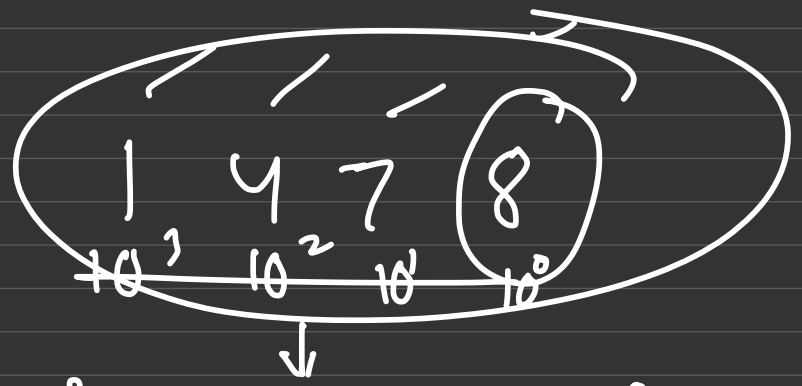
10 171

9

8



$1\times10^3 + 4\times10^2 + 7\times10^1 + 8\times10^0$

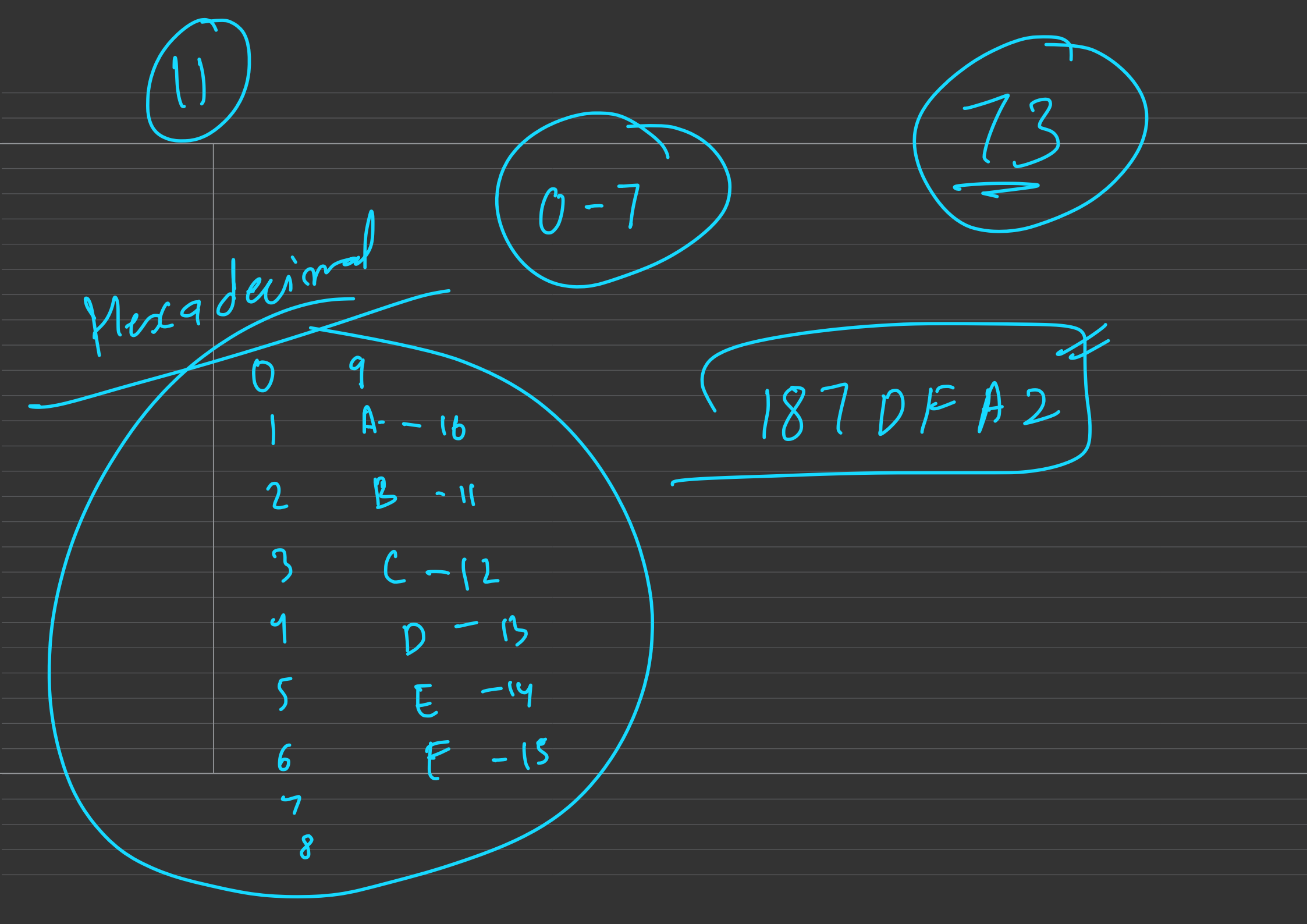
1478

$$10011001$$

$2^1 \; 2^0$

$$+ 1\times2^7 + 1\times2^5 + 0\times2^2 + 0\times2^1 + 1\times2^0$$

$$1\times2^7 + 0\times2^6 + 0\times2^5$$


11
0 - 7
73
Hexadecimal
0 9
1 A - 16
2 B - 11
3 C - 12
4 D - 13
5 E - 14
6 F - 15
7
8
187DFA2

Conversion

Hexa decimal to decimal.

$134_{16} \longrightarrow ?$

↓

$1 \times 16^2 + 3 \times 16^1 + 4 \times 16^0$ $\qquad$ 308

Octal

472_8 ⟶ decimal !

