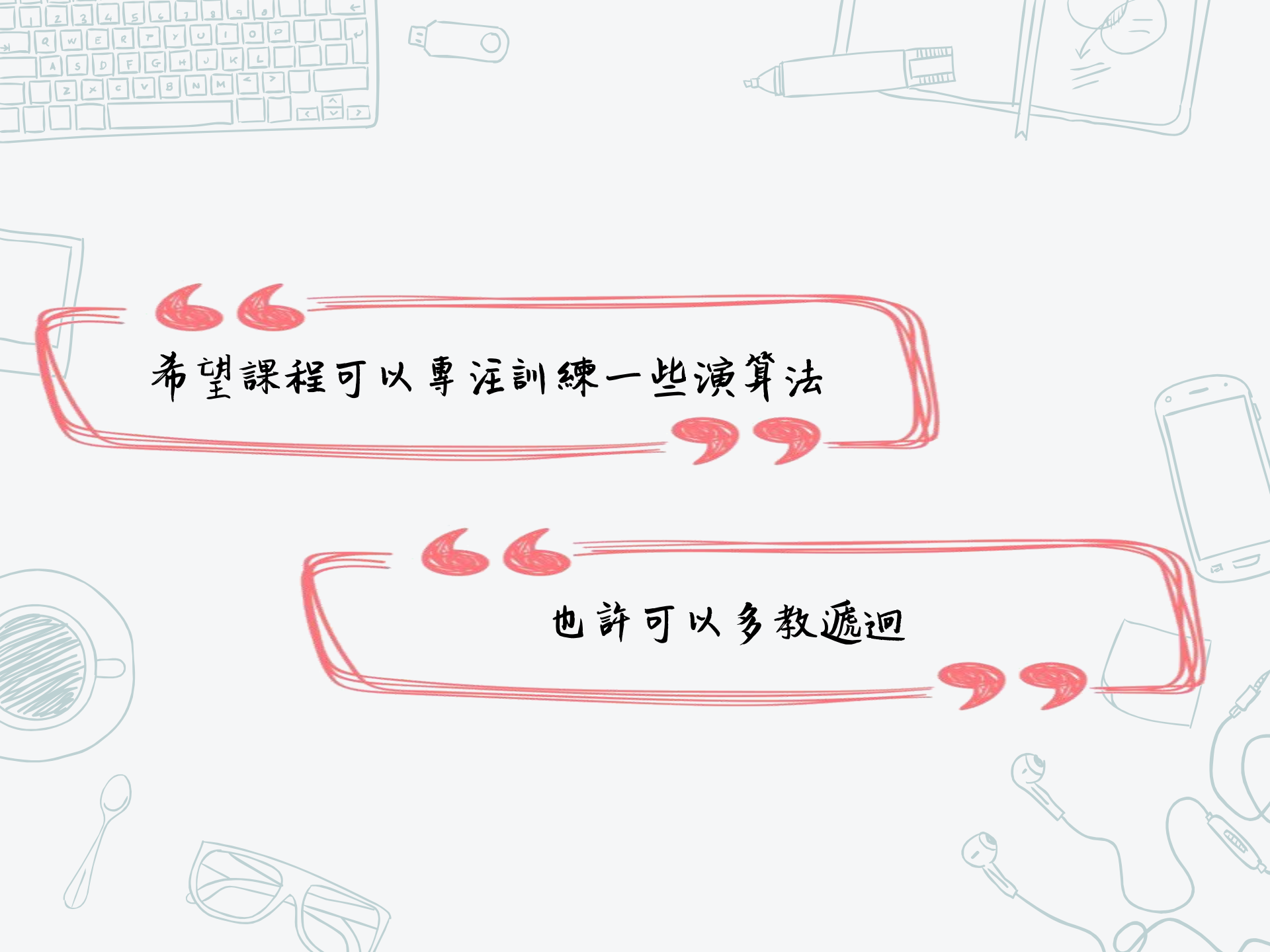
希望考試也能標難度以免在難的題目
卡太久卻沒拿下簡單題目的分數



課程教得有點快，感覺才剛學會就要上機考了。
還有希望可以教我們分析測資沒過的原因...
ps測資過一半可以不要顯示紅色而是顯示其他
顏色嗎（黃色之類的），因為看到紅色會很難
過QQ

