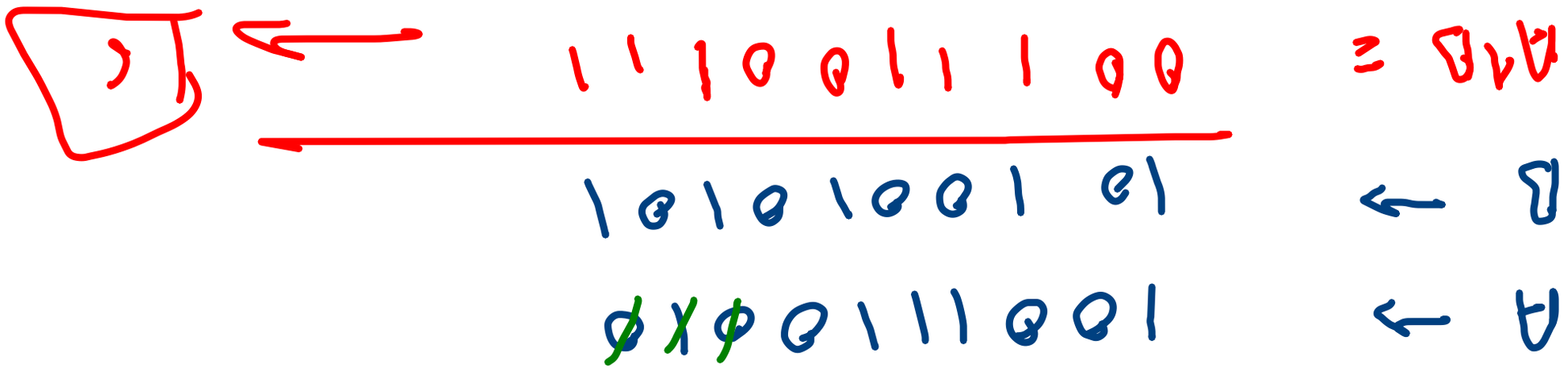


Right 12 . . . . . left 4 3 2 1

A → 1 0 0 1 1 0 1 0 0 0 0 1 0 1 0 1 0 1

B → 1 0 0 0 1 1 0 1 0 0 0 1 0 0 0 1 1 1

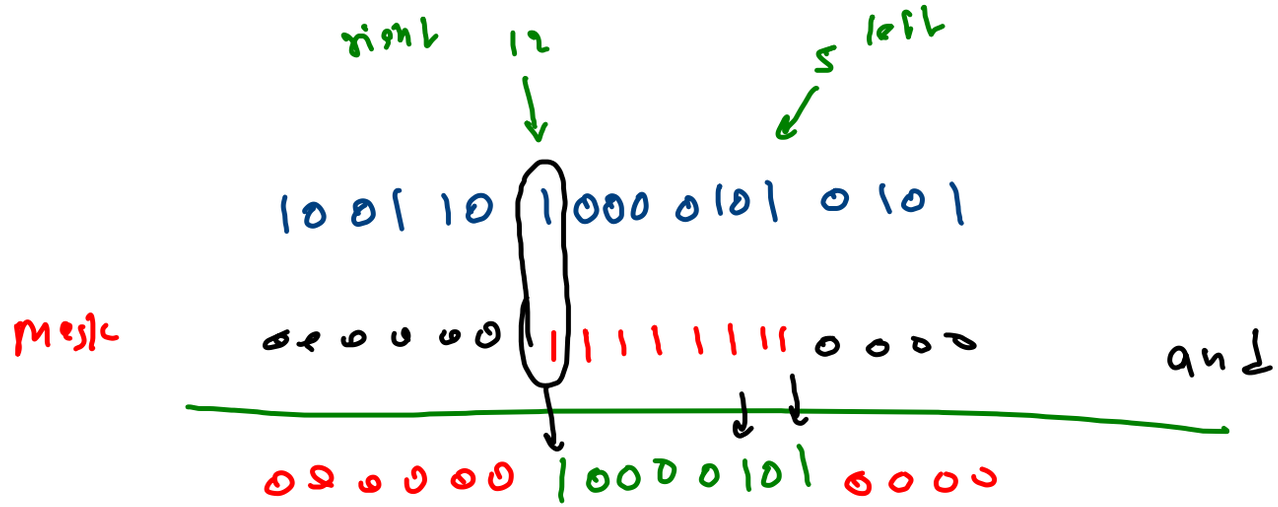
1 0 0 0 1 1 1 1 0 0 0 1 0 1 0 1 1 1

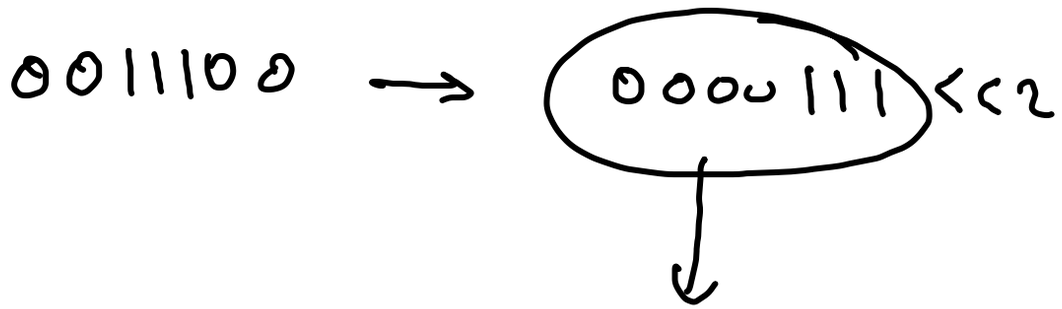
B set →

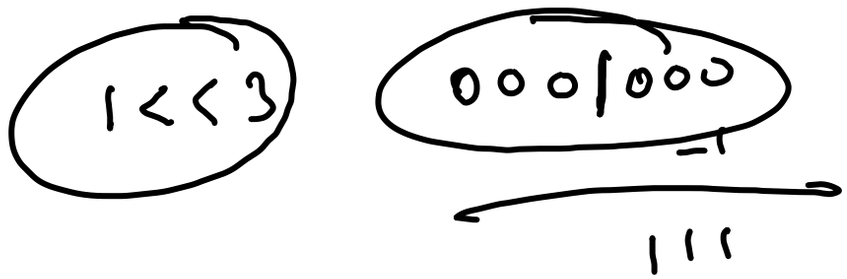
