$\longleftrightarrow$

$\longleftarrow \cdots \cdots \cdots \cdots \cdots \cdots \cdots \longrightarrow$

$-2 -1 0 1$

(int) signed int

32-bit $\qquad$ 2^{32} $\qquad$ $0, 1, 2 \ldots 2^{32}-1$

1-bit $\{0, 1\}$

2-bit $\{00, 01, 10, 11\}$ $\qquad$ $-2^{31} \ldots 0, 1 \ldots 2^{31}-1$

int a, b

$\underline{\underline{a+b}}$ $\qquad$ $(2^{31}-1)+(5)$

undefined

Types   data types

1 byte = 8-bit

— set of values 2^{20} m

— set of operation 1 T 2^{10} k 30
                                          2^{30} G

unsigned a,b; 2^{40} T

$(a+b) \mod 2^{32}$

int

unsigned int 2^{32}

$0, \ldots \cdot 2^{32}-1$

$5 + 3 \mod 6 = 2$ $a = 2^{32} - 1$
                        $b = 5$

                        $a + b = ?$

                        4

$a = 0$

$b = 40$

$c = -5$

$a = 50$

$b = 102$

$c = -42$ - - - - - - - - 2^{96}

2^{96}

$a = *$

$b = *$

$c = *$

$a := 5$ →

$a = 5$

$b = *$

$c = *$ 2^{64}

$\mathbb{Z}$

$-5/4 = \lfloor -1.25 \rfloor = -2$

$a, b \in \mathbb{Z}$

$\boxed{-1}$

$(5/4) \in \mathbb{Q}$

$+$
$*$
$-$
$/$

$5/4 = 1.25$

$\lfloor a/b \rfloor$

$\lfloor 1.25 \rfloor = 1$

$\mathbb{Q}$
$\lceil 1.25 \rceil = 2$
$\lfloor 5/4 \rfloor$

$$2^{3^1} - 2, \quad 2^{3^1} - 1$$

$$42$$

$$-2^{3^1}, \quad \boxed{-2^{3^1} + 1}, \quad \text{- - -}$$