

計算機概論課堂測驗二(Ch.3~5.4)

2007/10/25

系級：_____學號：_____姓名：_____

一、是非題 (每題 3 分)

- () 1. Signed numbers are commonly used for counting and addressing.
- () 2. To store a fraction in memory, you need its sign, exponent, and mantissa.
- () 3. To unset (clear) a bit in a target bit pattern, you can set the corresponding mask bit to 1 and use the AND operator.
- () 4. Registers can hold data, instructions, and also function as a program counter.
- () 5. The CD-ROM, CD-RW, DVD, and magnetic disk are examples of storage devices.
- () 6. A computer has 32 M Bytes of memory. It needs 25 bits to address any single byte in memory.
- () 7. In two's complement representation, the leftmost bit defines the sign of the number. If it is 0, the number is positive. If it is 1, the number is negative.
- () 8. The right-shift operation discards the rightmost bit, shifts every bit to the right, and inserts 1 as the leftmost bit.
- () 9. 在 two's complement representation 中，一個正數和一個負數相加，一定不會發生 overflow 或 underflow。
- () 10. In isolated I/O addressing method, CPU does not have separate instructions for transferring data from memory or input/output device.

二、選擇題 (每題 3 分，答案不一定只有一個；如果全錯，則請寫”全錯”)

- () 1. What is the Excess_128 representation of 5?
(A) 00000101 (B) 10000100 (C) 10000101 (D) 10000001
- () 2. How is the mantissa stored in a computer?
(A) in one's complement (B) in two's complement (C) in an unsigned integer
(D) in sign-and-magnitude
- () 3. _____ is a logical bit operator.
(A) The exclusive OR (B) The AND (C) The NOT (D) The OR
- () 4. _____ is a memory type with capacitors that need to be refreshed periodically.
(A) CD-R (B) DRAM (C) ROM (D) SRAM
- () 5. In _____ number representation, the binary number 11111111 in memory represents -0.
(A) sign-and-magnitude (B) two's complement (C) one's complement
(D) unsigned integers
- () 6. There are _____ bytes in 16 terabytes.
(A) 2^{30} (B) 2^{40} (C) 2^{50} (D) 2^{60}

() 7. 下列那一種記憶體的速度最快？

- (A) Level-1 cache memory (B) Level-2 cache memory (C) main memory
(D) registers

() 8. To flip all the bits of a bit pattern, make a mask of all 1s and then _____
the bit pattern and the mask.

- (A) OR (B) AND (C) NOT (D) XOR

三、 填空題 (每格 4 分)

1. Show the decimal number $-2^{-5} \times 1.625$ in 32-bit IEEE format: _____ .

2. Show the result of the operation $(-93) + 109$ using 8-bit two's complement representation:

_____ .

3. Change the decimal number -109 to 8-bit one's complement integer: _____ .

4. 請寫出 USB 的英文全名 _____ .

5. 請寫出 CD 的英文全名 _____ .

6. Show the result of the operation $x\text{E111111A} + x\text{77777777}$ using 32-bit IEEE format:

_____ .

7. Most computers typically spend 80% of the time accessing only 20% of the data. The phenomena is called _____ rule.

8. 從設計上來講, one's complement representation 並沒有被廣為使用, 請說明 one's complement representation 的一個缺點: _____ 。

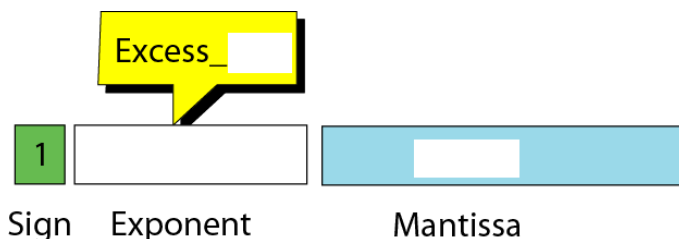
四、 簡答題 (每題 6 分):

1. 請簡述 Benford's Law 的意義。

答題處:

3、下圖表示 IEEE 754 standards for single precision floating-point numbers, 請在圖中補上 3 個數字。

答題處:



2、試繪出 XOR 對切開關的線路圖。

答題處: