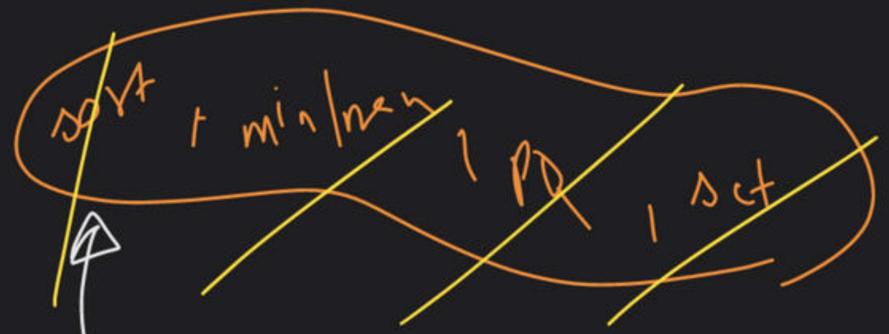
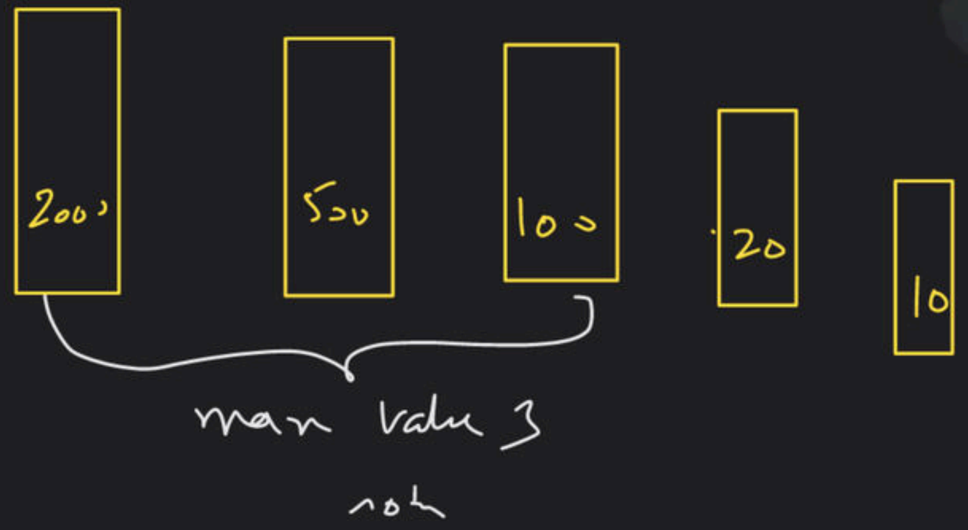
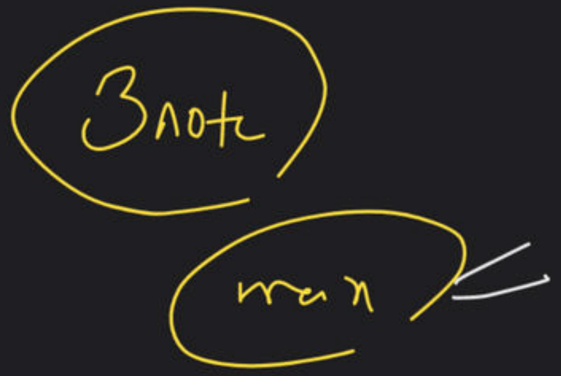
Bonus Class - Greedy

