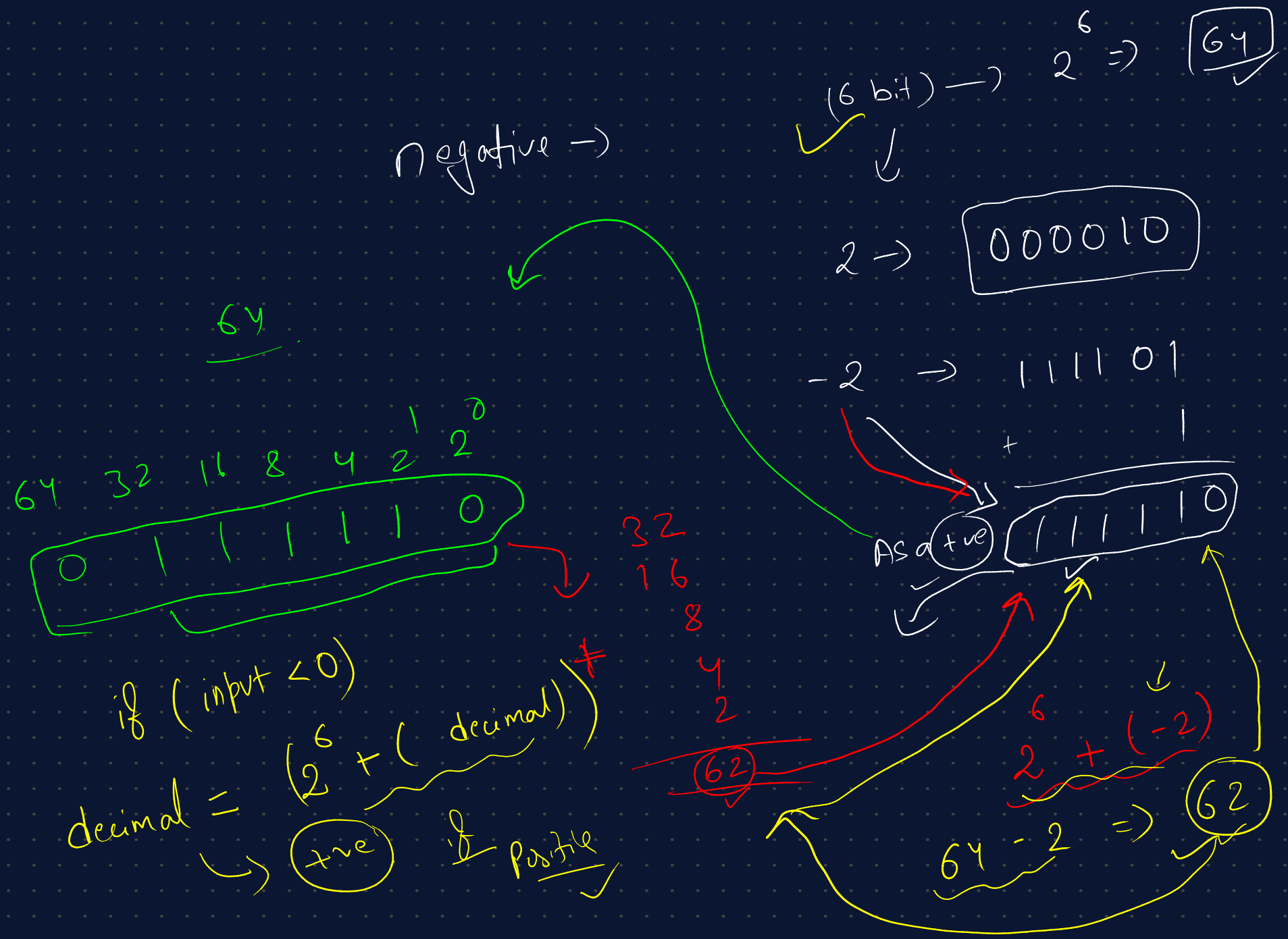
Class - 7 (Tuesday, 14th May 2024)



(Reverse Integer)

$$(-2^{31}) \le x \le (2^{31} - 1)$$

123 ⟶ 1 digit -> 3
2nd -> 2
3rd -> 1

88 ⟶ 2^{32}

$$(-2^{31} \le 2^{32} \le 2^{31} - 1)$$

1. reverse kro
2. Negative value
3. Range > -> return 0

10 ! formula ?

