

singed-to-unsigned.c

$$\overset{15}{1100111111000111} \rightarrow -12345$$

$$-2^{15} + 2^{14} + 0 + \dots + 2^0 = -12345$$

bit representation will be same

$$2^{15} + 2^{14} + 0 + \dots + 2^0 \rightarrow 53191$$

$x \rightarrow 1010$

$$-2^{15} + \sum_{w=0}^{14} 2^w \cdot x \quad \text{VS} \quad \sum_{w=0}^{15} 2^w \cdot x$$

unsigned-to-signed.c

$$UMax \rightarrow 4294967295_u$$

1111...

32 bits

1) unsigned $u = 4294967295_u$

2) $\text{int } tu = \text{int}(u)$

1) $\sum_{x=0}^{31} 2^x = UMax$

2) $-2^{31} + \sum_{x=0}^{30} 2^x = -1$

$$\begin{array}{r} 222 \\ 1 \\ \hline \end{array}$$

A. $\overset{-8}{1}\overset{4}{1}\overset{2}{0}\overset{1}{0} \rightarrow (-4)_{10}$

B. $\overset{-16}{1}\overset{8}{1}\overset{4}{1}\overset{2}{0}\overset{1}{0} \rightarrow -16 + 8 + 4 = (-4)_{10}$

D. $\overset{-32}{1}\overset{16}{1}\overset{8}{1}\overset{4}{1}\overset{2}{0}\overset{1}{0} \rightarrow -32 + 16 + 8 + 4 = -4$

2,23

$$0x00000076 \ll 24 \rightarrow$$

$$\rightarrow 0x76000000 \gg 24$$

$$(7)_{10} \rightarrow (0111)_2 \quad \uparrow \text{ starts with 0111}$$

$$0x76000000 \gg 24 \rightarrow 0x00000076$$