

20220224

Shi' Qin

$$0.5 \times -0.437$$

$$1.00 \times 2^{-5} \cdot -1.11 \times 2^8$$

$$-5 + 8 = 3$$

$$2 \times 2 \downarrow$$

$$1.00$$

$$\times 1.11$$

$$100$$

$$100 \downarrow$$

$$100 \downarrow$$

$$11100$$

$$1.1100$$

$$1.11 \times 2^3$$

$$\downarrow$$

round

$$\downarrow$$

sign (-)

$$= -1.11 \times 2^3$$

Check:

$$= 1110 = 8 + 4 + 2 = 14$$

Other

$$-\frac{111}{2^5} = -\frac{7}{32} = -0.21$$

$$\begin{array}{rcl}
 185 & + & 122 \\
 \hline
 10111001 & & 01111010 \\
 \downarrow & & \downarrow \\
 -57 & + & 122 = 65
 \end{array}$$

8-bit IEEE 754



0.0011011_2

$$\begin{array}{r}
 \downarrow \\
 1.1011 \times 2^{-3}
 \end{array}$$

rounding
 $1011 \times$
 \downarrow
 110

0	0100	110
0	4	6

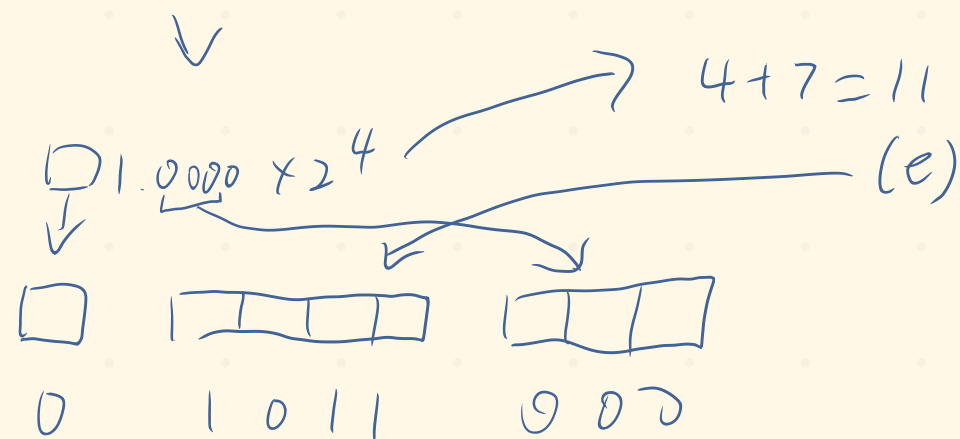
exp + bias
 exp - bias

$$\begin{array}{l}
 \uparrow \\
 2^{e-1} - 1 = 2^{4-1} - 1 \\
 = 7
 \end{array}$$

$$e = -3 + 7 = 4$$

16)₁₀ → IEEE 8 bit

10000



$$\text{CPU Time} = \text{Instruction} \cdot \text{CPI} \cdot \text{Clock cycle time}$$

$$= 100000 \cdot 1.3 / 600 \cdot 10^6 \text{ ns.} \quad \leftarrow 600 \text{ MHz}$$

$$= x \cdot 2.5 / 750 \cdot 10^6$$

65000