$4 \times 8^2 + 7 \times 8^1 + 2 \times 8^0$

314

Binary

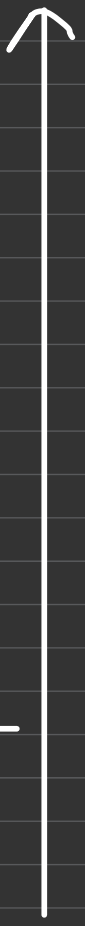
$101101 \longrightarrow$ decimal

$+ 1\times2^3 + 1\times2^2 + 0\times2^1 + 1\times2^0$

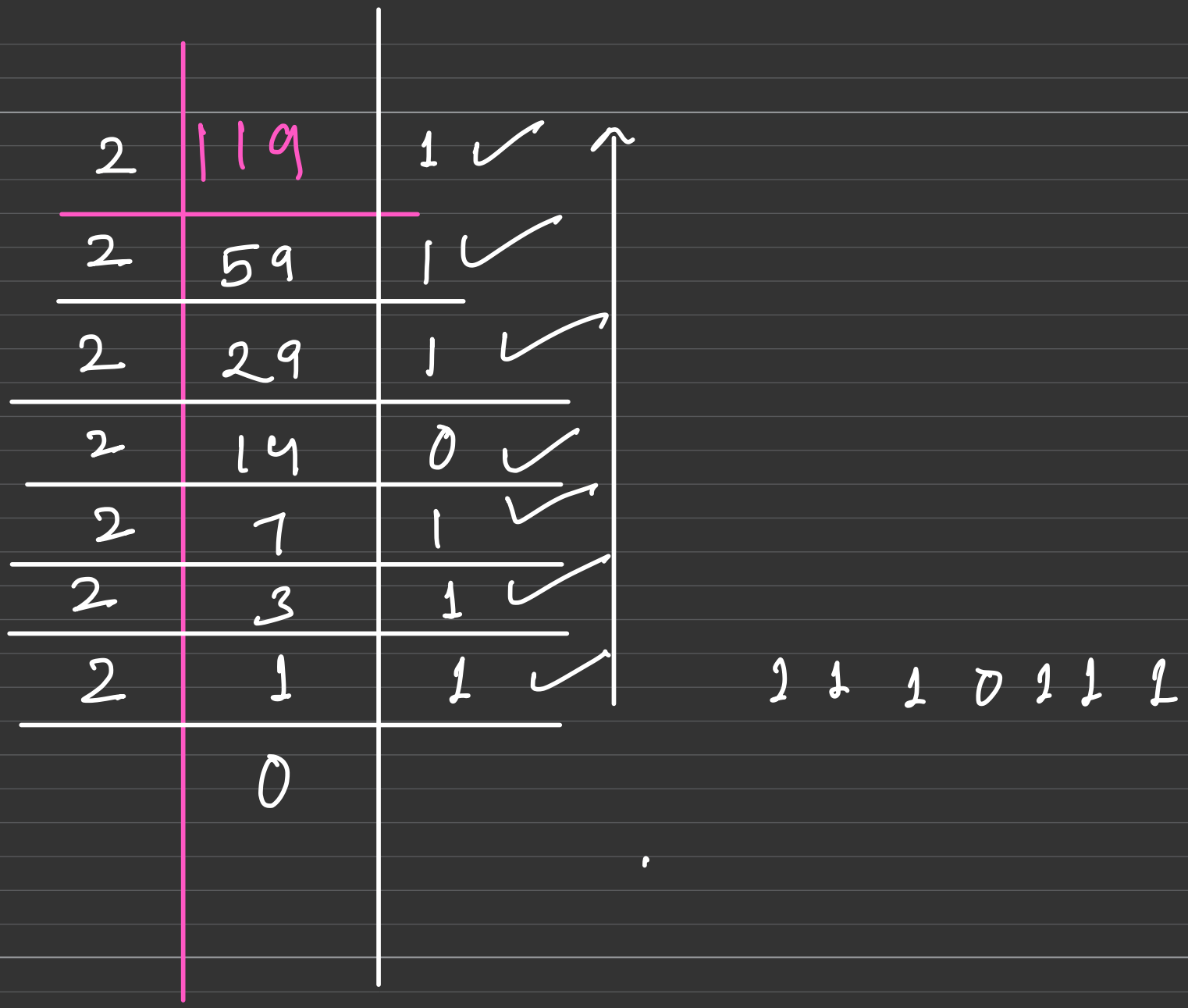
$1\times2^5 + 0\times2^4$

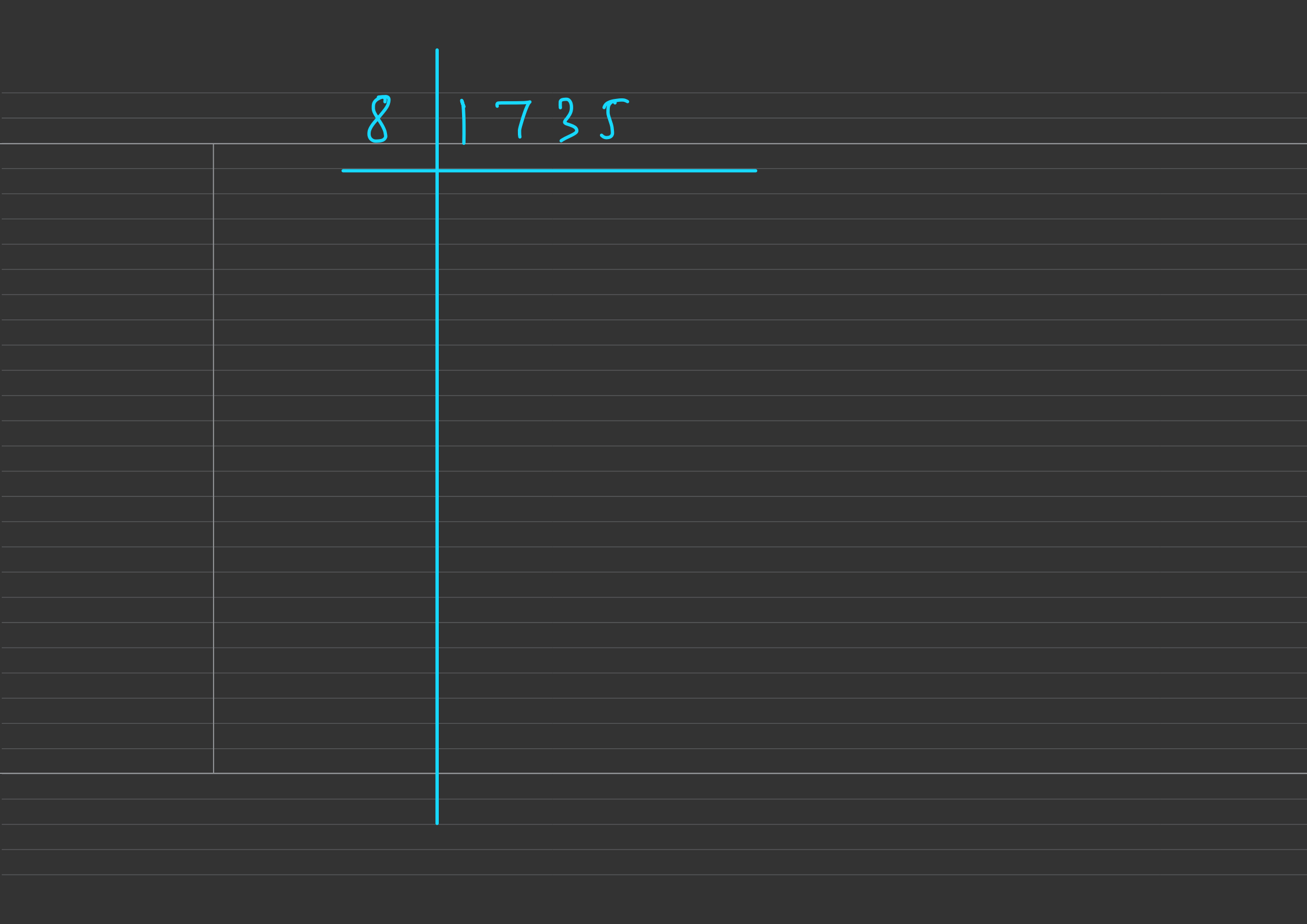
$2 \times 18 + 1$

2	37	1 ✓
2	18	0 ✓
2	9	1 ✓
