

Practical 03

12/04/21

(d)

$$32_{10} \xrightarrow[\text{Binary 8-Bit}]{\text{Change to}} 0010\ 0000_2$$

$$16_{10} \xrightarrow[\text{Binary 8-Bit}]{\text{Change to}} 0001\ 0000_2$$

Take the number to be subtracted!

Flip the digits and add 1 to get 2's Complement (-16_{10})

$$0001\ 0000_2 \xrightarrow{\text{Flip}} 1110\ 1111_2 \xrightarrow{\text{Add 1}} 1111\ 0000_2$$

Add the Binary 32 to the Binary 2's complement of 16

$$\begin{array}{r} 0010\ 0000 \\ + 1111\ 0000 \\ \hline 10001\ 0000 \end{array}$$

↑ Ignore leading bit (overflow)

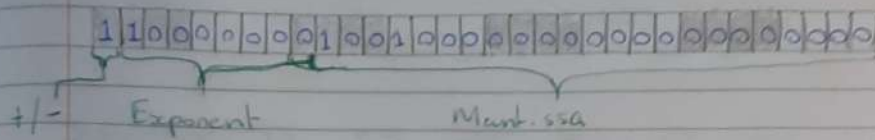
$$0001\ 0000 \xrightarrow[\text{to Base 10}]{\text{Convert back}} 16_{10}$$

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(c) $C0\ 48\ 00\ 00_{16} \equiv \text{Decimal } 10$

$C0\ 48\ 00\ 00$



Sign is 1 so "-"

$$\text{Exponent} = 10000001_2 = 128 + 127 = 1$$

Sign * 2^{exponent} * mantissa

$$\begin{aligned} &+1 * 2^1 * (1.10010000000000000000000_2) \\ &-1 * 2^1 * (1.5625_{10}) = -3.125 \end{aligned}$$

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(e)

Practical 3

48 61 6E 20 53 6F 6C 6F

↓ ↓ ↓ ↓ ↓
Han Solo

48 61 6E 20 53 6F 6C 6F

H a n S o l o

Han Solo