Class 02

Thursday, February 24, 2022 8:47 PM

```
int c = 0;
c++;
```

c = 0

c = 1

32 bit signed integer

↓

4 bit

0010 → 1101 (1's) → 1110 (2's)

1

1110

%	%	%	%

$2^{32} \approx 400$ (कोटि)

400×10^7

4×10^9

4 billion

$[0 \sim 15] \rightarrow 2^4 \rightarrow 2$ #bits

$[-8, +7] \rightarrow 8$ negative, 8 non-negative

$[-2^3, +2^3 - 1] \rightarrow [0 \sim (2^b - 1)]$

0 — 1 bit

1

0	0 0 0	→ 0		
0	0 0 1	→ 1		
0	0 1 0	→ 2	non	
0	0 1 1	→ 3	-neg	
0	1 0 0	→ 4		
0	1 0 1	→ 5		
0	1 1 0	→ 6		
0	1 1 1	→ 7		
1	0 0 0	→ -8		
1	0 0 1	→ -7		
1	0 1 0	→ -6		
1	0 1 1	→ -5	neg	
1	1 0 0	→ -4		
1	1 0 1	→ -3		
1	1 1 0	→ -2		
1	1 1 1	→ -1		

$[-2^{31}, +2^{31} - 1]$

$-1, -2, \ldots, -2^{31}$

$0, 1, \ldots, (2^{31} - 1)$

0001 → (1's C) 1110 → (2's C) 1111 → -1

$2^{32}/2 \rightarrow 2^{31}$

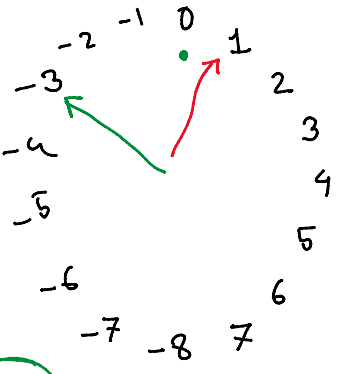
$2^b/2 \rightarrow 2^{b-1}$

$[-2^{63}, 2^{63} - 1] \approx 10^{19}$

-2^3 → 4 bit

-2^{31} → 32 bit

4 bit



13 mod 16 = 13

13 − 16 = −3

33000 mod 65536

→ 33000 − 65536

0 → 0	9 → −7
1 → 1	10 → −6
2 → 2	11 → −5
⋮	12 → −4
7 → 7	13 → −3
8 → −8	14 → −2
	15 → −1
	16 → 0

$$\frac{2.64}{64} = 2$$

vec

sz = 1

① arr[1] = 1 → new array

② arr[0] = 1

arr[1] = 2

→ new array

④ arr[0] = 1

arr[1] = 2

arr[2] = 3

arr[3] = 4

→ new array

⑧ arr[0] = 1

[1] = 2

[2] = 3

[3] = 4

[4] = 5

[5] =

[6] =

[7] =

$2+4+8+16+32+\boxed{64} \approx 64+64 \simeq 2.64$

$62 \simeq 64$