ICS HomeWork-1

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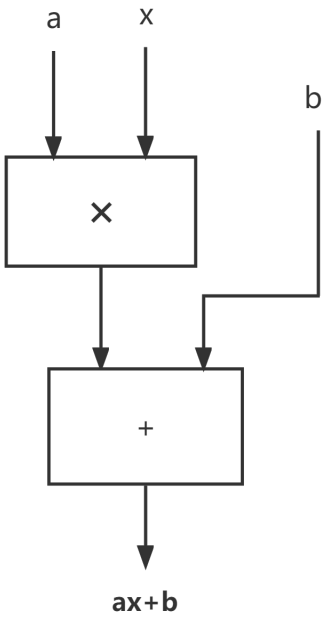
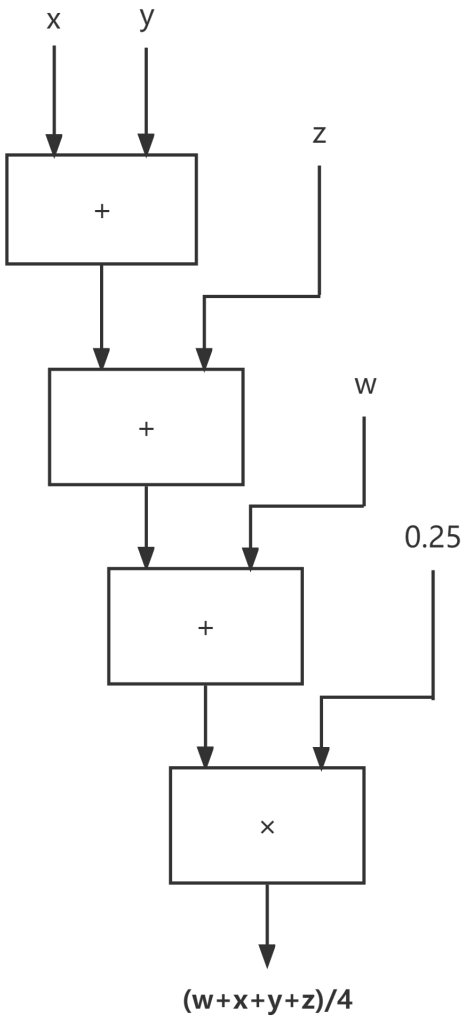
October 3, 2022