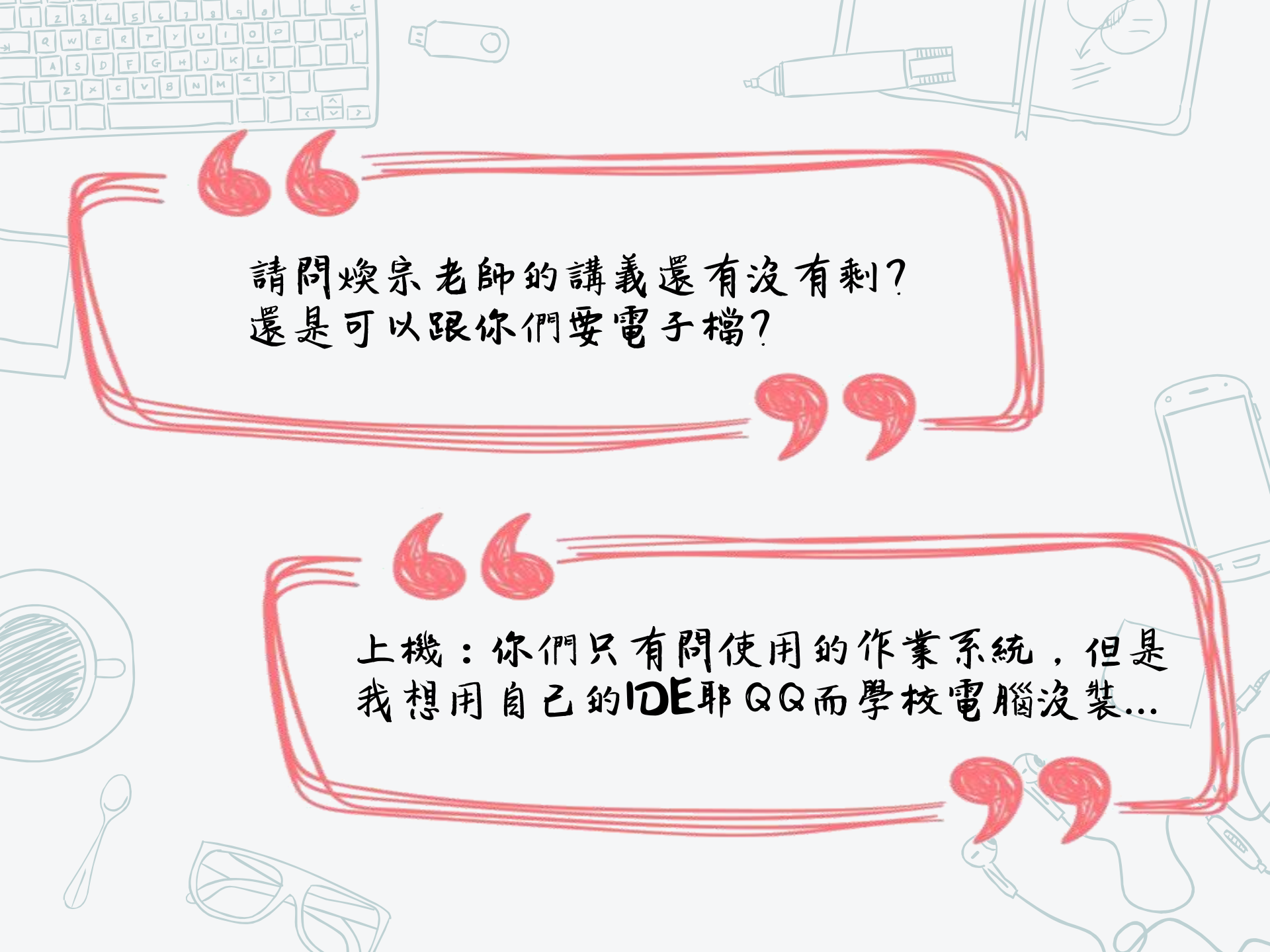
是否能給較弱勢的同學其他補救方法，至少不會讓分數看起來像是這段學習空窗了！（並非想利用調分等等讓大家分數變高以製造學好的假象，而是透過其他實際靠實力換分得到）因為很多人不是很混也不是都沒在學，但很多思維與技巧並非一時就能與努力多年的高手分庭抗禮的！