B → 1 0 0 0 1 1 0 1 0 0 0 1 0 0 0 1 1 1

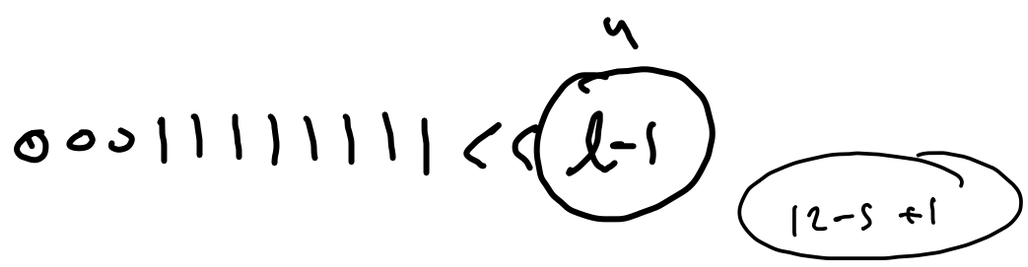
Mask → 08 0 0 0 0 0 0 1 0 0 0 0 1 0 1 0 0 0 0

1 0 0 0 1 1 1 1 0 0 0 1 0 1 0 1 1 1









mask = 1<<(R-L+1); 000|0000

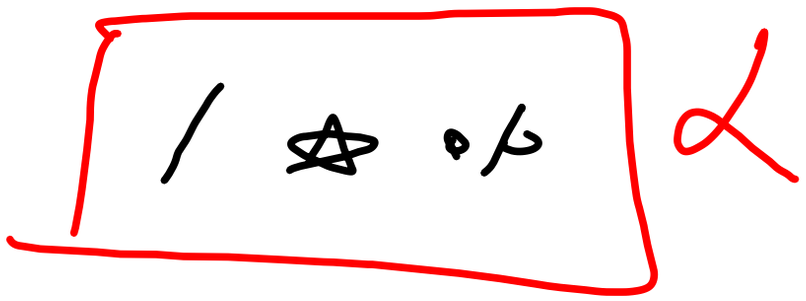
mask = mask-1; 0011111

mask = mask<<(Left-1); 0011110000

mask & mask

ans = b | mask;