Special class







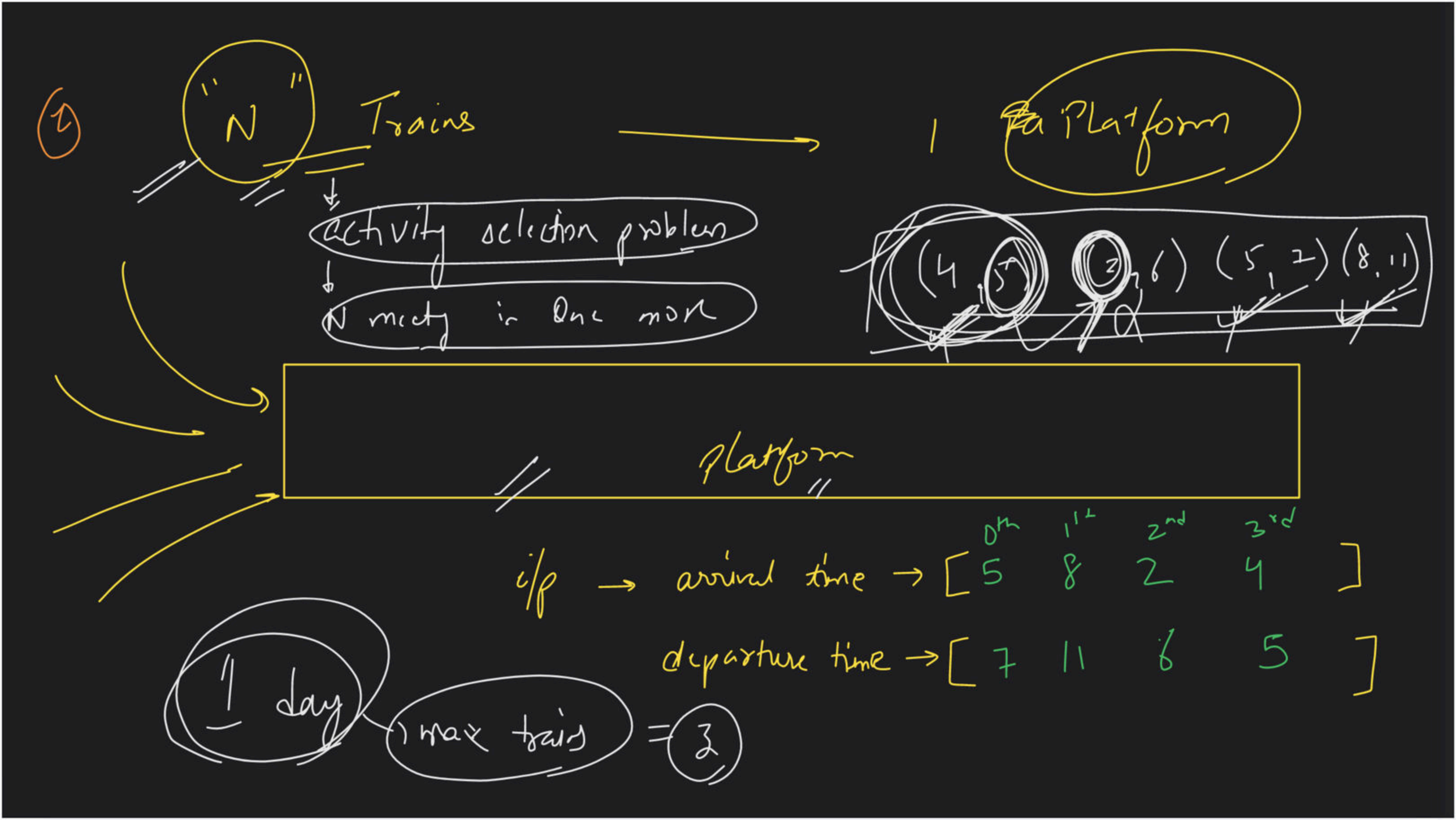
Love Babbar • July 5, 2023

→ Dijkstra

pq

distance min → pick

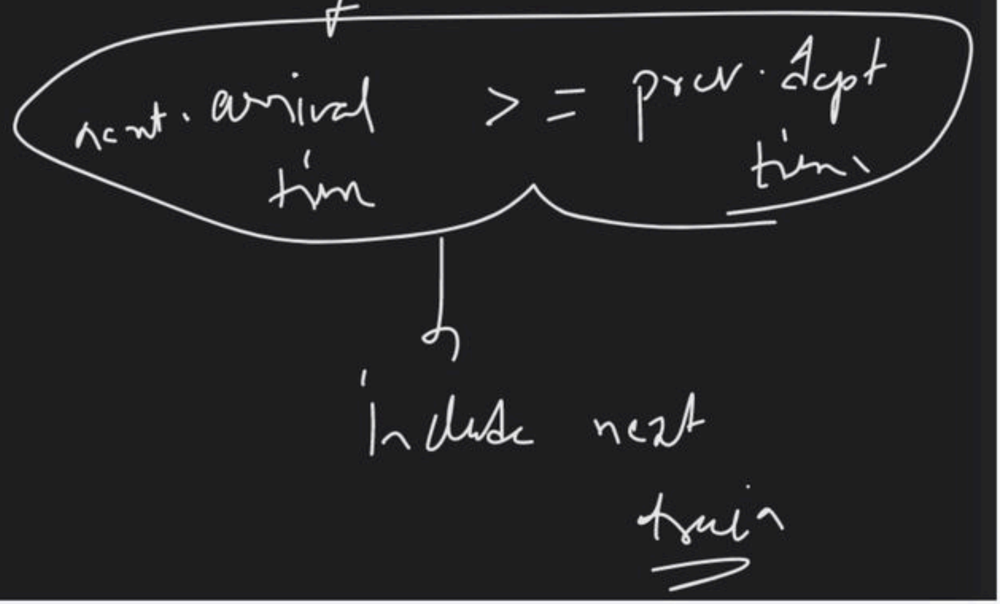
farzi topic

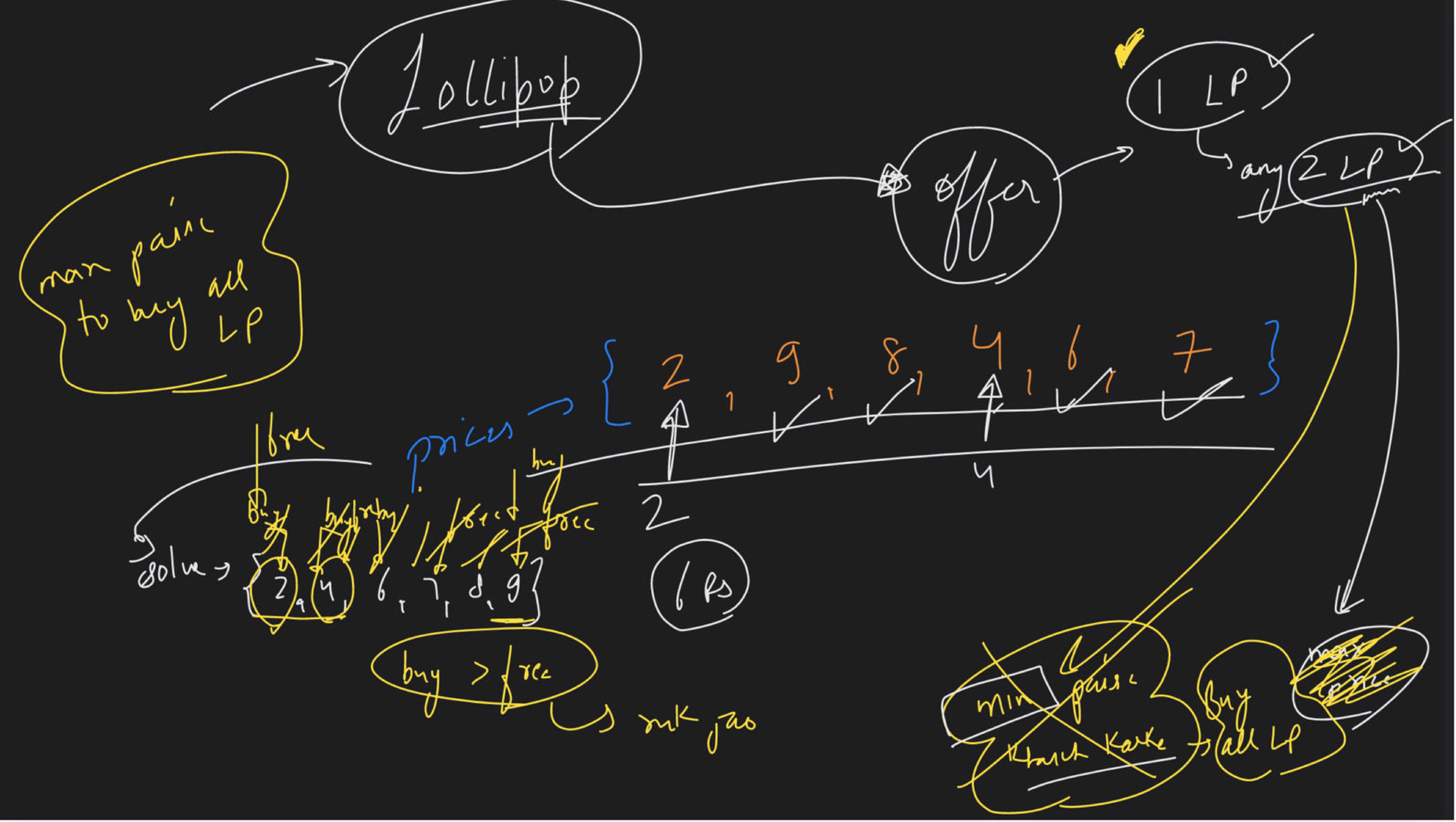

1
"N" Trains
