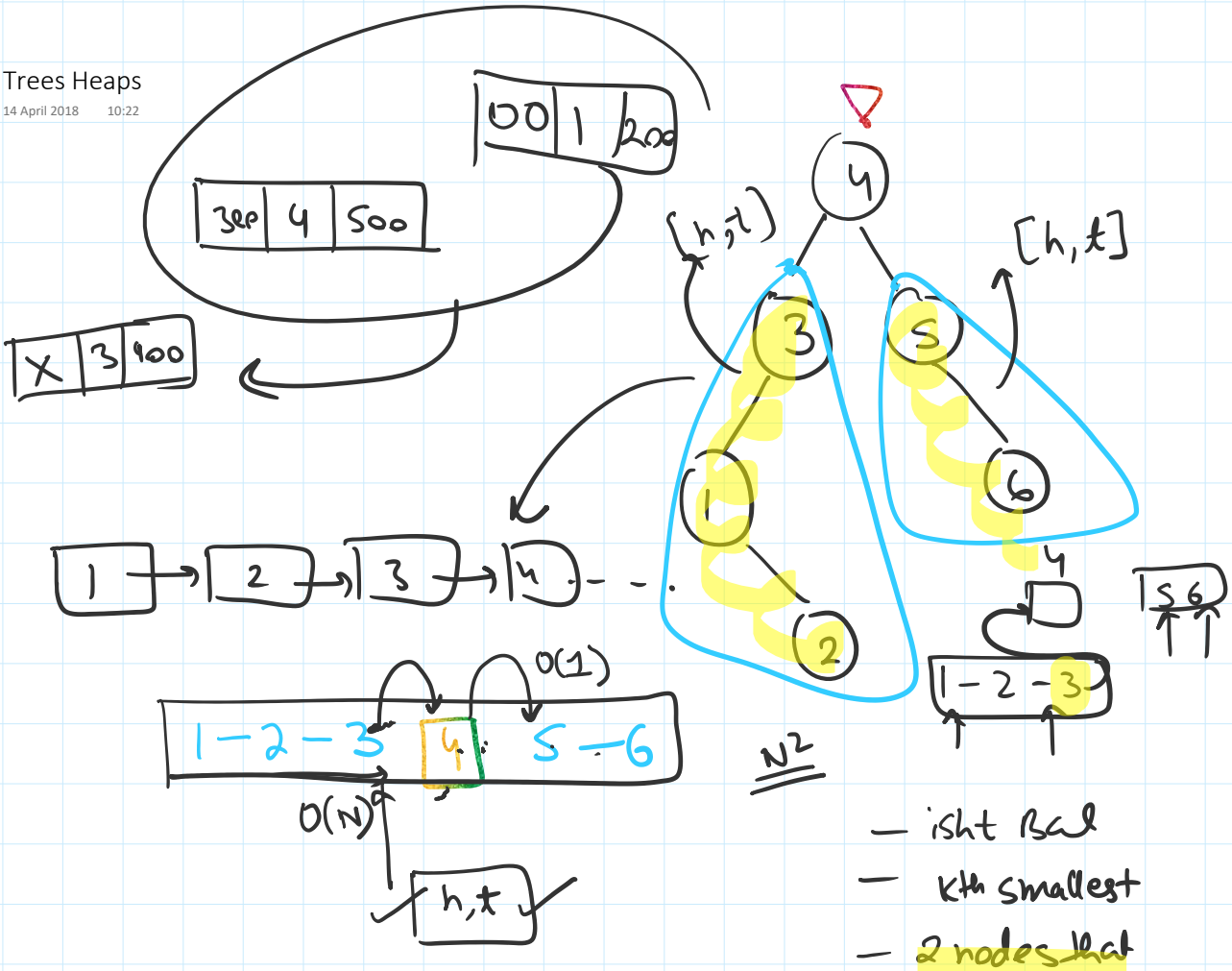
Trees Heaps

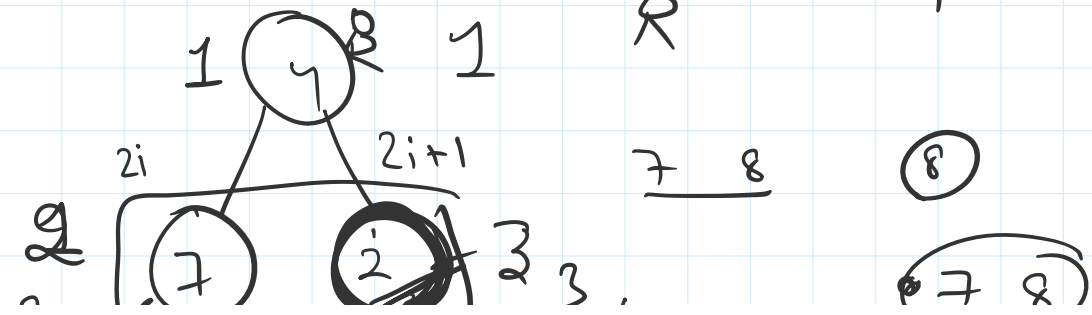
14 April 2018 10:22

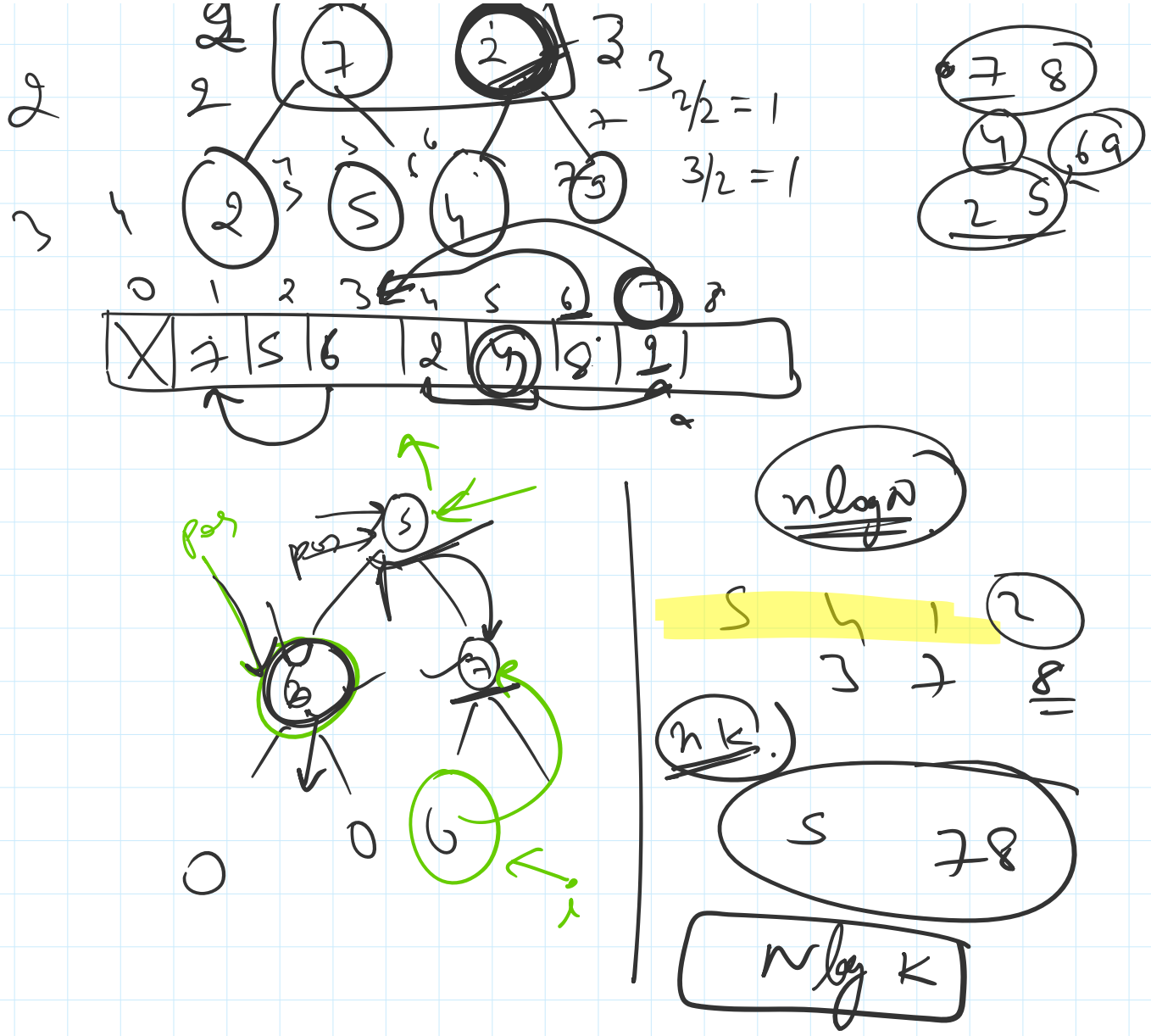


- isht BST
- Kth smallest