n



$n << 1 = 2n$

$n << 2 = 2 \times 2 \times n$

$n << 3 = \underbrace{\boxed{2 \times 2 \times 2}}_{8n} \times n$

$$\frac{7n}{8} = \frac{8n - n}{8} \qquad \frac{(n << 3) - n}{8}$$

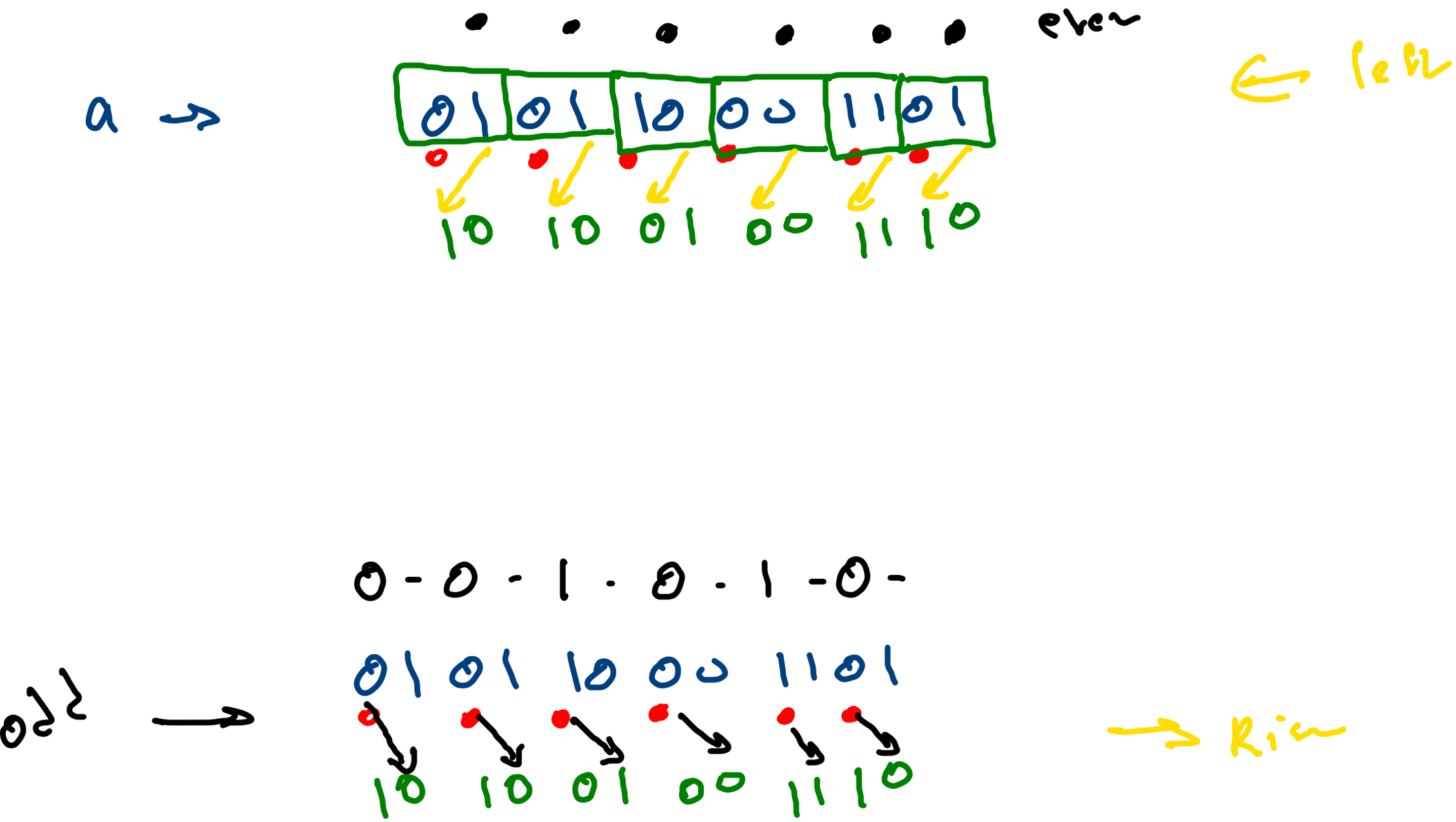
$$\frac{7n}{8} = \frac{8n - n}{8} = \left((n << 3) - n \right) >> 3$$

