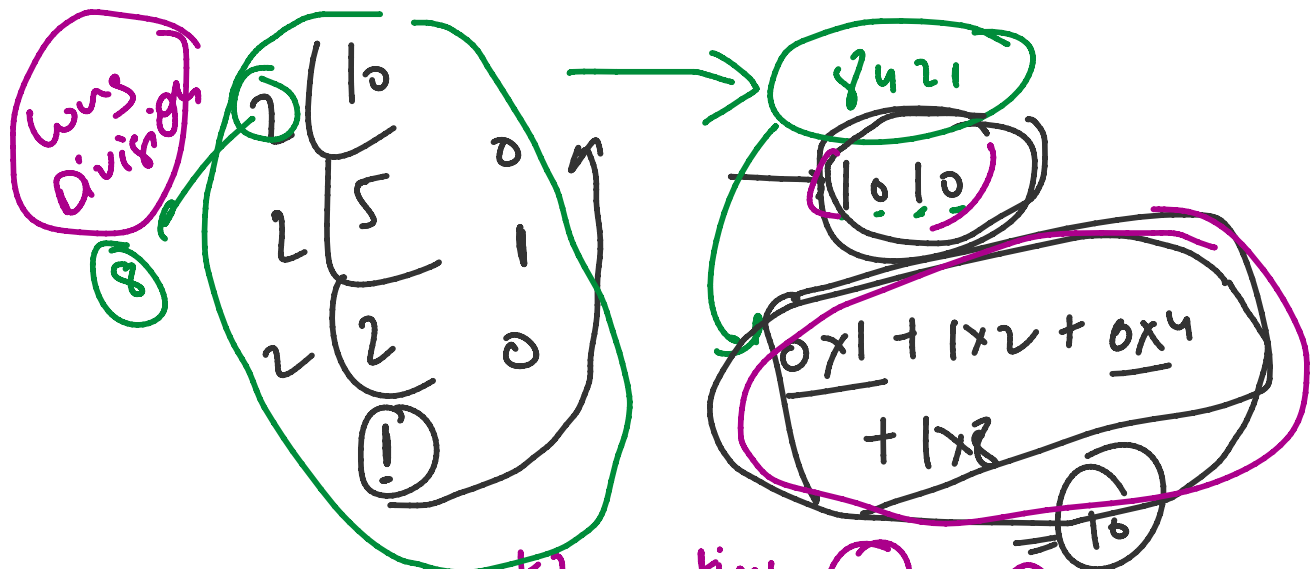


Conversion Any to Any

28 June 2023 19:37

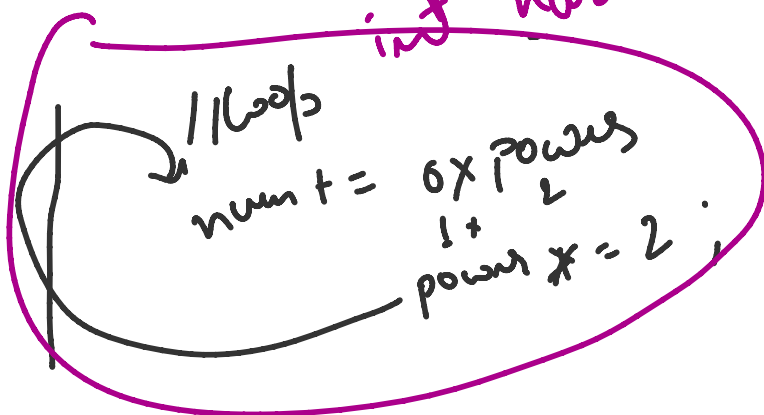
10 \rightarrow Binary



inc power of 2 starting from 2 \rightarrow 1.

$$s = [\begin{matrix} 7 & 2 & 1 & 0 \\ 1 & 0 & 1 & 0 \\ 8 & 4 & 2 & 1 \end{matrix}] = (\text{Dec})!$$

int power = 22 x 8
int num = 0.



$$0 + 2 + 0 + 1 \times 8 = 10$$

(Octal) \rightarrow (Decimal)

[0, 1, 2, 3, 4, 5, 6, 7]

0 \rightarrow 0

(0, 1, 2, 3, 4, 5, 6, 7)

In Binary (0, 1)

power = $2^0 \rightarrow \dots$

power = $8^0 \rightarrow \dots$

$$\begin{matrix} 0 & \rightarrow & 0 \\ 1 & \rightarrow & 1 \\ 2 & \rightarrow & 10 \end{matrix}$$