10^{i} × — — ?

rev

123

$1 \times 10^{2} + 2 \times 10^{1} + 3 \times 10^{0}$

(lastdigit × 10^{i} + rev)

rev =>

123 -> 321

321 -> 123

-123 ->

-123

n

)

if (

{

return 0;

}

↳ Starting me (-) ko hata do

↳ Positive bnaya

↳ Reverse

↳ Agr n negative tha toh reverse (-) Add sign krdo

Absolute

=> abs (x)

$|x| = x$

$|-x| = x$

$(rev < -2^{31})$ ✓ ①

$(rev > 2^{31} - 1)$ ② ✓

return 0;

method

-2^{31} -> INT_MIN

$2^{31} - 1$ -> INT_MAX

123

$1 \times 10^2 + 2 \times 10^1 + 3 \times 10^0$ (rev = 0)

$3 \times 10^0 + 0 \Rightarrow 3$

$2 \times 10^1 + 3 \Rightarrow 23$

$1 \times 10^2 + 23 \Rightarrow 123$

rev ✗

formula glat hai

same → rev

(rev × 10 + last digit)

Shi hai ✓

123

$0 \times 10 + 3 \Rightarrow 3$

$3 \times 10 + 2 \Rightarrow 32$

$32 \times 10 + 1 \Rightarrow 321$ ✓

rev

rev < INT_MIN

rev > INT_MAX

return 0;

rev = rev × 10 + last digit ;

term → ye range se bahar ja skta hai ?

Rough :-

Range :- 100

5 × 10 + 2 ⇒ 52

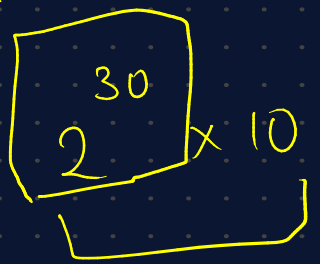
50

955 × 10 value

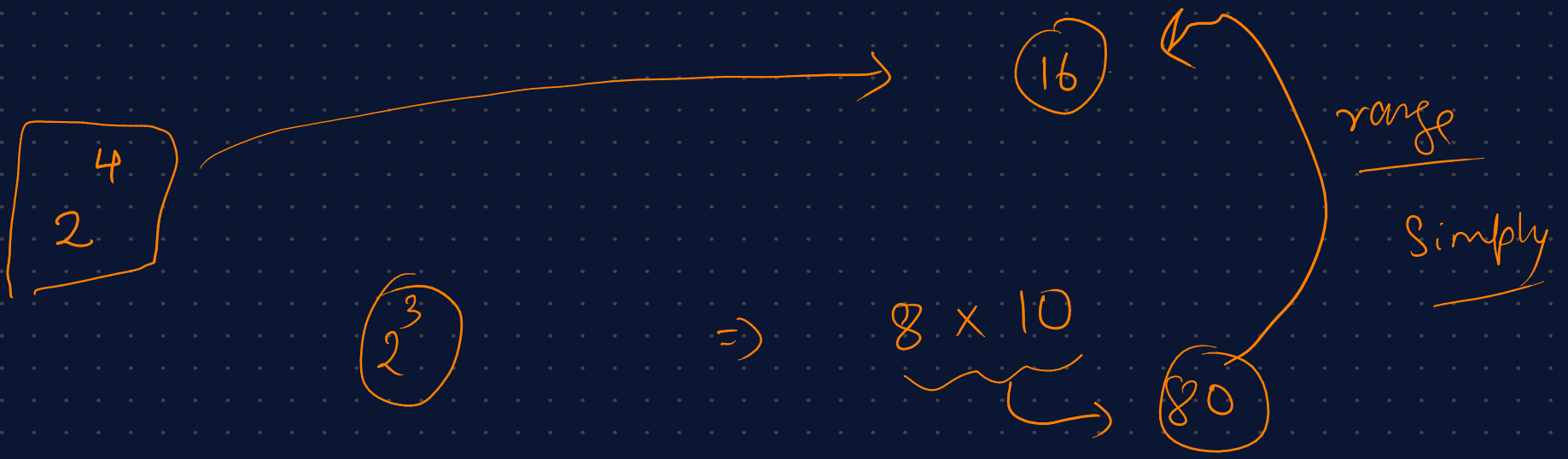
+4 +94 +80

+ve :) $(2^{31} - 1)$ → (2^{30}) ☑ formula

valid value ✓



range exceed krygg



rev x 10 < INT_MIN

rev x 10 > INT_MAX

} → return 0

multiply, range se bhr v ng jae

$\left(rev < \frac{INT\_MIN}{10} \right)$ ☑ valid

$2^4 \rightarrow 16$ ✓

min : $(-2^4) \Rightarrow (-16)$]