$\underbrace{101000}_{40} >> 3$

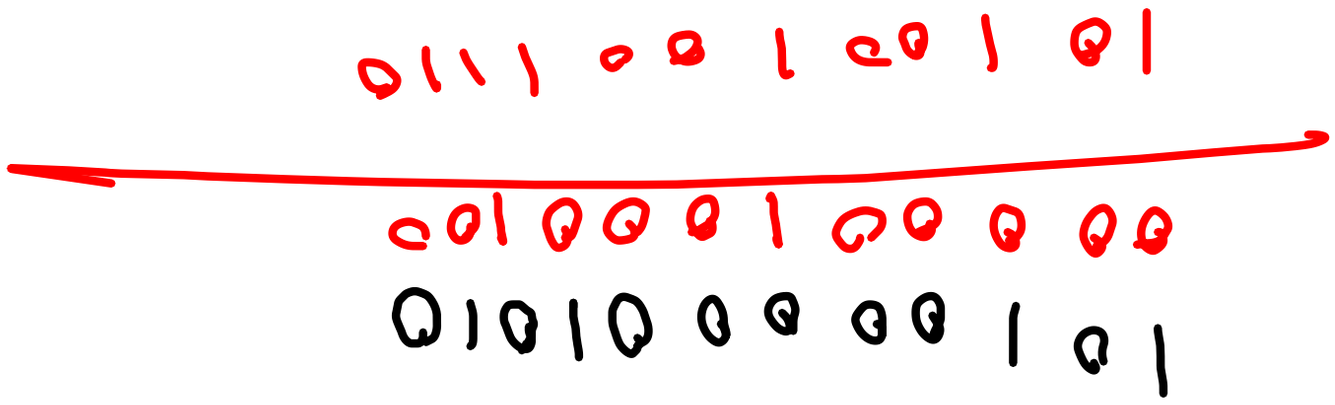
$\underbrace{101}_{5}$

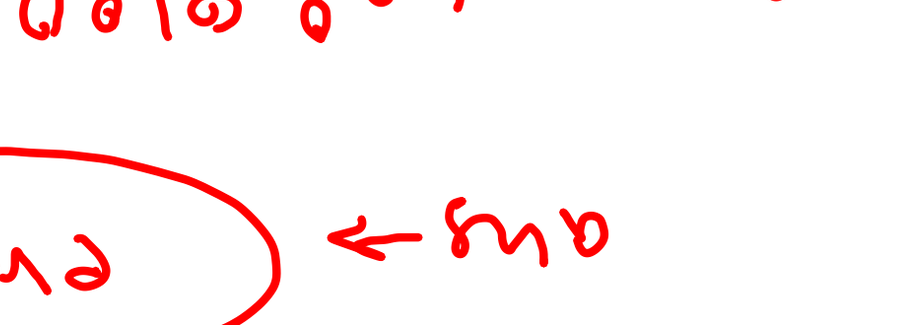
$48/8 = 6$

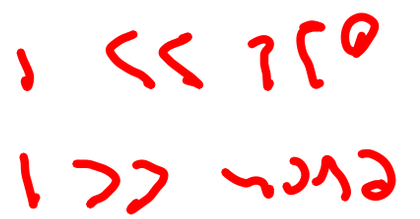
$49/8 = 6 \cdot \cdots\cdots$

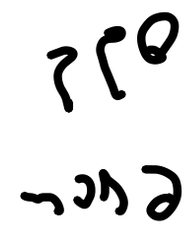


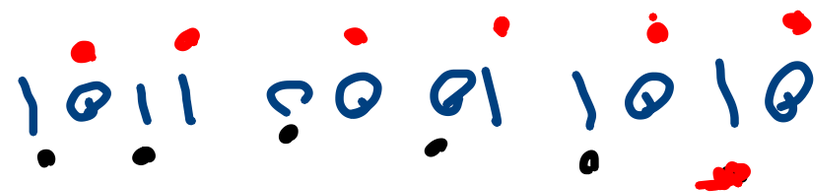
even
a →
01 01 10 00 11 01
10 10 01 00 11 10
← left
0 - 0 - 1 - 0 - 1 - 0 -
odd →
01 01 10 00 11 01
10 10 01 00 11 10
→ Rise