2	4	0 ✓
2	2	0 ✓
2	1	1 ✓
	0	

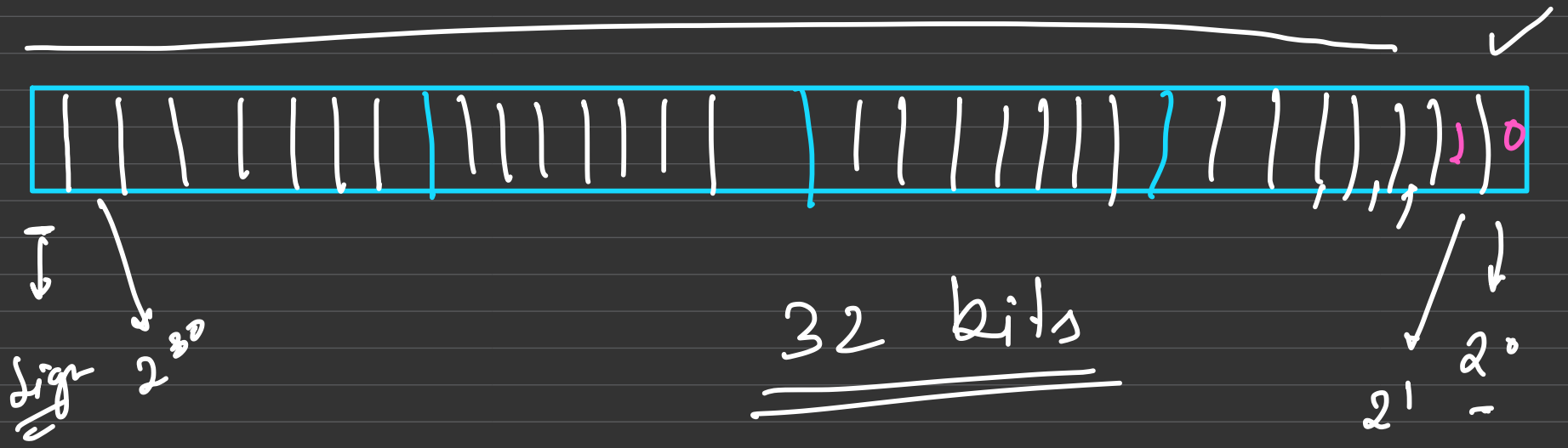


100101


2 | 119 | 1
2 | 59 | 1
2 | 29 | 1
2 | 14 | 0
2 | 7 | 1
2 | 3 | 1
2 | 1 | 1
0
1 1 1 0 1 1 1