$(10)_{10} \rightarrow (?)_{10}$

$8^0, 8^1, 8^2, 8^3$

start bit

$$\begin{matrix} 1 & 0 \\ 8^1 & 8^0 \end{matrix}$$

$$0 \times 8^0 + 1 \times 8^1 = 8$$

$(10A)_{16} \rightarrow ()_{10}$

0, 1, ..., 9, A, B, C, D, E, F $\rightarrow 16$

power $\rightarrow 16^0, 16^1, 16^2$

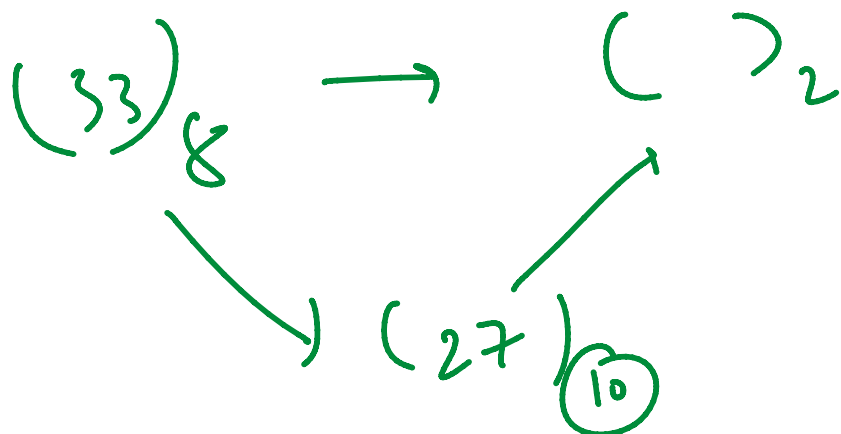
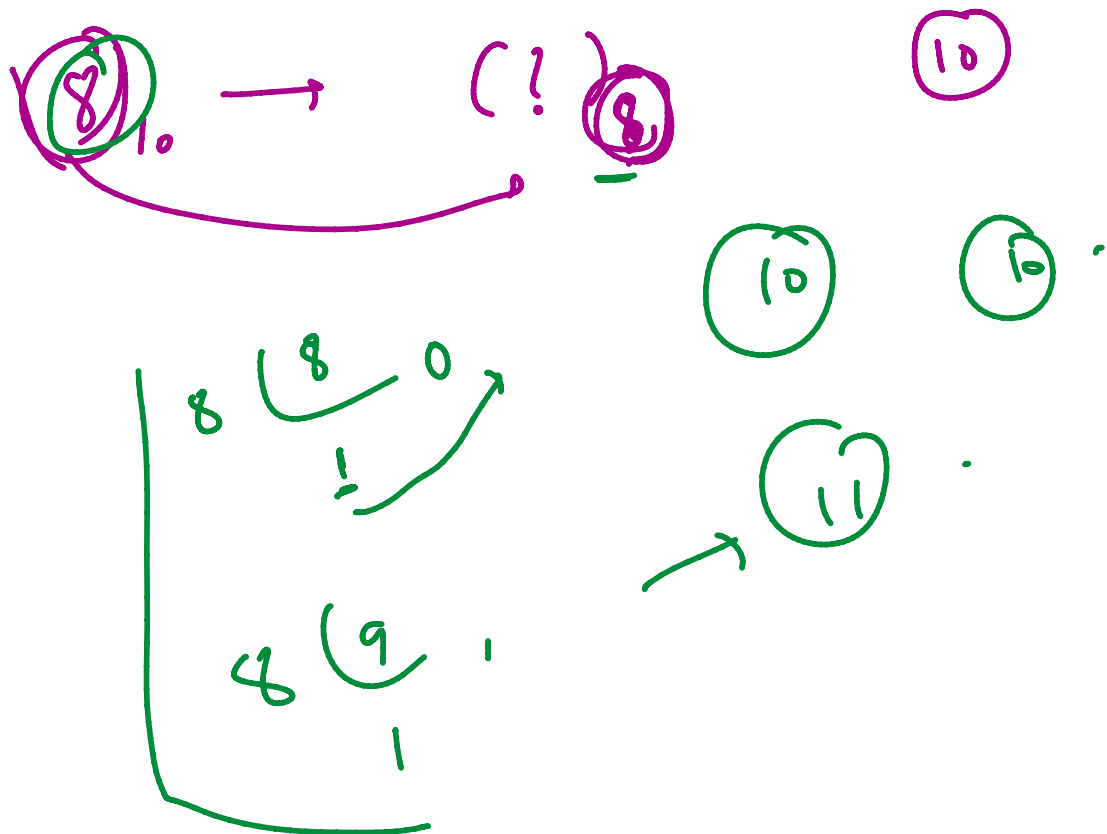
$$\begin{matrix} 2 & 1 & 0 \\ 1 & 0 & A \\ 16^2 & 16^1 & 16^0 \end{matrix}$$

$$A \times 16^0 = 10 \times 1 + 0 \times 16^1 + 16^2 \times 1$$

$$10 + 256 = 266$$

$$1A_{16} = 10 + 256 = 266$$

$$(10A)_{16} = (266)_{10}$$



$(1/2)$

$...$

$$\begin{pmatrix} 3 \\ 8 \end{pmatrix}_8 = 3 \times 8^1 + 3 \times 8^0 \\ = 3 + 24 = \boxed{27}$$

$$27 \quad \frac{1}{16} \quad \frac{1}{8} \quad \frac{0}{4} \quad \frac{1}{2} \quad \frac{1}{1}$$

$$\left(\begin{pmatrix} 3 \\ 3 \end{pmatrix} \right)_8 \rightarrow (!)_{10}$$

$$\text{power} = 1 \rightarrow$$

$$\begin{array}{r} 2 \overline{) 27} \\ 2 \overline{) 13} \\ 2 \overline{) 6} \\ 2 \overline{) 3} \\ \quad \quad \quad \overline{) 1} \end{array} \quad \begin{array}{c} 1 \\ 1 \\ 0 \\ 1 \end{array}$$

$$\underline{\underline{11011}}_2$$

$$\text{ans} = \underline{\underline{11}}$$

①

num = 27
div: 2, 13 = 3

ans = 9
1001
long
long

while (num)

ans += num * 2
ans *= 10;
num /= 2;

ans /= 10

27 → 8

$0 \leq sb, db \leq 16$