max : $(2^4 - 1) \Rightarrow (15)$

$2^3 \rightarrow 8$

$8 \times 10 + n$

$8 > \frac{16}{10}$

lo'p

$8 > 1$ ✓

true

$2^3 \Rightarrow (8)$

$\left(rev > \frac{INT\_MAX}{10} \right)$

$(rev \times 10 > INT\_MAX)$

$8 \times 10 > 15$

$(80 > 15) \rightarrow$ true

overflow

80

Agr value range se bahar jayega toh kya

integer int n = const;

↳ store? ↓

↳ garbage value

$8 > \frac{15}{10}$

$8 > 1$

true

↳ range me ho jayega 99

x

```
if (x < 0) {
        return (-reverse);
    } else {
        return (reverse);
    }
```

1

if else

Ternary operator

3

modification

Ternary operator

```
x < 0 ? -reverse : reverse
```

Condition

execute this when condition is true

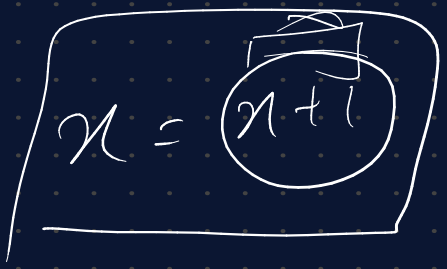
execute when condition is false

```
(x < 0 ? -reverse : reverse;)
```

kya kro is missing

dhundo

?



(Reverse Integer)

```
class Solution {
public:
    int reverse(int x) {

        int temp = x, lastdigit, reverse = 0;

        // negative ignore kro
        temp = abs(temp);

        // finding reverse
        while (temp) {
            lastdigit = temp % 10;

            if (reverse < INT_MIN / 10 || reverse > INT_MAX / 10) {
                return 0;
            }

            reverse = (reverse * 10) + lastdigit;
            temp = temp / 10;
        }

        reverse = x < 0 ? -reverse : reverse;

        return reverse;
    }
};
```

(Complement of base -> 10)