8
1735

int a = 2



OR

AND

XOR

OR

a	b	
1	1	→ 1
0	1	→ 1
1	0	→ 1
0	0	→ 0

AND

a	b	
1	1	→ 1
0	1	→ 0
1	0	→ 0
0	0	→ 0

XOR

a	b	
1	1	→ 0
0	1	→ 1
1	0	→ 1
0	0	→ 0

XOR ^

5 → ... 0 0 1 0 1

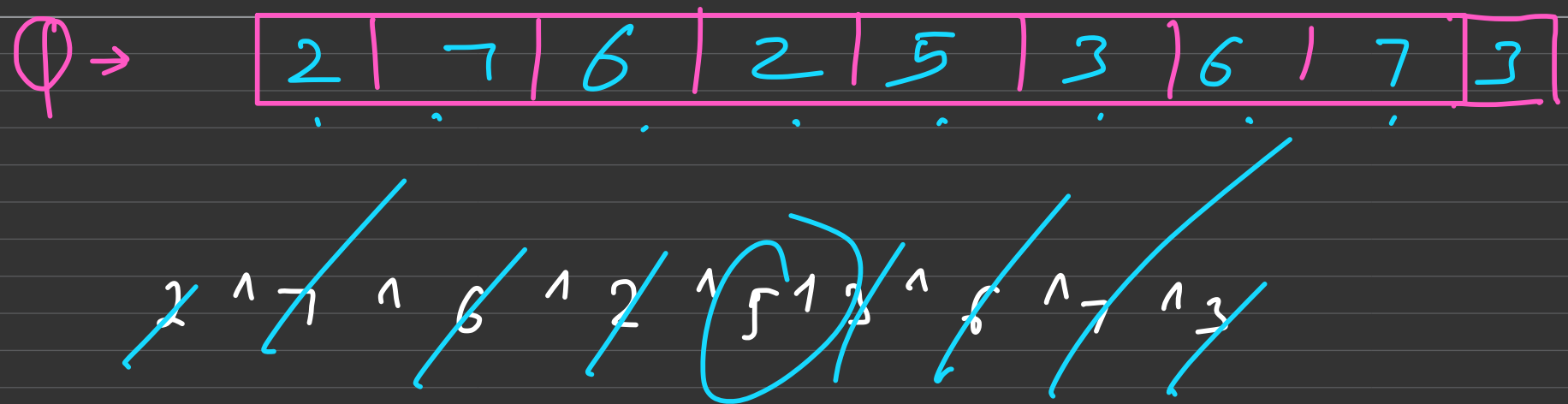
7 → ... 0 0 1 1 1

↓

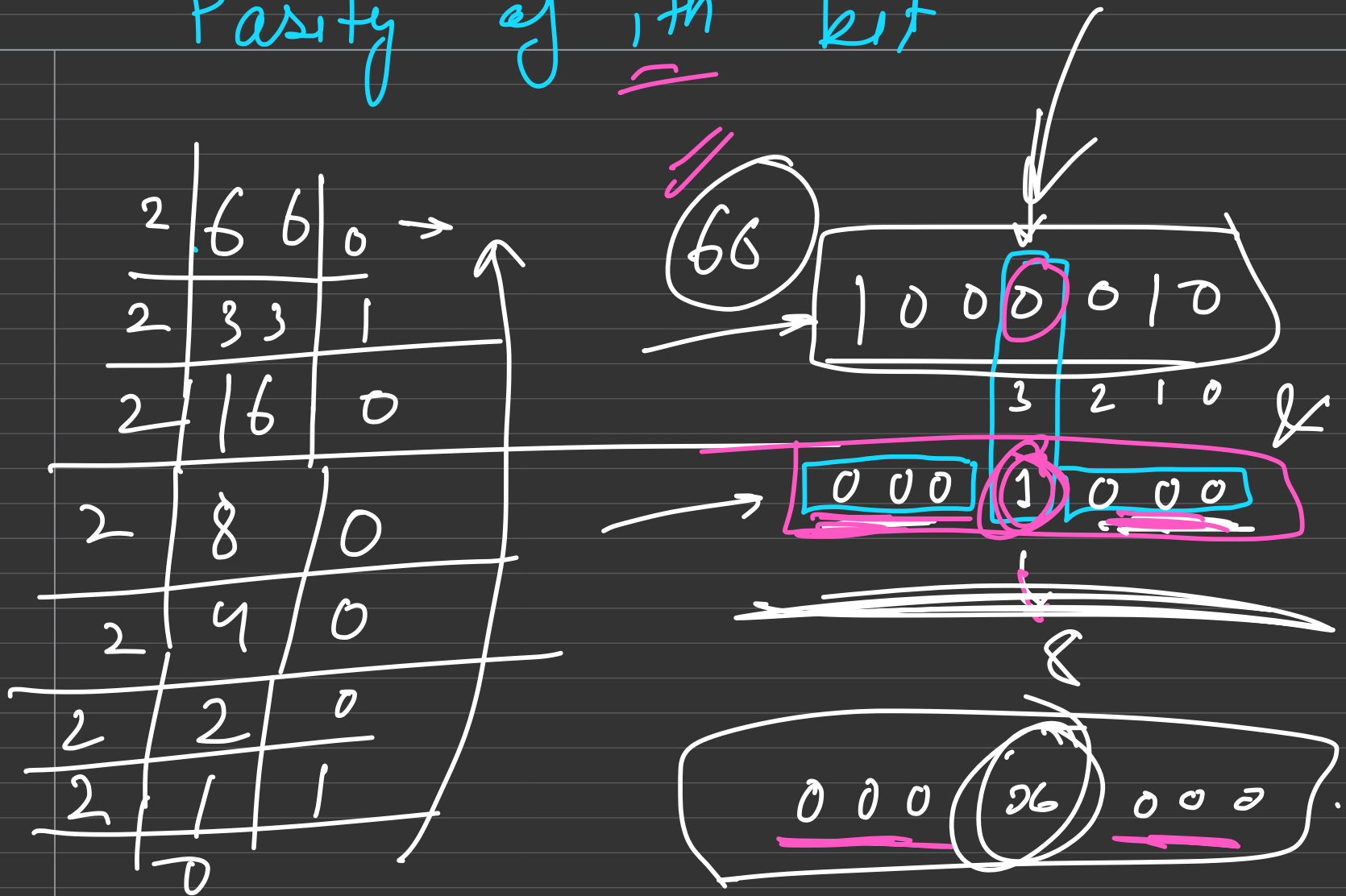
