文字處理 String Manipulation: char s[100];

<str-ex01a> s[i] Q: enter text: Chan Tai Man Q: n=? 0 A: s[0]='C', "C"	Q: n=? 3 A: s[3]='n', "Chan" Q: n=? 7 A: s[7]='i', "Chan Tai" …
<str-ex01b> '\0' Q: enter text: Chan Tai Man Q: n=? 7 A: Chan Tai Q: n=? 3 A: Chan …	<str-ex01c> '\0' ½,¼,⅛… Q: enter text: Chan-Tai-Man A: 12 Chan-Tai-Man 6 Chan-T 3 Cha 1 C
<str-ex02a> s[i] Q: enter text: ChanTai C h a n …	<str-ex02b> s+i, strncpy Q: enter text: Chan-Tai-Man Chan-Tai-Man han-Tai-Man C an-Tai-Man Ch n-Tai-Man Cha : : n Chan-Tai-Ma
<str-ex03> a-z, aeiou, 0-9 Q: enter text: Chan Tai Man A: 10 letters, 4 vowels 2 spaces, 0 digits 大楷(3),小楷字母(7),數字(0),其他(2)	<str-ex04> a-z (只輸出字母) Q: enter text: Chan [Tai]+Man ChanTaiMan (10) Q: enter text: $C%h_an7? Chan (4)
<str-ex05> strcmp char t[20], s[20]="Chan TM"; Q: Enter text(t) : chan A: strcmp(s,t)=–1 strcmp(t,s)=+1 Q: Enter text(t) : CHAN A: strcmp(s,t)=+1 strcmp(t,s)= –1	<str-ex06a> surname (4 char) Q: Enter text : Chan Tai Man A: Chan Q: Enter text : Cheng Hong Tai A: Chen Q: Enter text : Lo Tai Man A: Lo T …
<str-ex06b> surname Q: Enter text : Cheung Three A: Cheung Q: Enter text : Chan Tai Man A: Chan	Q: Enter text : Lee Four A: Lee Q: Enter text : Lo Wai Man A: Lo …

<str-ex07a> file + surname
1A01 Chan
1A02 Cheng
…

school2011e.txt
1A01 Chan Tai Man M M …
1A02 Cheng Wai Yip M L …
…

<str-ex07b> surnames in file
Chan = 69
Li/Lee = 58
Wong = 37
Cheung = 25

<str-ex10> palindrome 廻文
Q: Enter text : abcd
A: No
Q: Enter text : abcba
A: Yes
Q: Enter text : aB cb A

<str-ex08> reverse
Q: Enter text : abcd
A: dcba
Q: Enter text : Chan Tai Man
A: naM iaT nahC

<str-ex09> word count
Q: Enter text : Chan Tai Man
A: 3 words
Q: Enter text : Chan Tai-Man, John
A: 4 words
…

<str-ex11> anagram + freq[]
Q: Enter text(s) : time
Enter text(t) : item
A: Yes
Q: Enter text(s) : timer
Enter text(t) : item
A: No

www.ssynth.co.uk/~gay/anagram.html

Q: Enter text(s) : act
Enter text(t) : cat
A: Yes
Q: Enter text(s) : Mother-in-law
Enter text(t) : Woman Hitler
A: Yes
Q: Enter text(s) : Funeral
Enter text(t) : Real Fun
A: Yes

<str-ex12a> idno (check format)
Q: HK id card#: A1234
A: Invalid
Q: HK id card#: A123456(7)
A: Valid
Q: HK id card#: 0123456(7)
A: Invalid

<str-ex12b> idno (check digit)
Q: HK id card#: A123456
A: A123456(3)

<str-ex13> swapping characters
Q: enter text: Chan Tai Man
0123456789 01
Q: swap s[x] & s[y]
x=? 2
y=? 5
A: ChTn aai Man

Q: swap s[x] & s[y]
x=? 7
y=? 0
A: ihTn aaC Man
…

<str-ex14> position of substring
Q: source string: banana
target string: na
A: 2, 4
Q: source string: banana
target string: nba
A: not found

<str-ex15> MC checking
Model Ans: ABCDABCD
Student Ans: AABBCCDD
Score: 2
Student Ans: ABCDDCBA
Score: 4
…

<str-ex16> Initials
Q: 姓名 name? chan tai man
A: Chan Tai Man
A: 簡寫 Chan TM
A: 簡寫 TM Chan
A: tai man, chan

Q: 姓名 name: Chan Ho
A: Chan H

<str-ex17> 中英對照
Q: name? chan tai man
A: 陳
Q: name? lee km
A: 李
Q: name? cheung yc
A: 張
Q: name? wong ww
A: 黃

<str-ex18> Random Names generator
Surname: 陳,李,張,鄭,王,何,...
Given name: 大文,小明,偉業,成功...
陳大文, 李小明, 鄭成功, …

<str-ex19> Eliminate blank spaces
Q: 姓名: Chan Tai Man
A: Chan Tai Man

<str-ex20> re-arrange the alphabets
char s[]="house";
Q: Word Sequence: 11354
A: Error!
Q: Word Sequence: a1354
A: Error!
Q: Word Sequence: 1354
A: Error!
Q: Word Sequence: 21354
A: ohues

<str-ex21> Hangman
char words[10]="secret";
char guess[10]= "------";
Hint: 秘密
Q: guess (1)? a
A: ------
Q: guess (2)? e
A: -e--e-
...

