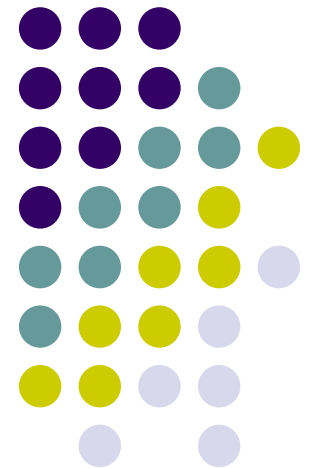
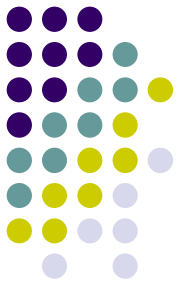


Mid-Term Exam

Introduction to Computer Science

NCNU CSIE





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1.

- ALU = Arithmetic Logic Unit(算術邏輯單元)
- ANSI = American National Standards Institute(美國國家標準學會)
- ASCII = American Standard Code of Information Interchange(美國信息互換標準代碼)
- CPU = Central Processing Unit(中央處理單元)
- GUI = Graphical User Interface(圖形使用者界面或圖形用戶介面)
- ISO = International Organization for Standardization(國際標準化組織)
- RAM = Random Access Memory(隨機存取記憶體)
- ROM = Read Only Memory(唯讀記憶體)
- SCSI = Small Computer System Interface(小型電腦系統介面)
- USB = Universal Serial Bus(通用串列匯流排)



- 2.
ALU, Memory, Control Unit, Input, Output
- 3. CD – RW中相變合金以一種高反光性晶體形式存在，當紅光高功率鐳射光束對相變合金加熱，被加熱的部分便會變得黯淡無光，這就相當於一般光碟上的微坑。如果再次用紅光高功率的鐳射加熱相變合金，它又會變回晶體，這樣就可以再次寫入資料。

>From wiki

CD-RW drive uses a medium-power laser beam to change pits to lands. The beam changes a spot from the amorphous state to the crystalline state.



- 5.
1**1**01000
- 6.
 - (1) No, I can't finish that in an hour.
 - (2)
$$\frac{[(28 * 1024) \text{ bytes} / (56/8) \text{ bytes}]}{60(s)}$$
$$= 68.47 \text{ 分鐘} / 60 = 1.14 \text{ 小時}$$



- 7. [10000000]

- (1) 128 $(2^8 \times 1)$

- (2) 0 (-0)

- (3) -127 $(127 = (01111111)_2 \rightarrow (10000000)_2)$

- (4) -128

- $(128 = (10000000)_2 \rightarrow (01111111)_2)$

- $((01111111)_2 + 1 = (10000000)_2)$

- (5) 1 $((10000000)_2 - (01111111)_2 = 1)$



8 bit excess-127

Binary value	Excess-127 interpretation	Unsigned interpretation
00000000	-127	0
00000001	-126	1
...
01111111	0	127
10000000	+1	128
...
11111111	+128	255

from :

http://en.wikipedia.org/wiki/Signed_number_representations#Excess-N

- 8.
 2. text editor



- 9.

- (1) 1011, overflow

$$\begin{array}{r} 0111 \\ +0110 \\ \hline 1011 \end{array}$$

- (2) 1100, overflow

$$\begin{array}{r} 0110 \\ +0110 \\ \hline 1100 \end{array}$$

- (3) 1000

$$\begin{array}{r} 0100 \\ +0100 \\ \hline 1000 \end{array}$$

(1100 \rightarrow 0011+1 \rightarrow 0100)



● 9.

● (4) 0000

$$\begin{array}{r} 0111 \\ -0111 \\ \hline 0000 \end{array}$$

(1001 \rightarrow 0110+1 \rightarrow 0111)

● (5) 0001

$$\begin{array}{r} 0111 \\ -0110 \\ \hline 0001 \end{array}$$

(1010 \rightarrow 0101+1 \rightarrow 0110)



- 10.

- (1) $(12+34)_7=(46)_7$

- (2) $(56+56)_7=(145)_7$

$$\begin{array}{r} 5 \ 6 \\ + 5 \ 6 \\ \hline 1 \ 4 \ 5 \end{array}$$

↑ ↑

$$\underline{6+6 = 12 = (1 \ 5)_7}$$

↑

$$\underline{5+5+1 = 11 = (1 \ 4)_7}$$



- 10.

- (3) $(11 \cdot 11)_7 = (121)_7$

$$\begin{array}{r} 1 \ 1 \\ \times 1 \ 1 \\ \hline 1 \ 1 \\ 1 \ 1 \ 1 \\ \hline 1 \ 2 \ 1 \end{array}$$

- (4) $(12 \cdot 12)_7 = (144)_7$

$$\begin{array}{r} 1 \ 2 \\ \times 1 \ 2 \\ \hline 2 \ 4 \\ 1 \ 2 \ _ \\ \hline 1 \ 4 \ 4 \end{array}$$



- 10.

- (5) $(25 \cdot 25)_7 = (1024)_7$

$$\begin{array}{r} 1 \quad 3 \\ 2 \quad 5 \\ \times \quad 5 \\ \hline 1 \quad 6 \quad 4 \end{array}$$

$$\begin{array}{r} 25 = (3 \quad 4)_7 \\ \hline 10 = (1 \quad 3)_7 \end{array}$$

$$\begin{array}{r} 1 \\ 2 \quad 5 \\ \times \quad 2 \\ \hline 5 \quad 3 \end{array}$$

$$\begin{array}{r} 10 = (1 \quad 3)_7 \\ \hline \end{array}$$