... 0 0 0 1 0

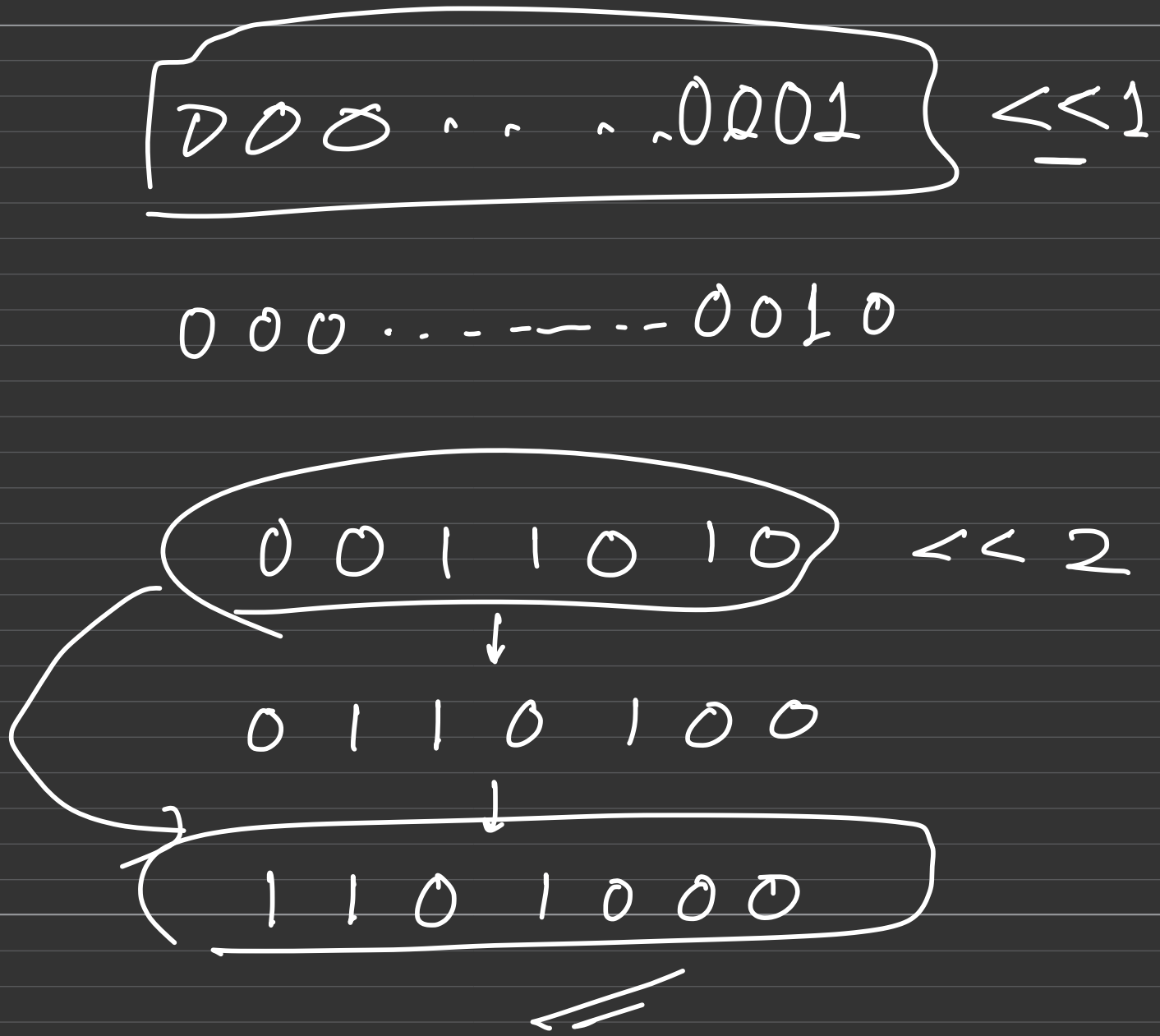
2

8 ^ 8 = ?


2 7 6 2 5 3 6 1 7 3

Pasity of ith bit




000...0001
<<1
000.....0010
00110110
<<2
01101100
11010000

3

011 << 1

110 ? 2^1

00101 << 2

5 $\times 2^2$

10100 20

$x << 3$

$x * 2^3$

$00001 << i$

1 << 3

