Assignment II

① .

n.	2^n (Dec)	2^n (Hexa).
11	2048	0x800.
7	128.	0x80.
13.	8192.	0x 2000.
13.	8192	0 x 2000
16	65536.	0 x 10000
8	256.	0 x 100.
5	32.	0x20.

② .

$31\,415\,6_{10} = 4CB2C_{16}$ / 0x 4C B2C.

$82\,984_{10} = \ldots 14428_{16}$ / 0x 14428.

③ .

Decimal	Binary	Hexa.
0	00000000	0x00.
55.	00 11 0111	0x37.
136.	1000 1000.	0 x 88.
243.	1111 0 0 11	0xF3.
82.	0 1 0 1.00.10	0x52.
172.	10 1 0 11 00	0xAc
231	1 1 1 00 1 1 1.	0 xE7
167.	1 0 1 00 1 1 1	0xA7
62	00 1 1 1 1 1 0	0 x3e
188.	1 0 1 1 1 1 00	0 xbC.

④ 0x502c + 0x8 = 0x5034.

0x502c − 0x30 = 0x4FFC.

0x502c + 0x64 = 0x5090.

0x5oda − 0x502c = 0xAE.

⑤.

	0x100	0x101	0x102	0x103.
Big Endian	1A	32	56	09
Small Endian.	09	56	32	1A.

⑥

char s[6] = "18243".

Big Endian	31	38	32	34	33	00.
Small Endian.	31	38	32	34	33	00.

⑦.

```
  01101001
& 01010100
----------
  01000000 //.
```

```
  01101001
| 01010100
----------
  01111101 //.
```

```
  01101001
^ 01010100
----------
  00111101
```

```
~ 01010100
----------
  10101011
```

Blue | Red. = 001 | 100 = 101 (Magenta)

Magenta & Cyan = 101 & 011 = 001 (Blue).

Green ^ White = 010 ^ 111 = 101 (Magenta).

(9). ~0x38 = ~ 11 1000 = 00 0111 = 0x07 //

or = ~ 0011 1000 = 1100 0111 = 0x C7 //

~0x00 = ~ 0000 0000 = 1111 1111 = 0xFF. //

0xFA & 0x12 = 1111 1010 & 0001 0010 = 0001 0010.

= 0x12 //

0x93 | 0x95 = 1001 0011 | 1001 0101 = 1001 0001

= 0x91 //

(10) x & 100_2.

x & 100000 // x & 10.

x | 10000

(11). (x | ~0xFF) // or. (x | FF FF FF 00) //

(x ^ 0xFF) //

(x & ~0xFF) // or (x & FF FF FF 00) //

(12).

→.

(12)

x		x << 3		Logical x >> 2		Arithmetic x >> 2	
Hex	Bin	Bin	Hex	Bin	Hex	Bin	Hex
0XF0	1111 0000	1000 0000	0x80	0011 1100	0x3C	1111 1100	0XFC
0X0F	0000 1111	0111 1000	0x78	0000 0011	0X03	0000 0011	0x03
0XCC	1100 1100	0110 0000	0x60	0011 0011	0X33	1111 0011	0XF3
0X55	0101 0101	1010 1000	0XA8	0001 0101	0X15	0001 0101	0X15

(13)

x		B2U4(x)	B2T4(x)
Hex	Binary		
A	1010	$2^3+2^1=10$	$-2^3+2^1=-6$
0	0000	$=0$	$=0$
3	0011	$2^1+2^0=3$	$2^1+2^0=3$
8	1000	$2^3=8$	$-2^3=-8$
C	1100	$2^3+2^2=12$	$-2^3+2^2=-4$
F	1111	$2^3+2^2+2^1+2^0=15$	$-2^3+2^2+2^1+2^0=-1$

(14)

x	T2U4(x)
-8	1000 ⇒ 8
-6	1010 ⇒ 10
-4	1100 ⇒ 12
-1	1111 ⇒ 15
0	0000 ⇒ 0
3	0011 ⇒ 3

(13)

x	U2T4(x)
0	0000 ⇒ 0
7	0111 ⇒ 7
8	1000 ⇒ -8
9	1001 ⇒ -7
14	1110 ⇒ -2
15	1111 ⇒ -1

	Decimal	Hex	Binary.
x	15214.	0x3BBG E	00 111011 011 0 111 0
ix	15214.	0x00003BBG E	0000 0000 0000 0000 0011 1011 1011 1110.
y	-15214	0x C492	1100 0100 1001 0010.
iy	-15214.	0xFFFF C492	1111 1111 1111 1111 1100 0100 1001 0010.

(15).

Hex		Unsigned		Twos complement.	
Original	Truncated	Original	Truncated	Original	Truncated
0	0	0	0	0	0
3	3	3	3	3	3
8	0	8	0	-8	0
A	2	10	2	-6	2
F	7	15	7	-1	-1.

(16). Can have more than one correct answer. Give full marks for any correct answer.

```
int lower_bits (int x, int n){
int mask;
mask = -1 >> (32-n);
return (x & mask);
}
```