

My Notes

Important Concepts worth keeping

Today: / /

單元一

* 遞迴 → 問題越來越小 (解決)

(recursion)

大 → 小 (仍是同一個問題)
- 組程式

精簡、一目了然但不一定快

binary search

如何讓問題變小 -

- divide and conquer
(分而治之)

ex. 字串 → 長度減一 → 直到空字串, 停下

ex. 碎形 (Fractal)

* 迴圈 (iteration)

My Questions

Problems & Difficulties needing exploration

單元二

抽象化 (完成程式)

物件導向

所有東西都是物件 (class)

像的規類一起 (描述更清楚)

data members (屬性, obj.n.)

methods, member functions (運算, v.)

常見種類

Encapsulation

封裝

hides inner details : (直接併到舊的裡不管方法)

Inheritance

繼承

lease d

(重寫一套 copy)

My Opinions

Thoughts, inspirations, and suggestions

Polymorphism

多型

(名稱一樣, 導向到對應的方法)

建築合約,

例外狀況

purpose

目的,

Assumptions

假設

input

輸入

output

輸出



My Notes

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Today :

原理

modularity

模範化

高內聚, 低耦合

(cohesion, coupling)

(- 模組做一事, 彼此關係參數少)

描述, 變作

資訊隱藏

Data abstraction (資料抽象化)

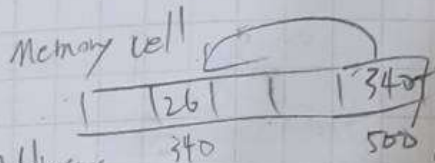
My Questions

Problems & Difficulties needing exploration

單元3 鏈結串列 (Linked list)

可彈性擴充

頭 (指標) (pointers) (門牌)
門牌號碼 (還沒有房子)
(int)*P
變數型態
開始 undefined, not null (請您配置)



Address P = &X (X = 房子 X 的門牌)

請注意 P = new int

*P (房子內部)

(申請一塊新房子)

陣列
需移動資料
鏈結串列
不需移動資料

500 -> &X

緊急配置

My Opinions

Thoughts, inspirations, and suggestions

delete P;

P = Null;

遺失門牌

int *P *Q

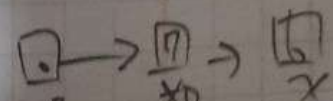
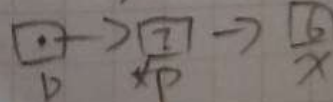
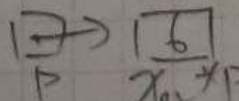
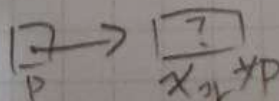
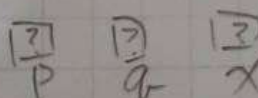
int X

P = &X

*P = 6

P = new int

*P = 7



Q = P

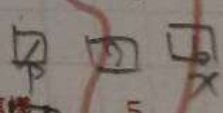
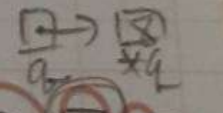
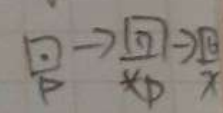
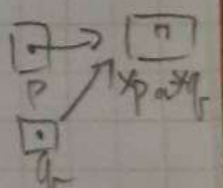
Q = new int

*Q = 8

memory leak
P = Null

delete Q;

Q = Null



魔鬼躲在細縫裡，天使更是這樣

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Today:

int arraySize = 50;

double * anArray = new double [arraySize];

陣列名稱 = 指標

double [3 * arraySize]

配置更大

double * oldArray

anArray = new double [3 *

for (

- 陣陣搬

delete [] oldArray;

歸還舊

head

□ →

→

→

Null

□

head = Null → link is empty

head = now Node

struct Node

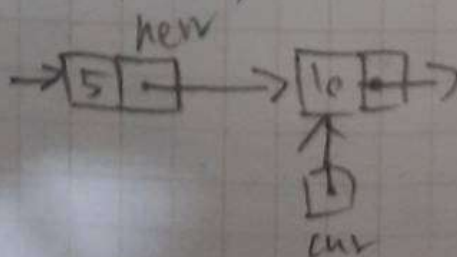
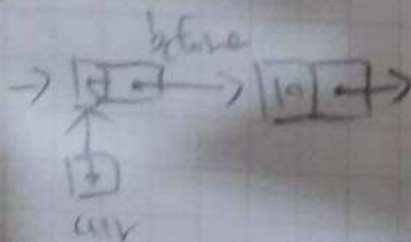
{ int item

Node *next;

};

刪除
新增

for (Node *cur = head; cur != Null; cur = cur->next)
cout << cur->item << endl;

