

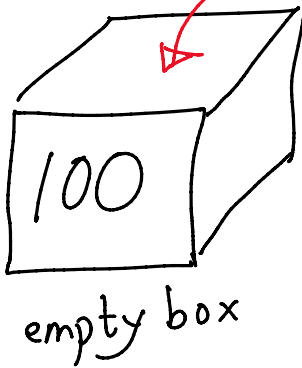
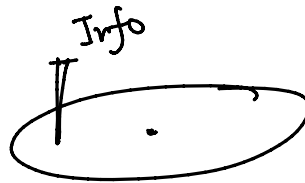
Brain of a computer!

CPU

RAM
ROM

RAM
Random Access

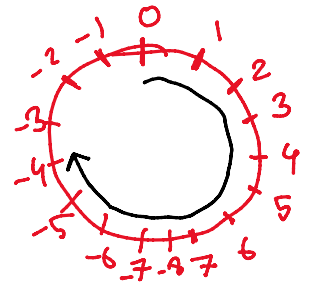
ROM
Read-Only



51

पूर्णांक/Integer

$[-8, 7] \rightarrow 16$



1 MB $\rightarrow 1024 \text{ kB} \rightarrow 1024 \times 1024 \text{ B}$
 $= 1,048,576 \text{ B}$
 $\approx 10^6 \text{ B}$

0/1

$[-2^3, 2^3 - 1]$

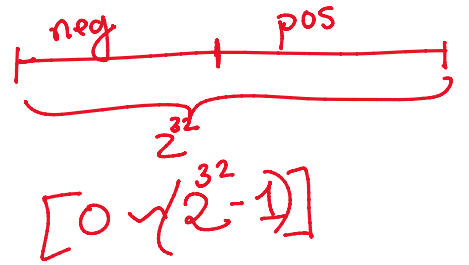
$2^8 \rightarrow 12$
 $-16 = -4$

$233 \dots 000000 \rightarrow$
 2621844352

1101110161101000

16 bit \rightarrow 2 Byte

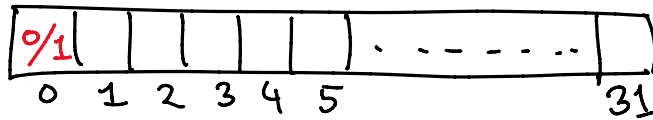
1 Byte \rightarrow 8 bit



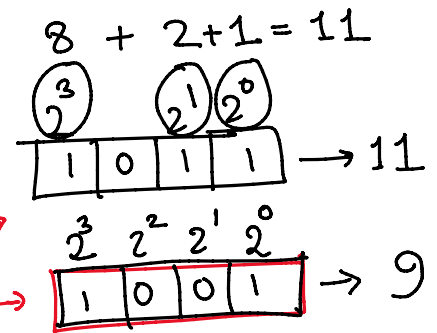
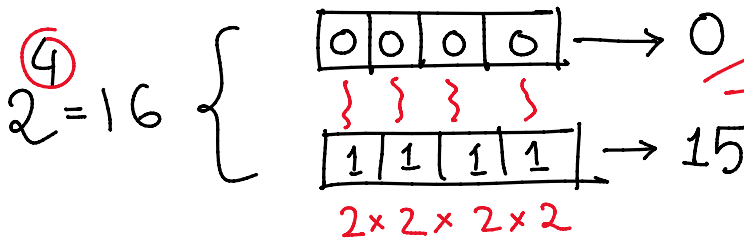
int n; \leftarrow 4 Byte \leftarrow RAM 2x2x2x2 \rightarrow 32 bit

2^{32} 2x2x2x2

$[0 \sim (2^4-1)]$



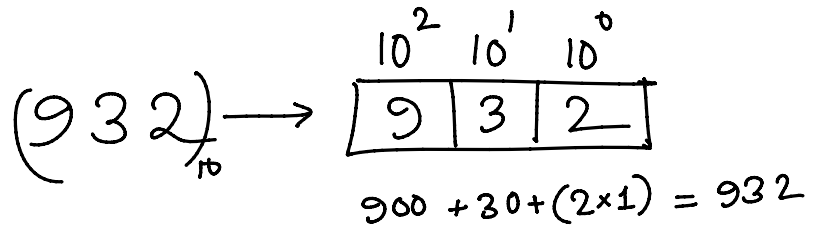
~~32 bit~~ \rightarrow 4 bit $a^0 = 1$



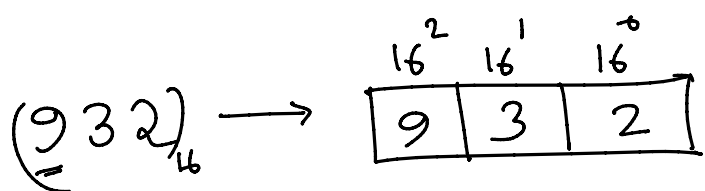
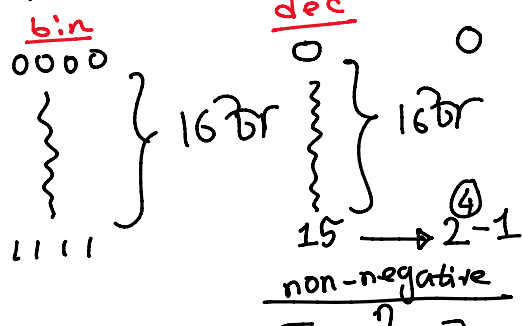
~~a^0~~

$$a^0 = a^{5-5} = \frac{a^5}{a^5} = 1$$

$-8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7$ (0 ~ 7) $5^2 = 5 \times 5$



4 bit



$| [0, 15] \rightarrow [-8, +7]$

1111

$$\begin{array}{c} \text{non-negative} \\ \hline n\text{-bit} \rightarrow [0, 2^n - 1] \end{array} \xrightarrow{\text{all}} [-2^{n-1}, 2^{n-1} - 1]$$

$$\begin{array}{c} [-2^{4-1}, 2^{4-1} - 1] \\ \hookrightarrow [-2^3, 2^3 - 1] \rightarrow [-8, 7] \end{array}$$

$$\begin{array}{l} [0, 15] \rightarrow [-8, 7] \\ [0, 2^4 - 1] \rightarrow [-2^3, 2^3 - 1] \end{array}$$

$$10 \bmod 15 \rightarrow 10$$

$$\begin{array}{r} 15 \overline{) 10} \quad (0 \\ \underline{00} \\ 10 \end{array} \leftarrow \text{Remainder}$$

$$7 \sim 8 \text{ MB/s}$$