- 2 nodes that sum to x
- preorder without rec
-

Heaps

1. Complete Tree
2. All children have less priority than root (parent)





Priority - queue

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hashmap

Phonebook

insertion
deletion
Searching
Update

update

phone["xyz"] = 345

O(1)

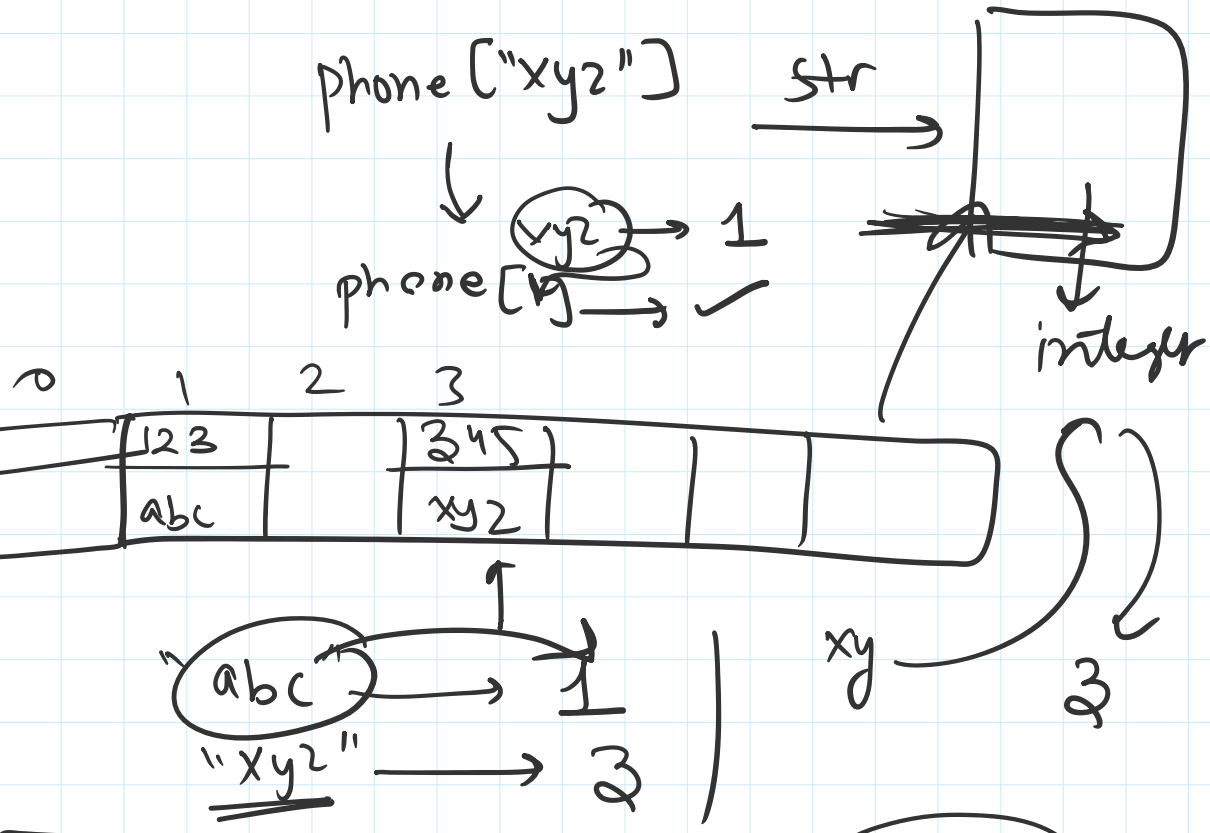
integer

phone(1)