--- 0000000001 << 3

--- 0000001000

↳ x 1011 4+n 0100

if (x & (1 << n) == 0)

else (

)

$a = 5$

$b = 7$

$a = a \wedge b$

$b = a \wedge b$

$a = a \wedge b$

$a' = a \wedge b$

$a' = 2$

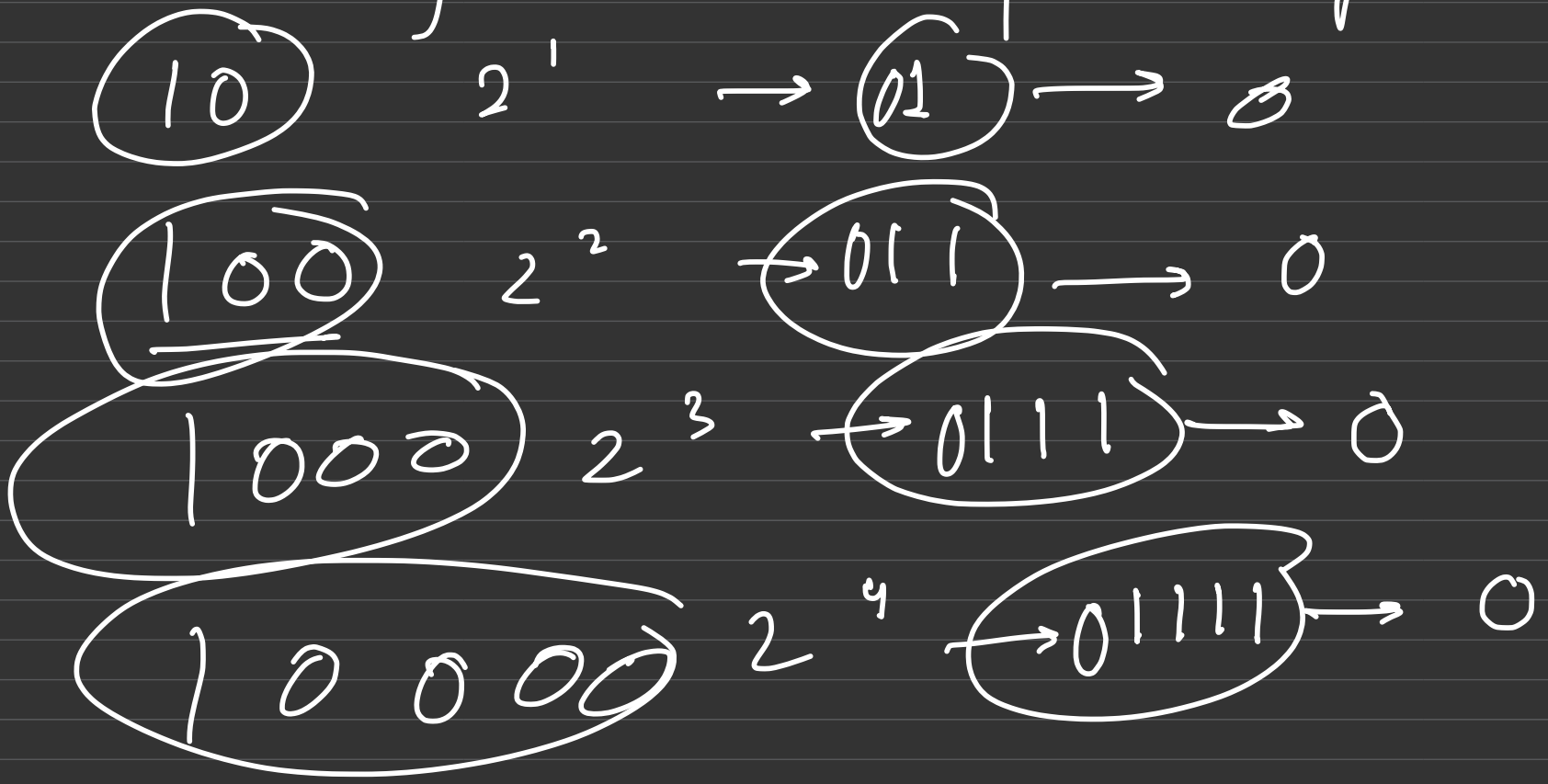
$b = a' \wedge b \Rightarrow a \wedge b \wedge b = a$