101

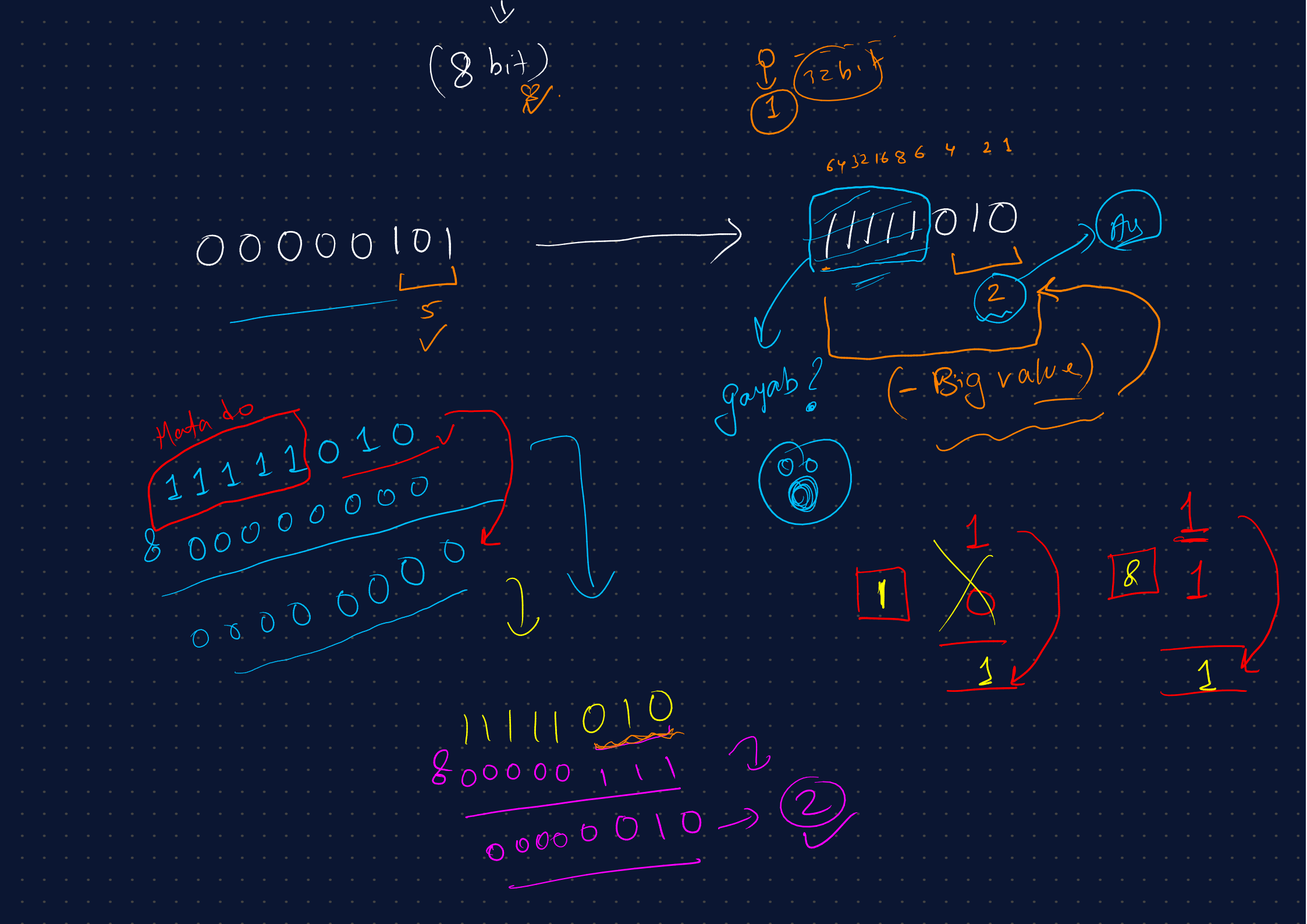
010 → 2

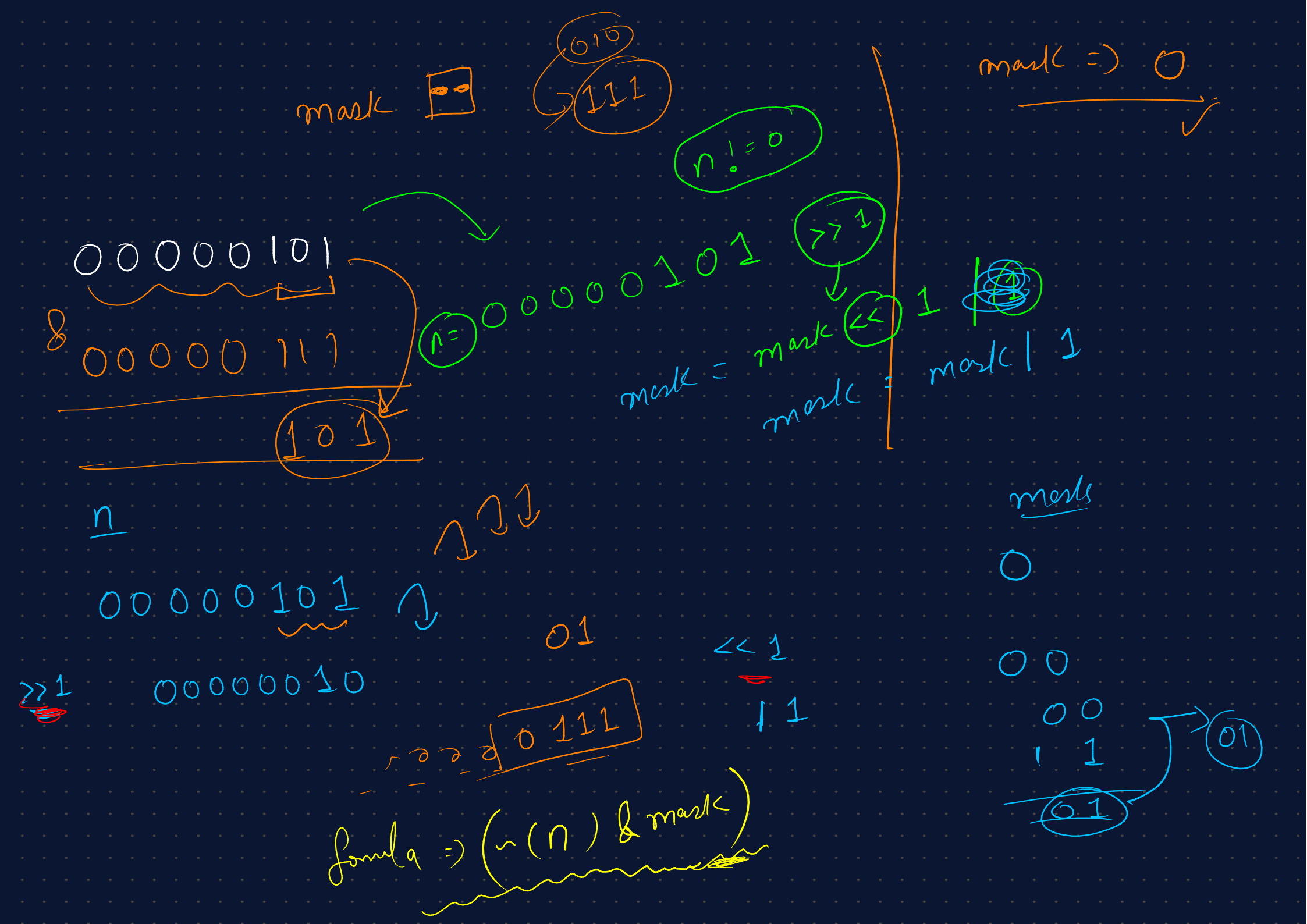
Rough → (Bit → 8 1 ~ ∞)