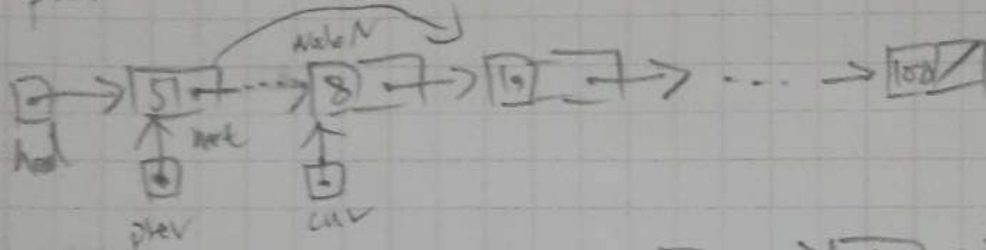


My Questions

Problem & Difficulties needing exploration

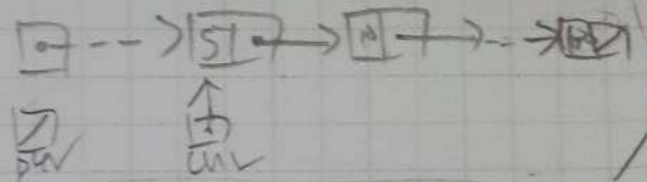
刪除

$prev \rightarrow next = cur \rightarrow next;$



first node
head = cur → next

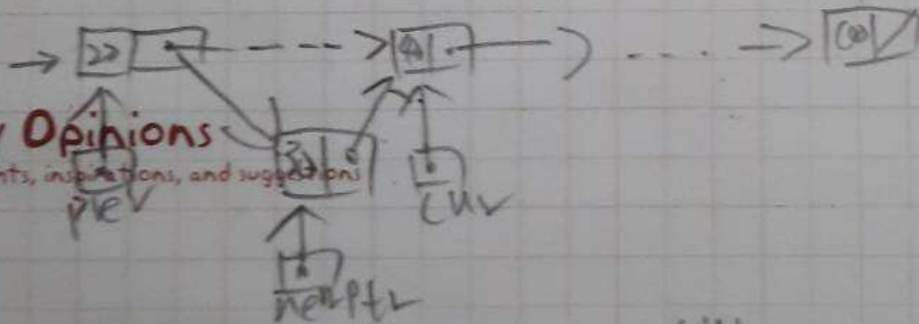
delete cur
cur = NULL



$cur \rightarrow next = NULL;$
cur = NULL
delete cur;

新增

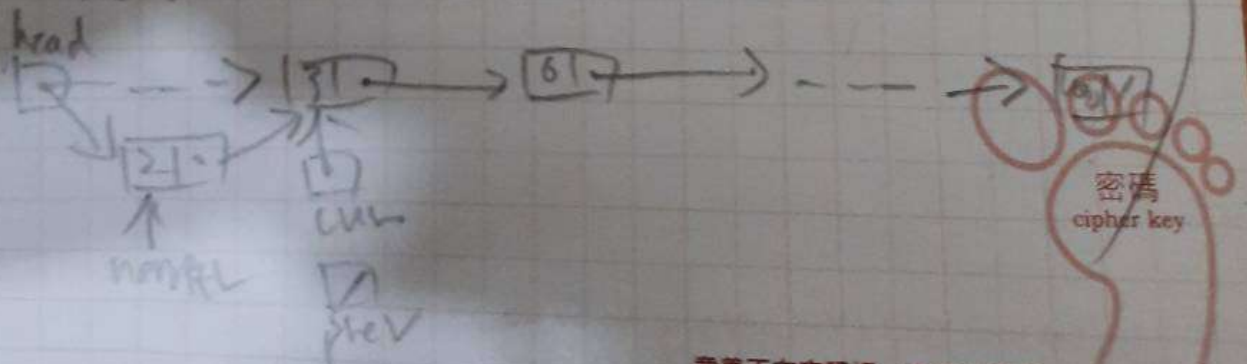
$newPtr \rightarrow next = cur;$ (可對調)
 $prev \rightarrow next = newPtr;$



My Opinions

Thoughts, inspirations, and suggestions

beginning
 $newPtr \rightarrow next = head;$ (不可對調)
head = newPtr;



密碼
cipher key

My Questions

Problems & Difficulties needing exploration

單元4 以邏輯解題

定義語言: grammars (文法)

syntax (語法)

邏輯定義語言: (圖文)

運算式

中序: Infix expressions

ex. $a+b$, $((a+b)^*c)/d$

An operator appears between its operands
運算子 運算元

前序: Prefix

ex. $+ab$

$+*+abcd$

before

My Opinions

Thoughts, inspirations, and suggestions

後序: Postfix

ex. $ab+$

$ab+c*d/$

after

中 \rightarrow 前 左括號

$((a+b)^*c) / + abc$

後 右括號

$(a+b)^*c) / ab+c^*$

前、後序 無優先權, 結合律, 括弧

* 前序式 後接上非空字串 一定不是前序式

密碼
cipher key

你們的話, 是, 就說是; 不是, 就說不是。

《馬太福音》

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Today

Backtracking 回溯

往下走，遇到沒路的路回一格再繼續找
可以繼續往下的才能找到答案

八皇后，航機路徑
(有方向性)

遞迴，數學歸納法

歸納 最簡 → 假設 → 歸納