"abc" → 123

"xyz" → 345

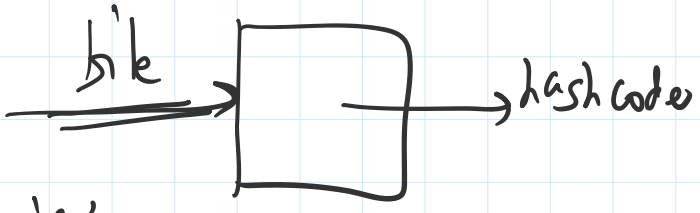
"345" → "xyz"



Hash function

hashing

1. Computationally fast
2. Consistent
3. Unique val to uniq inputs



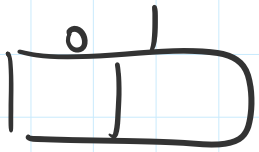
"abc" → 'a' + 'b' + 'c' = 2081 % 7 = 1

"abc" → 'a' + 'b' + 'c' = 2081 % 2 = 1

"bac" → 'b' * (31)^0 + = 2056 % 2 = 0

'a' * (31)^1 +

'c' * (31)^2

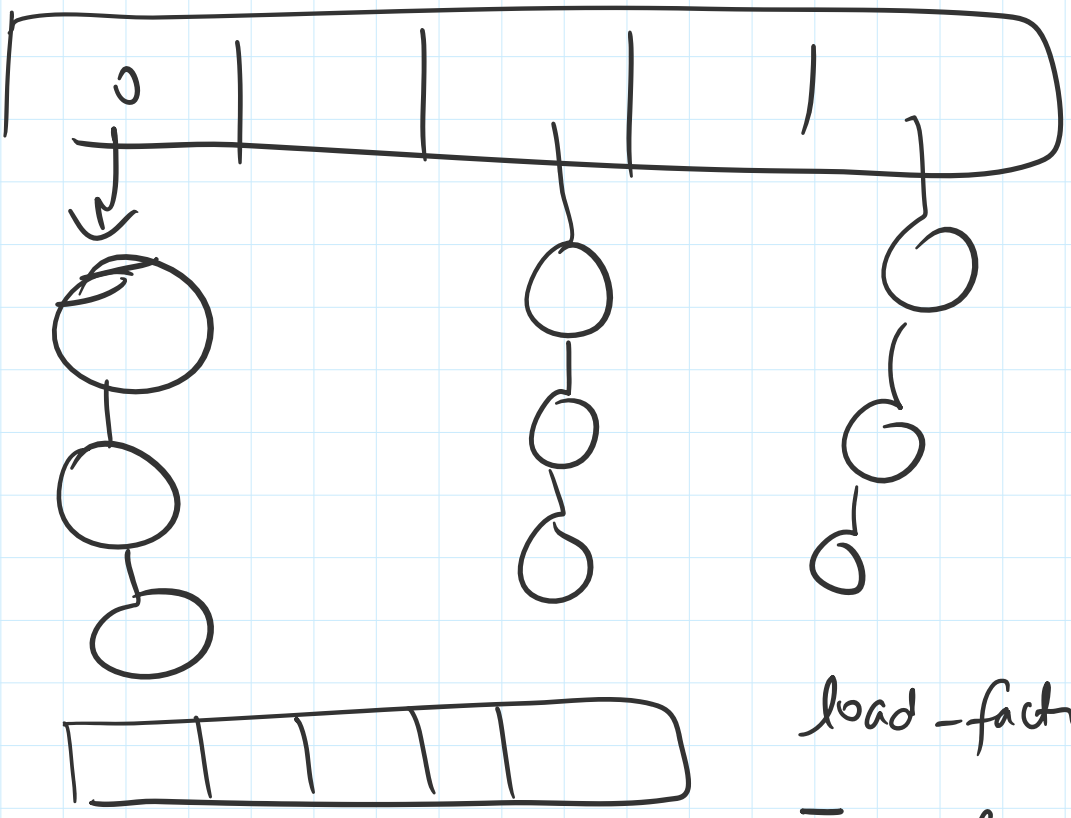


= 0

2000 = 5004 = 0

3000 = 0

4010 = 0



