Homework3

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题目1

	little-endian	big-endian
show_bytes(valp,1)	33	14
show_bytes(valp,2)	33 02	14 0a
show_bytes(valp,4)	33 02 0a	14 0a 02

题目2

Fractional value	Binary representation	Demical representation
1/8	0.001	0.125
3/4	0.11	0.75
43/16	10.1011	2.6875
25/16	1.1001	1.5625
51/16	11.0011	3.1875

题目3

A.首位为0；接下来E位首位和末位为1，其余位为0；接下来f位前两位为2，其余为0
B.首位为0，E为f二进制表示加上掩码,f全为1
C.1/2^(E-2)

题目4

Format A		Format B	
Bits	Value	Bits	Value
1 01110 001	-9/16	1 0110 0010	-9/16
0 10110 101	208	0 1110 1010	208
0 00000 101	$5/2^{14}$	0 1000 0000	1
1 11011 000	-2^{12}	1 1111 0000	-2^{8}

0 11000 100	768	0 1111 0000	2^8

题目5

A.是 对于x和dx，二者精度没有损失，转化为float遵循相同的规则 B.否 x=0x7FFFFFFF,y=0x80000000; C.是 int转换后的浮点数相加不会溢出 D.否 x=0x7F00FFAF,y=0x7FFFFFF7,z=0x7FFF007F; E.否 dx=0,dy=2

题目6

```
typedef unsigned float_bits;

bool is_nan(float_bits f) {
    unsigned exponent = (f >> 23) & 0xFF;
    unsigned fraction = f & 0x7FFFFF;
    return (exponent == 0xFF && fraction != 0);
}
float_bits float_abs(float_bits f) {
    if (is_nan(f)) {
        return f;
    }
    return f & 0x7FFFFFFF;
}
```

题目7

```
typedef unsigned float_bits;
bool is_nan(float_bits f) {
    unsigned exponent = (f >> 23) & 0xFF;
    unsigned fraction = f & 0x7FFFFF;
    return (exponent == 0xFF && fraction != 0);
}
float_bits float_twice(float_bits f) {
    if (is_nan(f)) {
        return f; }
    if ((f & 0x7FFFFFFF) == 0) {
        return f;
    }
    unsigned exponent = (f >> 23) & 0xFF;
    if (exponent == 0xFF) {
        return f; // overflow
    }
    return (f & 0x807FFFFF) | (exponent << 23);
}
```