希望多給點提示



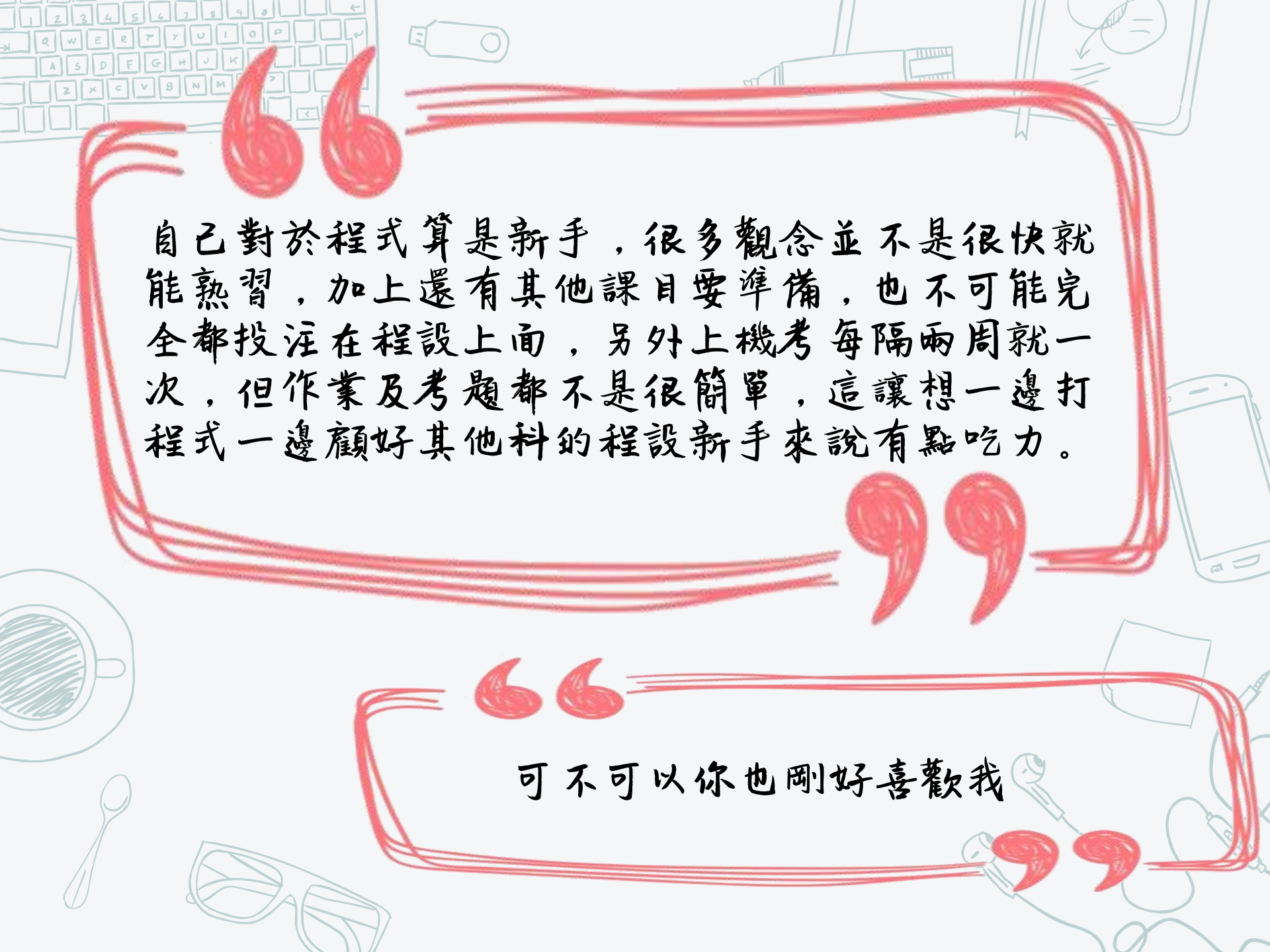
希望課程可以專注訓練一些演算法

也許可以多教遞迴



請問煥宗老師的講義還有沒有剩？
還是可以跟你們要電子檔？

上機：你們只有問使用的作業系統，但是
我想用自己的IDE耶QQ而學校電腦沒裝...

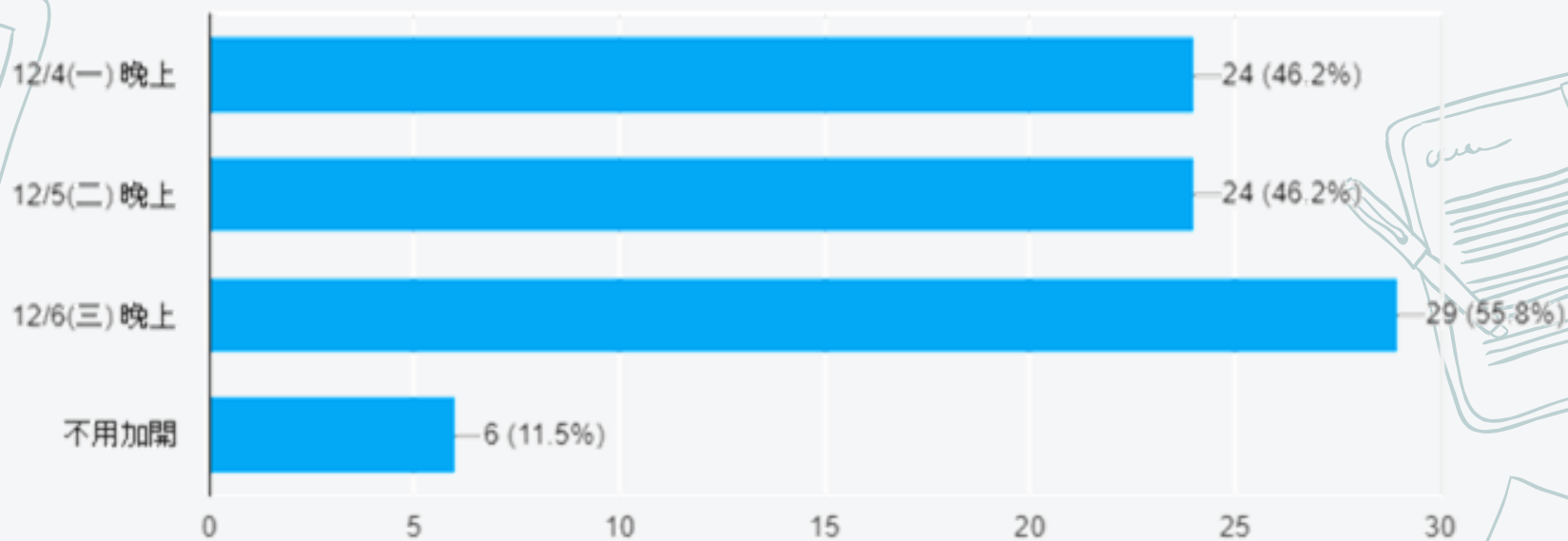


自己對於程式算是新手，很多觀念並不是很快就能熟習，加上還有其他課目要準備，也不可能完全都投注在程設上面，另外上機考每隔兩周就一次，但作業及考題都不是很簡單，這讓想一邊打程式一邊顧好其他科的程設新手來說有點吃力。

可不可以你也剛好喜歡我

加開的日期 (時間另定)?

52 則回應





TA TIME

12/4 1530-1800

12/6 1900-0000



Thanks!

Any questions?