bin 0, 1

octal 0 - - - 7

- - -

0 1 0 1 1 0 0 0 1 1 0 1

mask S 1 0 1 0 1 0 1 0 1 0 1 0

odd 0 0 0 0 1 0 0 0 1 0 0 0

oddmask = 0xAAAAAAAA 1010

evenmask = 0x5555 5555 0101

odds = val & oddmask

evens = val & evenmask

even = even << 1

odd = odd >> 1

even | odd

hexa^ — — — —

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

0101

A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

0xAAAAAAAA

1010 1010 1010 - - -

1 a 0 0 1

2 b 0 1 0

3 c 0 1 1

8

$O(n^2)$

3 2 1 0

ab 0 0 1 / 0 1 0 → 2

ba 0 1 0 / 0 0 1 → 2

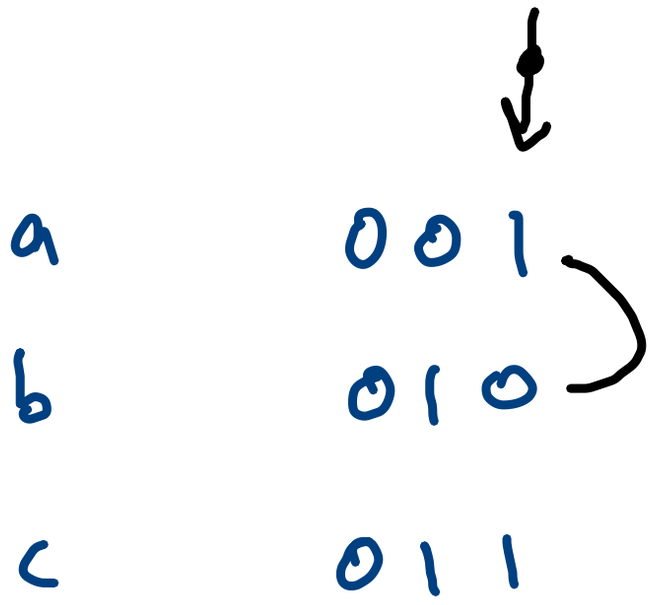
ca 0 1 1 / 0 0 1 → 1

ac 0 0 1 / 0 1 1 → 1

bc 0 1 0 / 0 1 1 → 1

cb 0 1 1 / 0 1 0 → 1

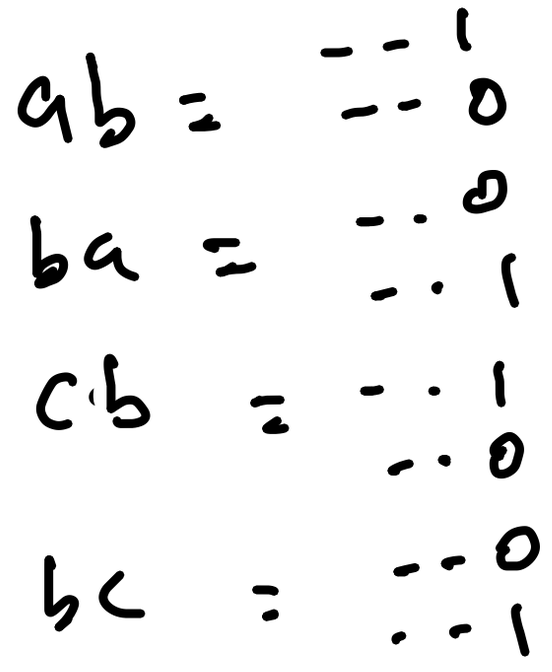
0 4 4



bit

zero → 1

one → 2



ab

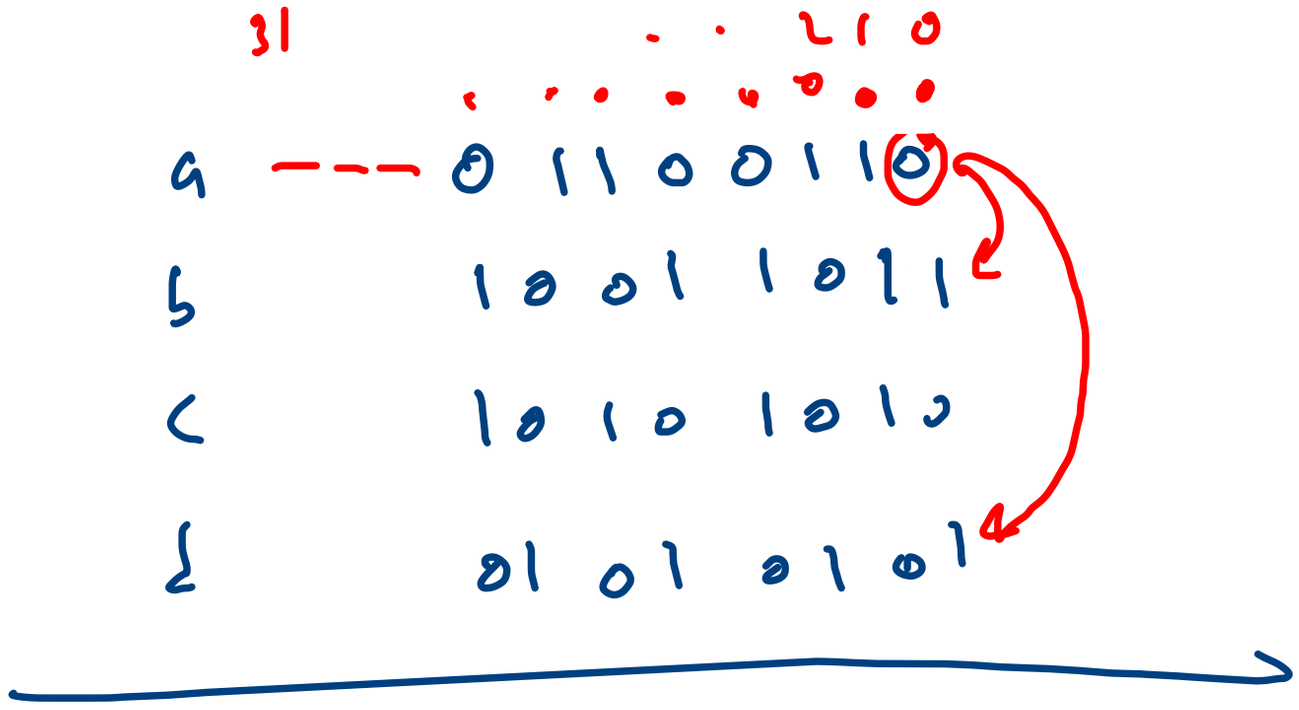
ba

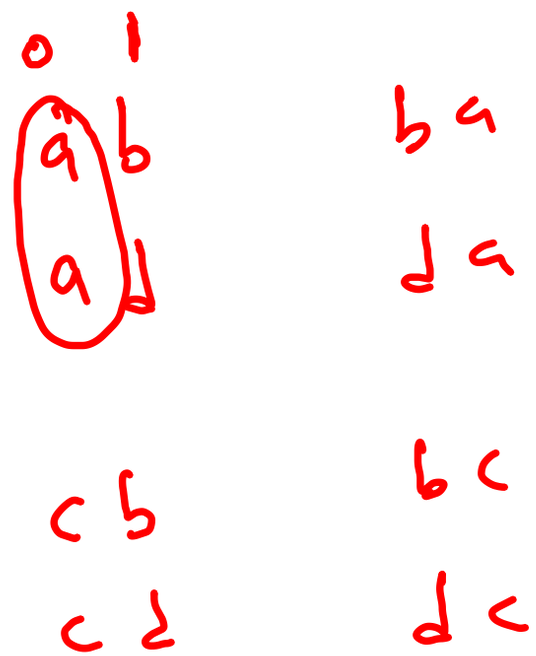
zero one

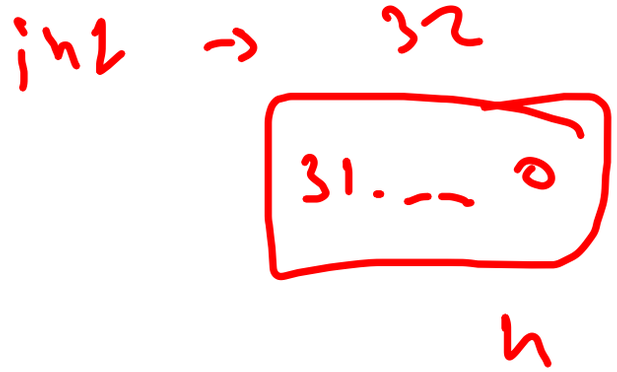
1 2 = 2

one zero

2 1 = 2







str = "10011001111" → true

binary string

"11011001111" → false

value 32 16 8 4 2 1