T1

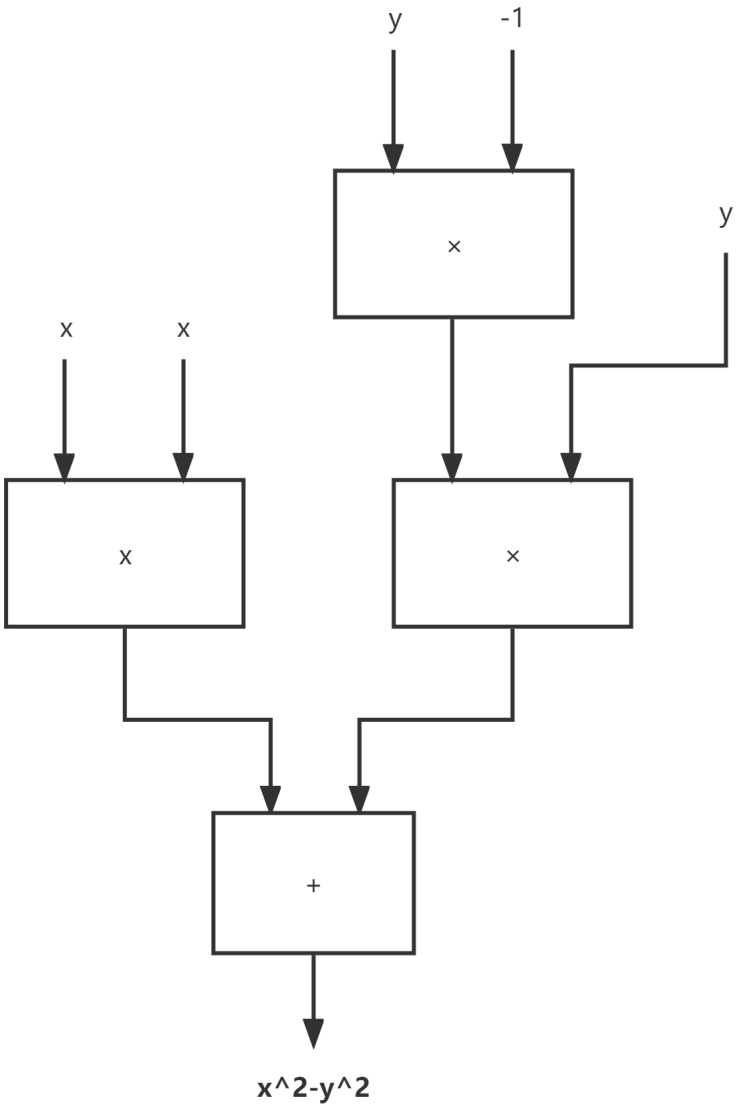
如图



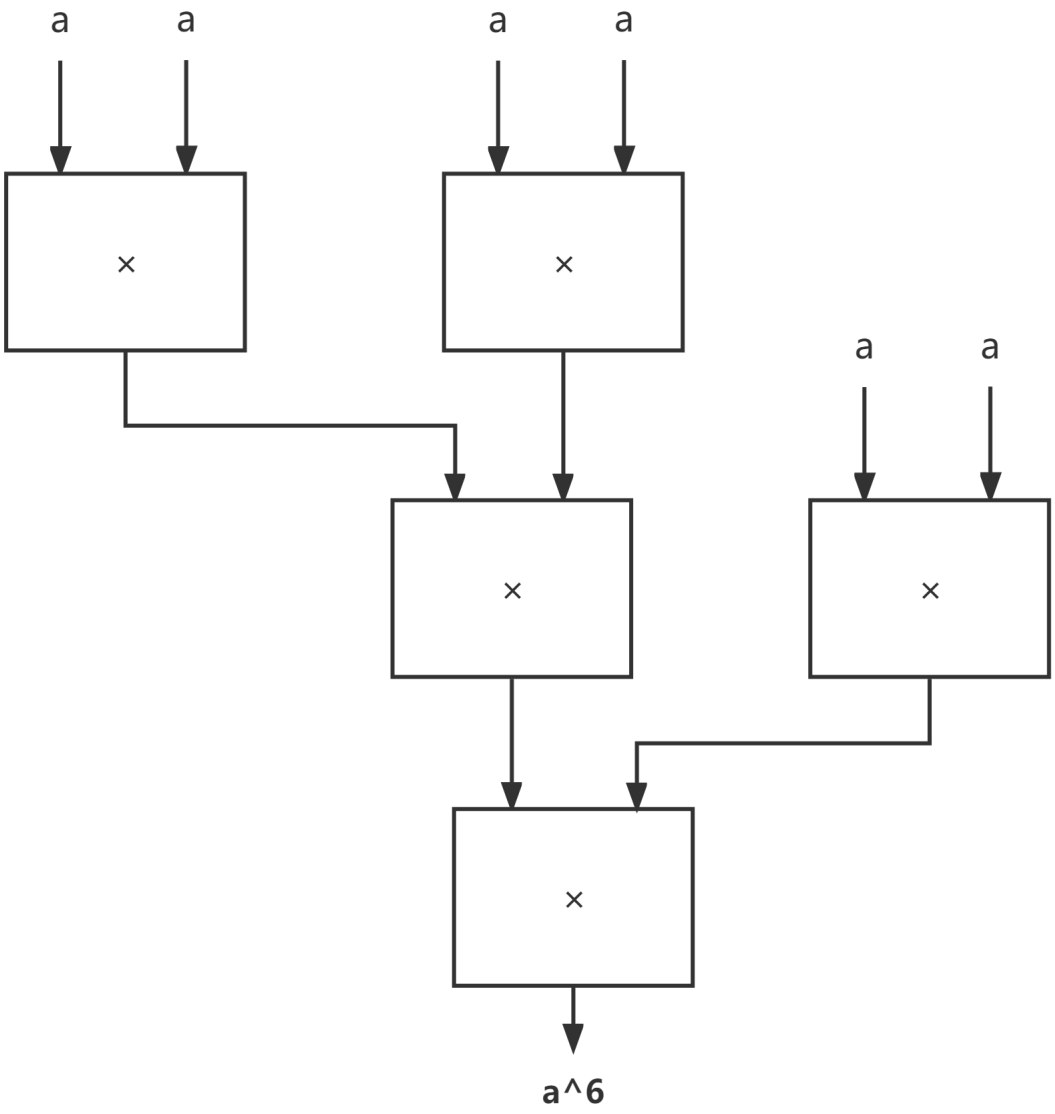
(a)



