Session A 05
Monday, 15 September 2025 10:05 AM

Revision →
- Storage classes
- Memory layout.

Bitwise :- Operator : Are Used to Perform Operations @ Bit level.

- & → Bitwise And
- | — Bitwise OR
- ^ — Bitwise XOR
- ~ — Bitwise Not
- << → Left Shift
- >> → Right Shift

Bitwise AND (&) :- [int : 2 Byte]

int x = 20; ✓

Number System

- Decimal → 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 — (Base - 10) radix - 10
- Octal → 0, 1, 2, 3, 4, 5, 6, 7 — Base - 8 / radix = 8
- Hexa → 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F → Base = 16
- Binary → 0, 1 (Base - 2)

0, 1, 2, 3 (Base = 4)

If we add One in maximum digit in Any Number System

$$9 + 1 = 10$$

Decimal	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001

0 1 1 1

$$0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$$
$$4 + 2 + 1 = 7$$

$$(44)_{10} \to (\,?\,)_2$$

Divisor	Value	Remainder
2	44	0
2	22	0
2	11	1
2	5	1
2	2	0
2	1	1
	0	

$$(44)_{10} \Downarrow (101100)_2$$

$$(543)_{10} \to (\,?\,)_2$$

Divisor	Value	Remainder
2	543	1
2	271	1
2	135	1
2	67	1
2	33	1
2	16	0
2	8	0
2	4	0
2	2	0
	1	

$$(1000011111)_2$$

Let Assume int takes 8 bit to store a Value.

00000000

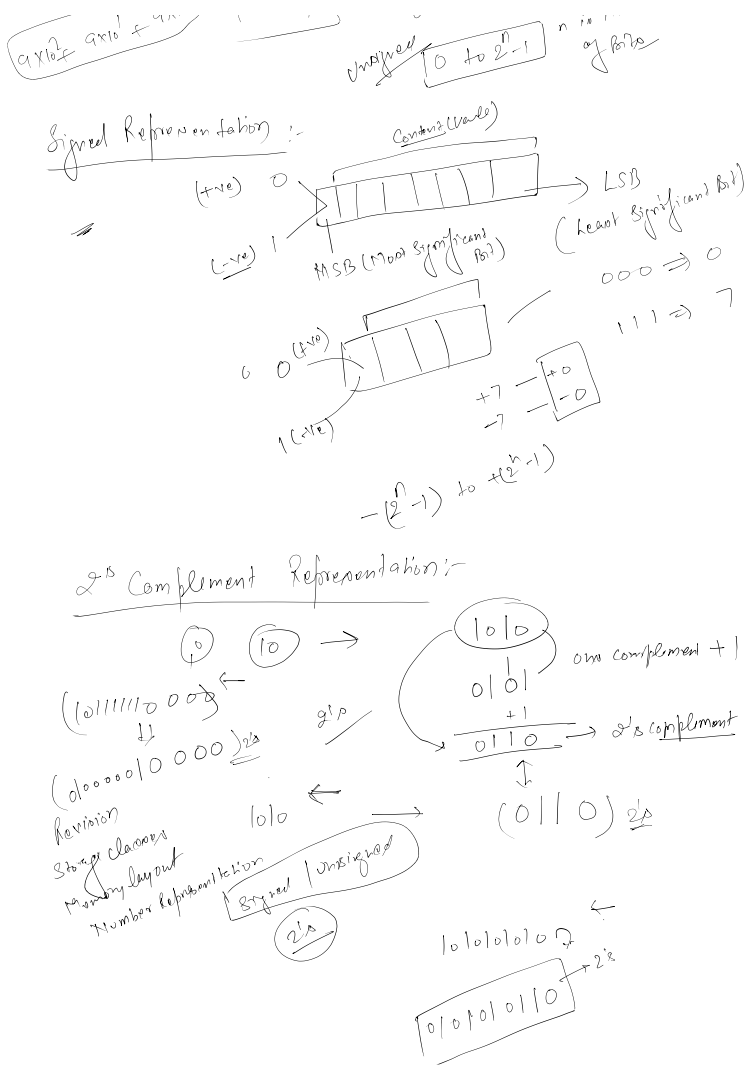
$(11111111)_2$

0 to 255

0 to $2^{8} - 1$ (8 → Number of Bits)

0999 ← $10^{3} - 1$

Number


Unsigned
0 to 2^n-1
Signed Representation :-
Context (Value)
(+ve) 0
(-ve) 1
LSB
MSB (Most Significant Bit)
(Least Significant Bit)
000 ⇒ 0
111 ⇒ 7
+0
-0
+7
-7
$-(2^n-1)$ to $+(2^n-1)$
2's Complement Representation :-
1010
one complement + 1
0101
+1
0110
2's complement
(0110) 2's
1010
Signed / unsigned
2's
Revision
Storage classes
memory layout
Number Representation
1010101010
0101010110
2's