Homework1

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Homework1

- 题目1

Fill in the table below

Binary	Octal	Decimal	Hexadecimal
101 0101 0110	2526	1366	0x556
1 1111 1111	777	511	0x1FF
1 1100 0101	705	453	0x1c5
111 1101 1111	3737	2015	0x7DF
100 0000 1101	2015	1037	0x40D

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$0x80$ $0x45$

$\sim$ 10000000 $\sim$ $0100\ 0101$

$\uparrow$ $\uparrow$

01111111 $1011\ 1010$

- 题目2
  - Given A and B with hexadecimal expression 0x7F and 0xBA respectively. Calculate the values of the following expressions.
  - a) A&B $(0011\ 1010)_2 = 0x3A$
  - b) A|B $(1111\ 1111)_2 = 0xFF$
  - c) A^B $(1100\ 0101)_2 = 0xC5$
  - d) ~A|~B $(1100\ 0101)_2 = 0xC5$
  - e) A&&B 1
  - f) A||B 1

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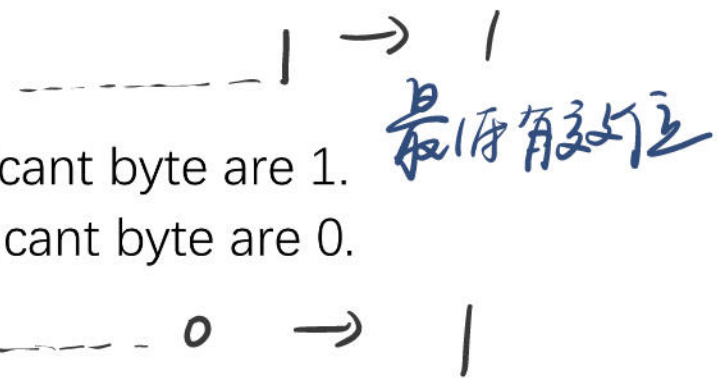
- 题目3
  - Design C expressions using bitwise (& | ~ ^) and logical (&& || !) operators, which return 1 under the specific conditions described below, otherwise return 0.
    - a) all bits of x are 1.
    - b) all bits of x are 0.
    - c) bits of x' s least significant byte are 1.
    - d) bits of x' s least significant byte are 0.



a) $!(\sim x)$

b) $!x$

c) $x \& 1$

d) $!(x \& 1)$

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- 题目4
  - Design a C expression, which generates a word (32-bit) consisting of the lower 16 bits of x and the remaining bits of y.
  - For example, x = 0x89ABCDEF and y = 0x76543210, it will generate 0x7654CDEF

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x & (~(~0<<16)) + y & (~0<<16)
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