

ICS'12 Spring Homework 1 Solution

I Number Conversion

i. 57783
3482
491

ii.
(FFFF)₁₆ or 0xFFFF
(97A)₁₆ or 0x97A
(1FF)₁₆ or 0x1FF

iii.
(1111101000011110)₂
(1010101111001101)₂
(101110111)₂

II Operations

i. A:10101011 B:11010010
a) (10000010)₂ or 0x82
b) 0x01
c) (11111011)₂ or 0xFB
d) 0x01
e) (01111001)₂ or 0x79
f) (01111101)₂ or 0x7D

ii. Fill in the table below with the results of shift operation given

X	X<<4	X>>3(Logical)	X>>3(Arithmetic)
0xB2	0x20	0x16	0xF6
0x0F	0xF0	0x01	0x01
0xDC	0xC0	0x1B	0xFB
0xA9	0x90	0x15	0xF5

iii. (本题答案形式不唯一, 仅供参考)

- A. $\sim x$
- B. $\sim x$
- C. $\sim x \& 0xFF$
- D. $x \& 0xFF$

iv. (本题答案形式不唯一, 仅供参考)

$(\sim(1 \ll \text{position}) \& \text{number}) | (\text{bit} \ll \text{position})$

v. (本题答案形式不唯一, 仅供参考)

$(x \& 0xFF) | (y \& \sim 0xFF)$

III Byte Ordering

i.

- | | | |
|----|-------------|-------------|
| A. | 12 | 78 |
| B. | 12 34 | 78 56 |
| C. | 12 34 56 | 78 56 34 |
| D. | 12 34 56 78 | 78 56 34 12 |

ii. (此题答案不唯一)

```
public int is_little_endian()
{
    /* MSB = 0, LSB = 1 */
    int x = 1;

    /* Return MSB when big-endian, LSB when little-endian */
    return (int) (* (char *) &x);
}
```