load_factor

= no of nodes / size of arr

= 2/4 = 0.5

2/4

S/4 = 1.25

3

S/4 = 1.35

3

4/4

5/4 = 1.25

7/4 = 1.75

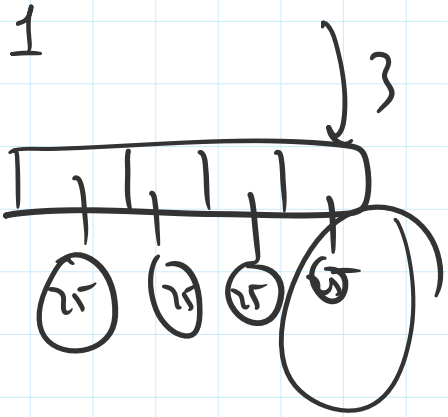
8/4 = 1.75

10/4 = 2.5

- 1/4 = 0.5

- 3/4 = 0.75

= 1

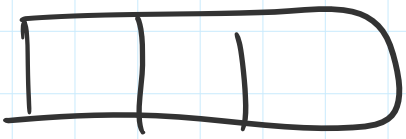


Rish → 3000/2 = n ✓ / 2 ✓

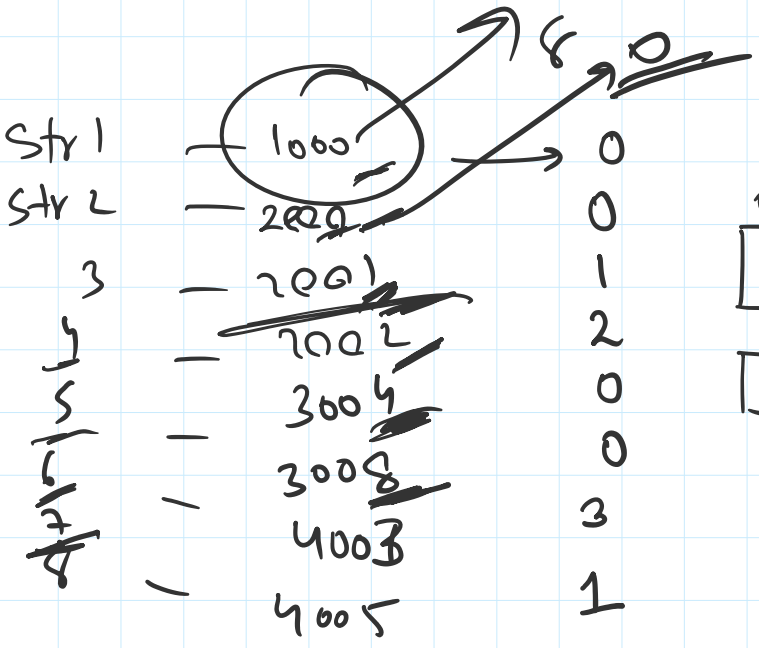
Kareena = 3002

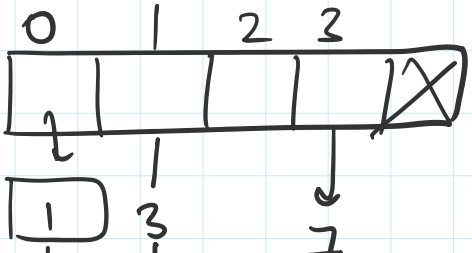
Kalki = 3011

n = 0.75



Asymptotic



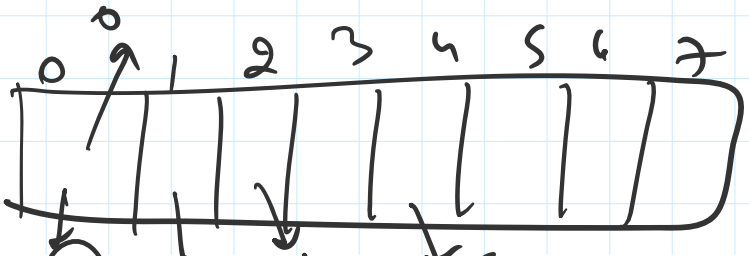