rem 2 1 2 1 2 1

1 + 2 = 3
0 + 0

3 = a + b

4 + 2 = 6

4 + 8 = 12

ints 64

10,000

$2^{10,000}$

10^{18}

3 → 0 1 1

2 1

6 → 8 4 2 1

1 1 0

1 2

1 0 0 1 1 1 0 0

1 1 1 1

9 → 8 4 2 1

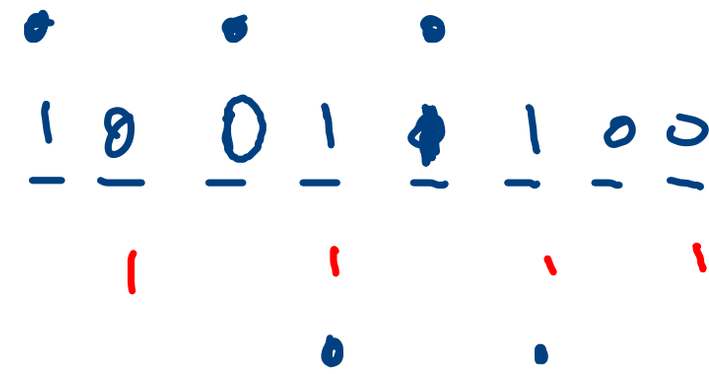
1 0 0 1

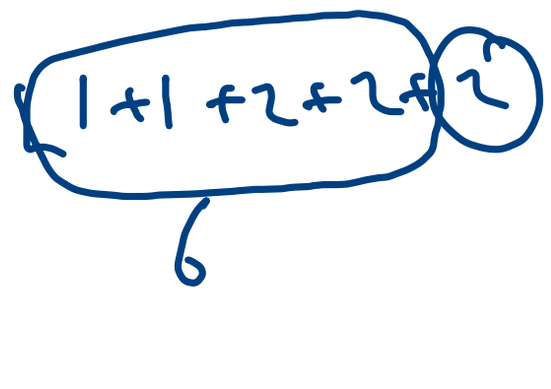
2 1

12 → 8 4 2 1

1 1 0 0

2 1





1+1+2+2+2

6

rem 2 — n

rem 1 → n

1 0 1 0 1 0 1 1

1 1 1 1

4 x 2 = 8

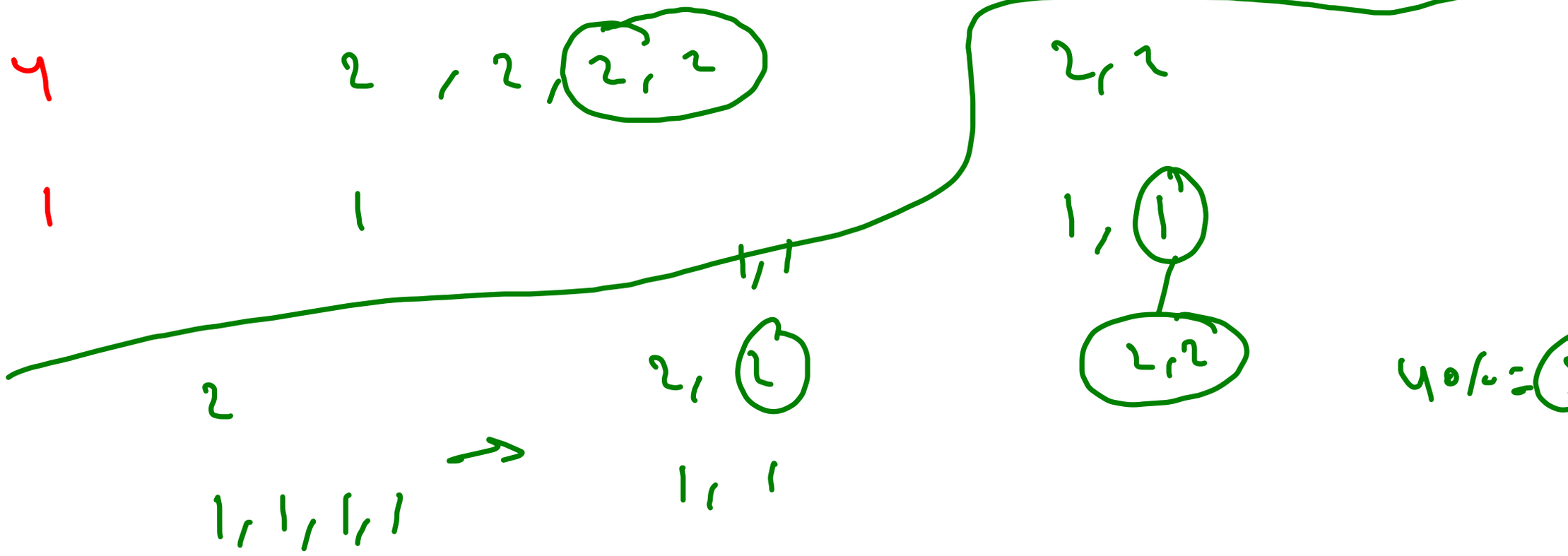
1 x 1 = 1

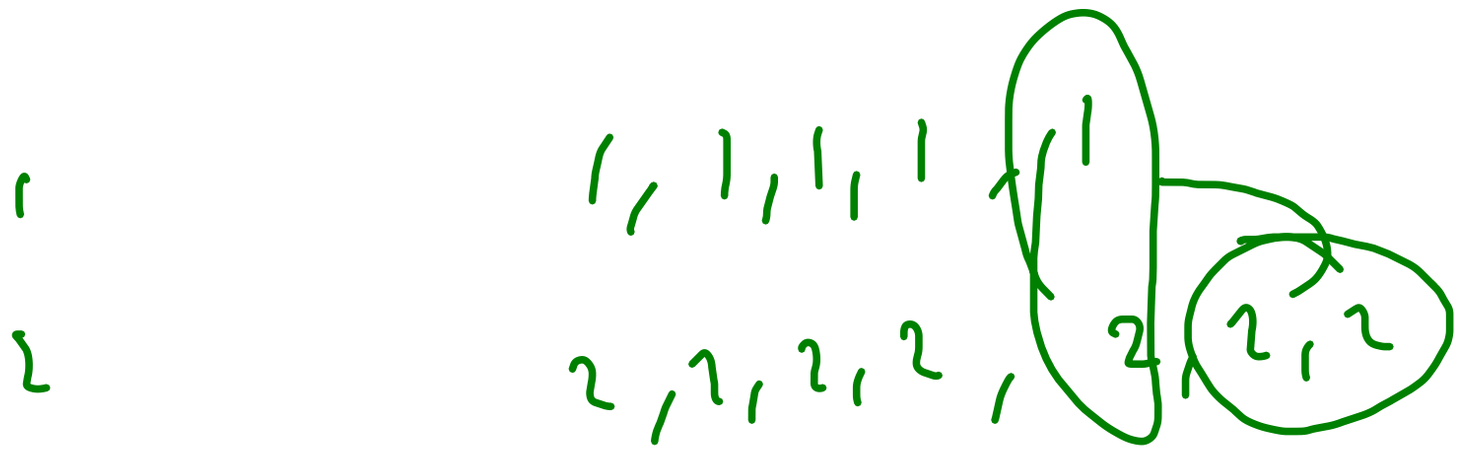
9