<str-ex22> int to string/char
Q: Level (1-7): 4
Class (A-D): a
No. (1-40): 9
A: Class no. = 4A09

<str-ex23> 文字輸入，文字輸出
Q: class number: 4109
A: 4A09
Q: class number: 4AB9
A: Error
Q: class number: 6540
A: 6E40

<str-ex23> char s[10]="abcd";

輸出 1:	輸出 2:	輸出 3:	輸出 4: kill-left	輸出 5: kill-right
a	a	a	abcd	abcd
b	b	ab	bcd	abc
c	c	abc	cd	ab
d	d	abcd	d	a

輸出 6: rotate-left	輸出 7: rotate-right
abcd	abcd
bcda	dabc
cdab	cdab
dabc	bcda

<str-ex24> Split line into words
Q: enter text: this is a test.
A: (1)this (2)is (3)a (4)test

<str-ex25> parity check (8-bit)
Q: Even or Odd: E
Q: enter bit pattern: 10101010
A: parity bit is 0

<str-ex26> parity check (8-bit)
Q: Even or Odd: E
Q: enter bit pattern + parity bit : 10101011
A: invalid

<str-ex27> HKID 檢查數位 (函數)
Q: ID card no.: A101010A
A: valid 合法

Q: ID card no.: A101010
A: invalid 不合法

Q: ID card no.: 0101010X
A: invalid 不合法

int checkFormat(char id[])
1. length=8
2. first char = alphabet (A-Z)
3. 6 digits (0-9)
4. last digit (0-9,A)

int validateCheckDigit(char id[])
1. call checkFormat(id)
2. sum = 58×9 + …
3. sum / 11

<str-ex28> check digit of ISBN
Q: enter ISBN: 962001006X
A: valid

<str-ex29> Visa – IBM check
Q: Visa: 1234678912346789
A: valid

<str-ex30> Roman →Dec →Roman
Roman: V+III
A: 5+3=8
V+III=VIII

Roman: XI+XV
A: 11+15=26
XI+XV=XXVI

<str-ex31> string to int
Q: page no.s : 1,3,7-10,15
A: 1 3 7 8 9 10 15

<str-ex32> char s[]=" A B C ";
gets(s);
Ltrim(s); puts(s); "A B C "
Rtrim(s); puts(s); " A B C"
Alltrim(s); puts(s); "A B C"

Master mind (Red,Yellow,Green,Magenta)

Rules of the game

1. The computer randomly generates a set of secret code which consists of 4 colored code pegs (RYGM):
2. The color code pegs may be duplicated. e.g. RGYY.
3. You, as the player, attempt to decode the secret code.
4. If your guess of a peg is of correct color and correct position, then a black indicator peg (represented by B) will be shown.
5. If your guess of a peg is of correct color, but wrong position, then a white indicator peg (represented by W) will be shown.
6. With the black and white indicator pegs, you can improve your next guesses. For example, the secret code is BGYY
   Your guess is MGYM yields BB
   Your guess is MGYB yields BBW
7. The number of trials that you can attempt depends on the level of difficulty that you have selected.
8. You win the game if you decode all 4 colored code pegs. i.e. when 4 black indicator pegs (BBBB) are shown.

Master Mind

假設謎底是"FACE"，執行結果如下：

以 ABCDEF 代表 6 種顏色

0 表示: 字母正確，位置 正確；(●)

X 表示: 字母正確，位置不正確。(○)

嘗試 1: AB 輸入錯誤 嘗試 1: ABXY 輸入錯誤 嘗試 1: ABCDEF 輸入錯誤	嘗試 1: ABCD 提示 ：OX 嘗試 2: ACEF 提示 ：XXXX 嘗試 3: acef 提示 ：XXXX	嘗試 4: aacc 提示 ：OO 嘗試 5: caFE 提示 ：OOXX 嘗試 6: face 提示 ：OOOO 全對!

```
            "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
enKey = "XCISGTUDMOAEZYVKRHQJWNBPLF"; // 編碼 encoding key
deKey = "KWBHLZERCTPYIVJXSQDFGOUANM"; // 解碼 decoding key
```

Encoding process: Letter A → X (i.e. enKey[1]) Letter B → C (i.e. enKey[2]) Letter C → I	Decoding process: Letter X → A (i.e. deKey[24]) Letter C → B (i.e. deKey[3]) Letter I → C ... ...

Advanced: enKey → deKey

15. Password checking: (三次機會 max 3 trials)

```
char userid[][]={"cs101","cs102","cs103","cs104","cs105"};
char password[][]={"pig","dog","tiger","cat","monkey"};
```

Q: enter user id: cs101 Q: enter password: cat A: Incorrect! 2 chance(s) left!	Q: enter user id: cs101 Q: enter password: lion A: Incorrect! 1 chance(s) left! A: Login (un)successful!

Table Of Content/30 char per line display: Enter first word: turtle Enter page number: 153 123456789-123456789-123456789- turtle.....153	7. 從簡單文字算式計算答案 char arith[20]="3+2-1"; gets(arith); Q: 3+2-1 A: 4 Q: 3×2+1 A: 7
2. Password checking userid[]: cs101, cs102, ... cs105 password[]: pig, dog, tiger, cat, goat Q: UID: cs101 PWD: dog A: incorrect!	6. 二進制轉十進制 Binary to decimal (d=d*2+i) Q: Binary: 1010 A: Decimal = 10
9. Q: enter number: 1234567 A: reverse: 7654321 Q: enter number: 1234 A: reverse: 4321 Q: enter number: 123 A: reverse: 321	10. Q: enter number: 1234567 A: 1,234,567 Q: enter number: 1234 A: 1,234 Q: enter number: 123 A: 123
11. Letter count: Q: Enter text: I like C programming! A: Statistics: A(1), C(1), ... I(3), M(2), ...	11. Counting vowels (aeiou) 12. int to string: 0->"000", 10->"010"