$b' = a$

$a = a' \wedge b'$

$= a \wedge b \wedge a \Rightarrow b$

Check if x is a power of 2

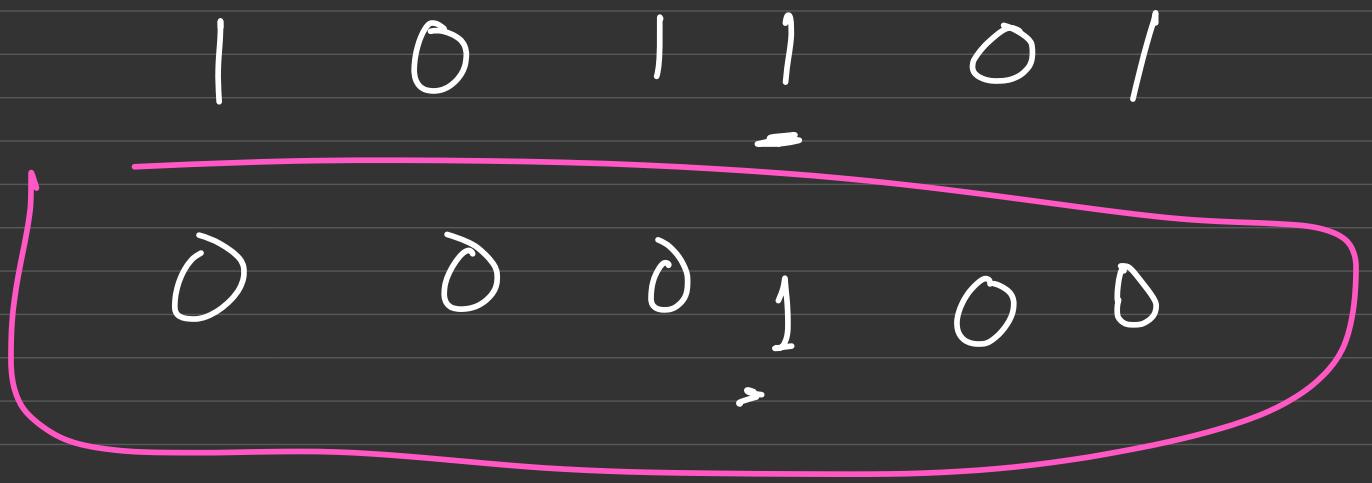


$$n \& (n-1) == 0$$

$$1\,0 \quad 1\,1 \quad \underline{0} \quad 1\,1$$

$$0\,0 \quad 0\,0 \quad 1 \quad 0\,0$$

$$1\,0 \quad 1\,1 \quad 1 \quad 1\,1$$


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