signed-to-unsigned.c

$(-12345)_{10}$ → 1100111111000111 → signed

$-2^{15} + \dots + 1 = -12345$

unsigned value

1100111111000111 bit pattern is the same

$2^{15} + \dots + 1 \rightarrow 53191$

unsigned-to-signed.c

UMax → $(4,294,967,295)_{10}$ → $(\underbrace{111\dots1}_{32\text{ bits}})_2$

1) u = UMax

2) int tu = (int) u;

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

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

2,22

A. $(1100)_2$ (8 4 2 1) → $-8+4 = -4$

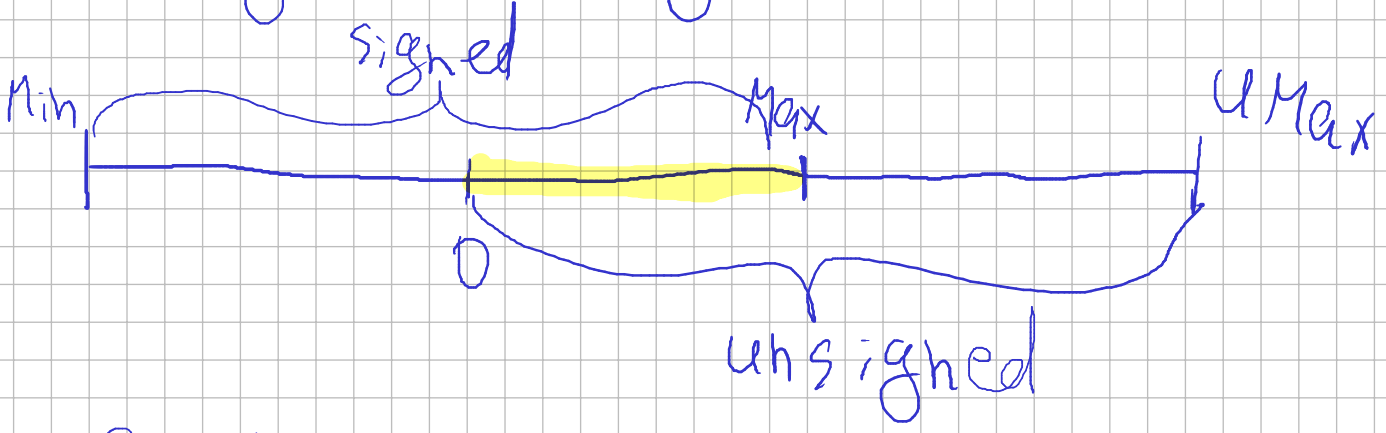
B. $(11100)_2$ (16 8 4) → $-16+8+4 = -4$

C. $(111100)_2$ (−32 16 8 4) → $-32+16+8+4 = -4$

sign-extension.c

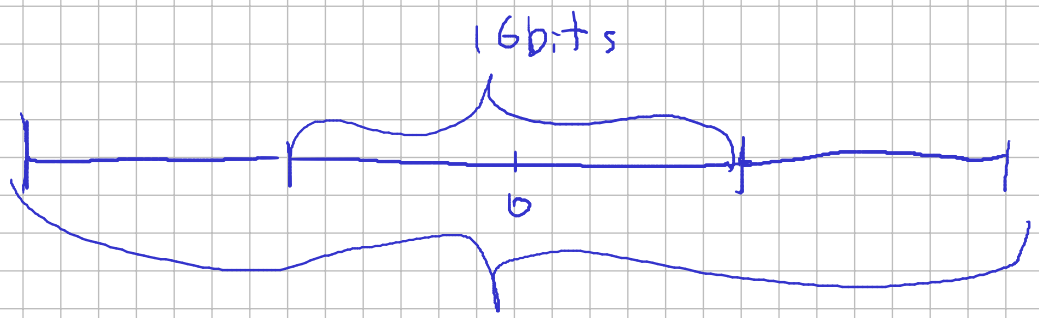
unsigned → signed

32bit → 32bit



short int → int

16 bits → 32 bits



2,23	fun1	fun2
A. 0x00000076	0x00000076	0x00000076
0x00000076 << 24 →		
→ 0x76000000		
B. 0x87654321		

c. 0x000000C9

<<24 → C9000000

>>24 → 000000C9

fun2 (Signed)

<<24 → C9000000 (int)

arithmetic

>>24 → FFFFFFC9

fun1

0x000000C9

fun2

0x FFFFFFC9

0xEDCBA987

<<24 → 87000000

>>24 → 00000087

fun2 1000

<<24 → 87000000

>>24 → FFFFFF87

0x 00000087

0x FFFFFF87

2.12

int a = 5; int *p = &a;