ICS 第二章作业

7. (1) 无符号加法指令:

R1 = 0X 0000 108B , R2 = 8080 108B H

(2) 带符号乘法指令:

R1 = 0x 0000 108B

R2 = -(0111 1111 0111 1111 1110 1111 0111 0100+1) = -7F7FEF75 H

(3) 单精度浮点数 2 1 1 b

R1 = 0/0000 0000/000 0000 0001 0000 1000 1011 b

R2 = 1/000 0001/000 0000 0001 0000 1000 1011 b

符号 阶码 尾数

R1 = +0.002116 × $2^{-126}$ H

R2 = -1.002116 × $2^{-126}$ H

10. (1) int x = FFFF 0006 H = 1111 1111 1111 1111 0000 0000 0000 0110 b

= -(0000 0000 0000 0000 1111 1111 1111 1010)b = -0000FFFA H

(2) short y = DFFC H = 1101 1111 1111 1100 b

= -(0010 0000 0000 0011 + 1) b = -2004 H

(3) unsigned z = FFFF FFFA H = +(FFFF FFFAH)

15. x = 0x5F = 0101 1111 b ~x = 1010 0000 b !x = 0000 0000

y = 0x A0 = 1010 0000 b ~y = 0101 1111 b !y = 0000 0000

x^y = 1111 1111 b = FFH

x & y = 0000 0000 b = 00 H x || y = 1 = 01 H

x | y = 1111 1111 b = FF H !x || !y = 00 H

~x | ~y = 1111 1111 b = FFH x && ~y = 01 H

x & !y = 0000 0000 = 00H

x & y = 1 = 01 H

23. $+1.75 = +1.11B = 1.11B \times 2^0$

$\Rightarrow 0/0111\ 1111/110\ 0000\ 0000\ 0000\ 0000\ 0000 = 3FE00000H$

$+19 = +10011B = 1.0011B \times 2^4$

$\Rightarrow 0/1000\ 0011/001\ 1000\ 0000\ 0000\ 0000\ 0000 = 4198\ 0000H$

$-1/8 = -0.125 = -0.001B = -1.0 \times 2^{-3}$

$\Rightarrow 1/0111\ 1100/000\ 0000\ 0000\ 0000\ 0000\ 0000 = BE00\ 0000H$

$258 = 100000010B = 1.00000001 \times 2^8$

$\Rightarrow 0/1000\ 0111/000\ 0001\ 0000\ 0000\ 0000\ 0000 = 4381\ 0000H$

24. 32位补码：$4098 = 0000\ 0000\ 0000\ 0000\ 0001\ 0000\ 0000\ 0010$

$= 0000\ 1002H$

单精度浮点格式：$4098 = 1.0000\ 0000\ 001 \times 2^{12}$

$= 0/10001011/000\ 0000\ 0001\ 0000\ 0000\ 0000$

$= 45801000H$

波浪线部分相同，因为都用来表示4098的二进制真值.

25. $-2147483647 = FFFF\ FFFF\ H$

单精度浮点数：$-2147483647 = -1.11\ 1111\ 1111\ 1111\ 1111\ 1111\ 1111 \times 2^{30}$

$= 1/10011101/1111\ 1111\ 1111\ 1111\ 1111\ 111$

$= CEFF\ FFFF\ H$

32位补码：$1000\ 0000\ 0000\ 0000\ 0000\ 0000\ 0000\ 0001$

$= 80000001\ H.$

32位补码表示精确值，单精度浮点数表示近似值.

28. 解：$x = -0.125 = -0.001B = -1.0 \times 2^{-3}$

$\Rightarrow 1/0111\ 1100/000\ 0000\ 0000\ 0000\ 0000\ 0000 = BE00\ 0000H$

$y = 7.5 = 1.111 \times 2^2 = 0/1000\ 0001/111\ 00\cdots0 = 40F0\ 0000H$

i = 100 = 1100100 B = 0064 H

大端机：

| 地址 | 100 | 101 | 102 | 103 | 108 | 109 | 110 | 111 | 112 | 113 |
|---|---|---|---|---|---|---|---|---|---|---|
| 内容 | BE | 00 | 00 | 00 | 40 | F0 | 00 | 00 | 00 | 64 |

小端机：

| 地址 | 100 | 101 | 102 | 103 | 108 | 109 | 110 | 111 | 112 | 113 |
|---|---|---|---|---|---|---|---|---|---|---|
| 内容 | 00 | 00 | 00 | BE | 00 | 00 | F0 | 40 | 64 | 00 |

29. X = 0x B0 = 1011 0000 b　　真值 x = -0101 1111 = -5F H = -95

Y = 0x 8C = 1000 1100 b　　真值 y = -01110100 = -74 H = -116

X+Y = 1001 1100 b 表示两数之和，发生溢出，OF=1，SF=0，CF=0.

x+y = -211

X-Y = 00 0 0100 b 表示两数之差，OF=0，SF=0，CF=0.

x-y = 21.

32. 55*x = (64-8-1)*x

= 64*x - 8*x - x

= (x<<6) - (x<<3) - x　　四个周期

38. 单精度：$1 \times 2^{128}$

双精度　$1 \times 2^{256}$