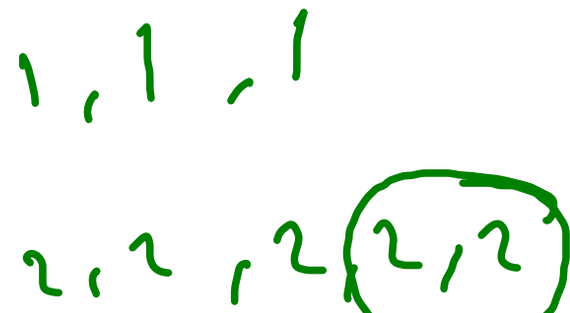
ym

2 → 4

1 → 1







8 8 8 8

h = 17

0...17

8

0	0 0 0 0 0
1	0 0 0 0 1
2	0 0 0 1 0
3	0 0 0 1 1
4	0 0 1 0 0
5	0 0 1 0 1
6	0 0 1 1 0
7	0 0 1 1 1
8	0 1 0 0 0
9	0 1 0 0 1

$2^3 \rightarrow$ 8

10	0 1 0 1 0
11	0 1 0 1 1
12	0 1 1 0 0
13	0 1 1 0 1
14	0 1 1 1 0
15	0 1 1 1 1

$2^4 = 16$

17

18

h = 19

0	0 0 0 0
1	0 0 0 1
2	0 0 1 0
3	0 0 1 1

16

$2^4 = 4 \times 2^{4-1}$

$h - 2^4 + 1$

$2^n = n \times 2^{n-1}$

$h - 2^n + 1$

fail if $(h - 2^n)$

$h - 2^n + 1$

$19 - 16 + 1$