(b)



(c)



(d)

T2

a.

$$(98)_D = (01100010)_B \Rightarrow (98)_{补} = 01100010.$$

b.

$$(-105)_D = (11101001)_B \Rightarrow (-105)_{补} = 00010111.$$

c.

$$01000010(补) = 01000010原 = (66)_D.$$

d.

$$11101111(补) = 10010001原 = (-17)_D.$$

T3

a.

$$\begin{aligned}(01)_{补} + (110011)_{补} =& (000001)_{补} + (110011)_{补} \\ =& (110100)_{补} \\ =& (101100)_{原} \\ =& (-12)_D.\end{aligned}$$

b.

$$\begin{aligned}(111)_{补} + (0100110)_{补} =& (1111111)_{补} + (0100110)_{补} \\ =& (0100101)_{补} \\ =& (0100101)_{补} \\ =& (37)_D.\end{aligned}$$

c.

$$\begin{aligned}(1010)_{补} + (1101)_{补} =& (0111)_{补} \\ =& (7)_D. \text{ (溢出)}\end{aligned}$$

d.

T4

a.

$$(101011)_{补} = (11101011)_{补}.$$

b.

$$(011110)_{补} = (00011110)_{补}.$$

c.

$$(11111111110000)_{补} = (11110000)_{补}.$$

d.

$$(00001)_{补} = (00000001)_{补}.$$

T5

$$\begin{aligned} 4.3(D) =& 100.0100110011001100110011001(B) \text{ (取小数点后 21 位)} \\ =& (-1)^0 \times 1.000100110011 \times 2^2 \\ \xrightarrow{IEEE754}& 0\ 10000001\ 00010011001100110011001. \end{aligned}$$

T6

$$\begin{aligned} 0\ 10001001\ 11111001101001000000000 &= 11111100110.1001000000000(B) \\ &= 2022.5625(D). \end{aligned}$$

T7

(1) a.

$$10100101 \text{ AND } 11010101 = 10000101.$$

b.

$$10001110 \text{ OR } 11110101 = 11111111.$$

c.

$$\text{NOT}(11110001) = 00001110.$$

(2) d.

$$\begin{aligned} &(\text{x}1234 \text{ AND x}5678) \text{ OR } (\text{x}ABCD \text{ AND x}99EF) \\ =&(0001001000110100 \text{ AND } 0101011001111000) \text{ OR } (1010101111001101 \text{ AND } 1001100111101111) \\ =&(0001001000110000) \text{ OR } (1000100111001101) \\ =&1001101111111101 \\ =&\text{x}9BFD. \end{aligned}$$

e.

$$\begin{aligned} \text{x}6A12 \text{ XOR x}3A15 &= 0110101000010010 \text{ XOR } 0011101000010101 \\ &= 0101000000000111 \\ &= \text{x}5007. \end{aligned}$$

T8

如图,$Q_2 = A$ AND B AND C.

A	B	C	Q_1	Q_2
0	0	0	1	0
0	0	1	0	0
0	1	0	1	0
0	1	1	0	0
1	0	0	1	0
1	0	1	0	0
1	1	0	1	0
1	1	1	1	1

T9

(1)

$$'\backslash t\backslash n\backslash r' = 000010010000101000001101 = CQoN.$$

(2) 在 MIME 格式的电子邮件中，base64 可以用来将 binary 的字节序列数据编码成 ASCII 字符序列构成的文本。使用时，在传输编码方式中指定 base64。使用的字符包括大小写字母各 26 个，加上 10 个数字，和加号“+”，斜杠“\”，一共 64 个字符，等号“=”用来作为后缀用途。

T10

$$\begin{aligned}\text{MAX} =& (-1)^0 \times 1.11111111111111111111111 \times 2^{254-127} \\ =& 1.11111111111111111111111 \times 2^{127}.\end{aligned}$$

T11

如图，$C = \{\{0, M\}, E[24:47]\}$.