10 → 1010 → 0101 → 5

(32bit) → (6bit)

000101 → 111010 → (-ve) no


(8 bit)
32 bit
64 32 16 8 6 4 2 1
00000101
11111010
5
2
Ans
Gayab?
(- Big value)
Nasta do
11111010
00000000
00000000
11111010
00000111
00000010
2
1
1
1
8
1
1
1


mask
010
111
n != 0
mask => 0
00000101
&
00000111
101
n =
00000101
>> 1
<<
1
mask = mask
mask = mask | 1
n
00000101
111
masks
0
00000101
01
<< 1
11
>> 1
00000010
0111
00
00
11
01
01
formula => (~(n) & mask

Actual Correct

```
class Solution {
public:
    int bitwiseComplement(int n) {
        int temp = n, mask = 0;

        if (temp == 0) {
            return 1;
        }

        while (temp > 0) {
            mask = (mask << 1) | 1;
            temp = temp >> 1;
        }

        return ~(n)&mask;
    }
};
```

5 -> 2

5 = 101

mask

011

000 101

0000 10

(H.W)

476. Number Complement

Error

```
class Solution {
public:
    int bitwiseComplement(int n) {
        int mask = 0;

        // edge case 0

        if (n == 0) {
            return 1;
        }

        while (n) {
            n = n >> 1;
            mask = (mask << 1) | 1;
        }

        return (~(n)&mask);
    }
};
```

Correct

n=0

1 & mask

Last -> Power of (2) ?

i/p -> (8, 9)

$(2^n == 8 \ ? \ true : false)$

$(2^n == 9 \ ? \ true : false)$

Logic -> Hawa me nahi banta

-> Traces -> Question 2 Breakdown

2	3
4	5
8	9

B. down

n	
2	3
4	5
8	9

B. down

Breadth

n =>
- 1 -> 001
- 2 -> 010
- 3 -> 011
- 4 -> 100
- 5 -> 101
- 8 -> 1000
- 9 -> 1001

relation?

observe?

(Logic)

?

```
  010
& 011
-----
  010
```

```
  100
& 101
-----
  100
```

```
  101
& 110
-----
  100
```

```
  100
& 011
-----
  000
```

```
  010
& 001
-----
  000   -> 0.
```

1000

& 0111

0000

8 → 0

6 → X

4 → 0

2 → 0