

# ICS作业1答案

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## 1

Binary	Octal	Decimal	Hexadecimal
101 0101 0110	2526	1366	0x556
0001 1111 1111	777	511	0x1ff
0001 1100 0101	705	453	0x1C5
0111 1101 1111	3737	2015	0x7df
0100 0000 1101	2015	1037	0x40d

## 2

- (a) 0x3a
- (b) 0xff
- (c) 0xc5
- (d) 0xc5
- (e) 1
- (f) 1

### 3

(a)  $!(\sim x)$

(b)  $!x$

(c)  $!((x \& 0xff) \wedge 0xff)$

(d)  $!(x \& 0xff)$

### 4

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

附：

$$1. (a) \begin{array}{ccc} 101 & 0101 & 0110 \\ \hline 5 & 5 & 6 \end{array} \rightarrow 0x556 \rightarrow 5 \times 16^2 + 5 \times 16 + 6 = 1366$$

$$1366 \div 8 = 170 \dots 6, 170 \div 8 = 21 \dots 2, 21 \div 8 = 2 \dots 5 \rightarrow 2526_8$$

$$(b) 7 \times 8^2 + 7 \times 8 + 7 = 511, 511 \div 2 = 255 \dots 1, 255 \div 2 = 127 \dots 1,$$

$$127 \div 2 = 63 \dots 1, 63 \div 2 = 31 \dots 1, 31 \div 2 = 15 \dots 1, 15 \div 2 = 7 \dots 1, 7 \div 2 = 3 \dots 1$$

$$3 \div 2 = 1 \dots 1 \Rightarrow \begin{array}{ccc} 0001 & 1111 & 1111 \\ \hline 1 & f & f \end{array} \rightarrow 0x1fff$$

(d)

$$2015 \div 2 = 1007 \dots 1, 1007 \div 2 = 503 \dots 1, 503 \div 2 = 251 \dots 1, 251 \div 2 = 125 \dots 1$$

$$125 \div 2 = 62 \dots 1, 62 \div 2 = 31 \dots 0, 31 \div 2 = 15 \dots 1, 15 \div 2 = 7 \dots 1, 7 \div 2 = 3 \dots 1$$

$$3 \div 2 = 1 \dots 1, 1 \Rightarrow \begin{array}{ccc} 0111 & 1101 & 1111 \\ \hline 7 & d & f \end{array} \rightarrow 0x7df \rightarrow 3737$$

$$(c) 0x105 \Rightarrow 5 + 12 \times 16 + 1 \times 16^2 = 453_{10}, 453 \div 8 = 56 \dots 5, 56 \div 8 = 7 \Rightarrow 705_8$$

↓

$$0001 \ 1100 \ 0101$$

$$(d) 5 \times 8 + 1 \times 8^2 + 2 \times 8^3 = 1037, 1037 = 1024 + 8 + 4 + 1 \Rightarrow \begin{array}{ccccccc} 0 & 1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 & 2 \end{array}$$

$$\rightarrow 0x40d$$

$$2. 0x7f = 0111 \ 1111_2$$

$$0xba = 1011 \ 1010_2$$

$$A \oplus B = 0011 \ 1010_2 = 0x3a$$

$$A \mid B = 1111 \ 1111_2 = 0xff$$

$$A^{\wedge} B = 1100 \ 0101 = 0xc5$$

$$\sim A \mid \sim B = 1100 \ 0101 = 0xc5$$

$$3. (a) 111 \dots 1 \quad \sim x = 00 \dots 0 \rightarrow !(\sim x)$$

$$(b) 000 \dots 0 \rightarrow !x$$

$$(c) \text{取后16位 } x \& 0xffff \text{ 判断是否} = 0xffff$$

$$(d) \text{取后16位 是否} = 0 \Rightarrow !(x \& 0xffff)$$

$$\rightarrow !(x^{\wedge} y)$$

$$4. x \text{ 取后16位 } x \& 0xffff \quad y \text{ 取前16位 } y \& \sim 0xffff \Rightarrow (x \& 0xffff) \mid (y \& \sim 0xffff)$$