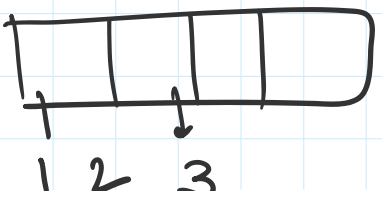
8/4 = 2

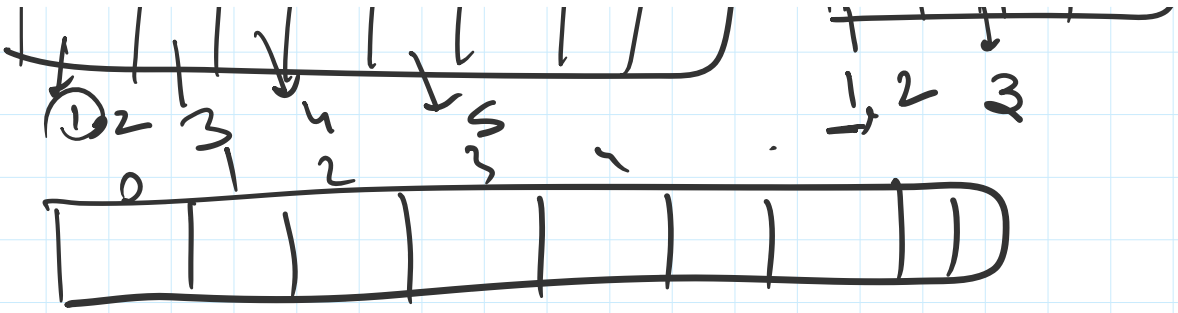
6/8 = .75

0.5

5/8 = 1





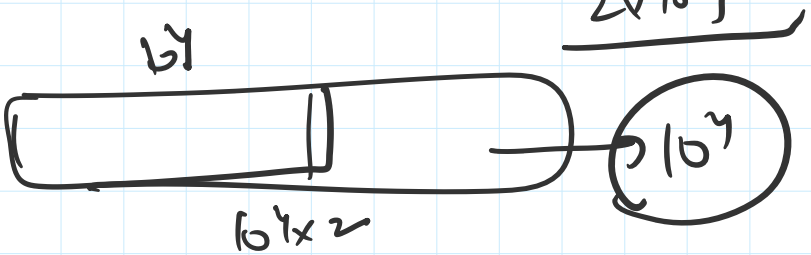


5/8 = 1

10^7

$0.7 = \frac{x}{10^4}$ $\leq$ 7000

$07 = x$

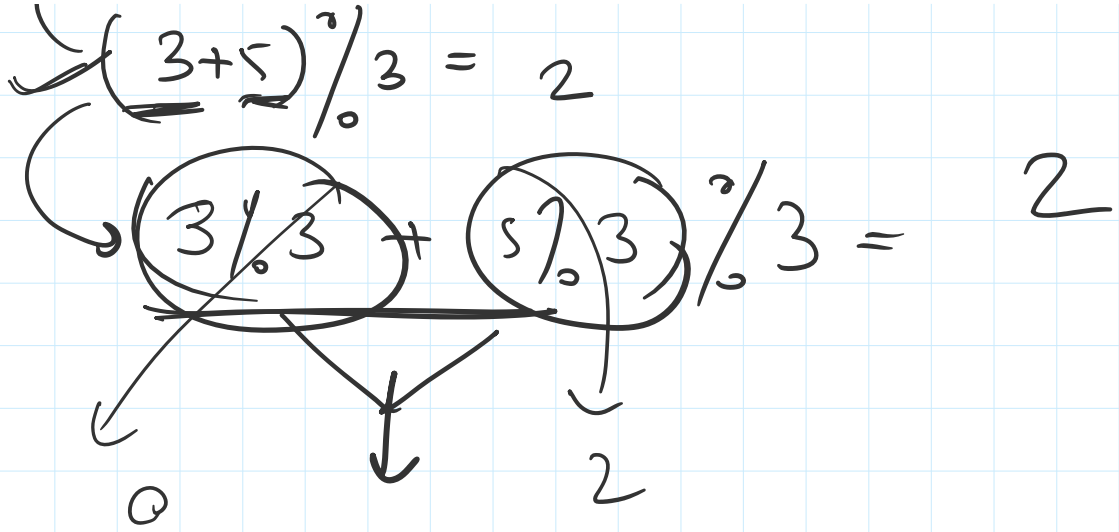


$2^5 = 11881376$

(01 2 3 4 5 6 7 8 Shreyansh) // 2 → 2.8 Bn

$8 \% 3 = 2$

$(3+5)^7 \% 3 = 2$



$$(a+b)\%c = (a\%c + b\%c)\%c$$

Modulo Arithmetic

$$(a*b)\%c = (a\%c * b\%c)\%c$$