1 Platform
activity selection problem
N meety in One room
(4,7) (2,6) (5,7) (8,11)
Platform
i/p → arrival time → [5 8 2 4]
departure time → [7 11 6 5]
1 day
max trains = 3

Algo

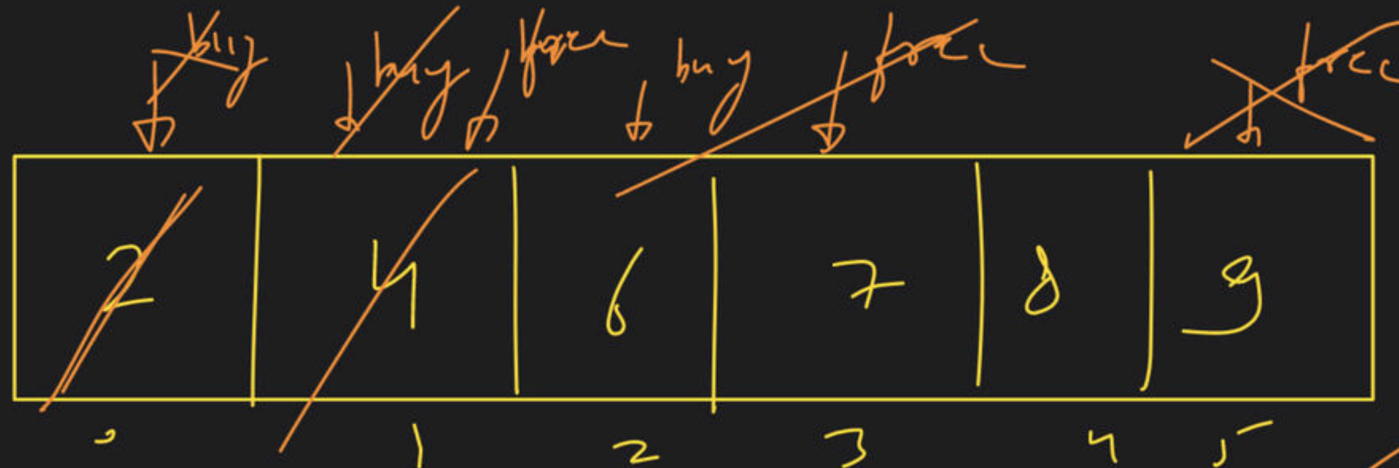
→ sort (basis on descending order)

→ analysis Kon Kon si trains possible hai




Lollipop
offer
1 LP
any 2 LP
max pairs to buy all LP
prices → { 2, 9, 8, 4, 6, 7 }
free
buy
solve → { 2, 4, 6, 7, 8, 9 }
2
4
6 Rs
buy > free
min price
buy all LP

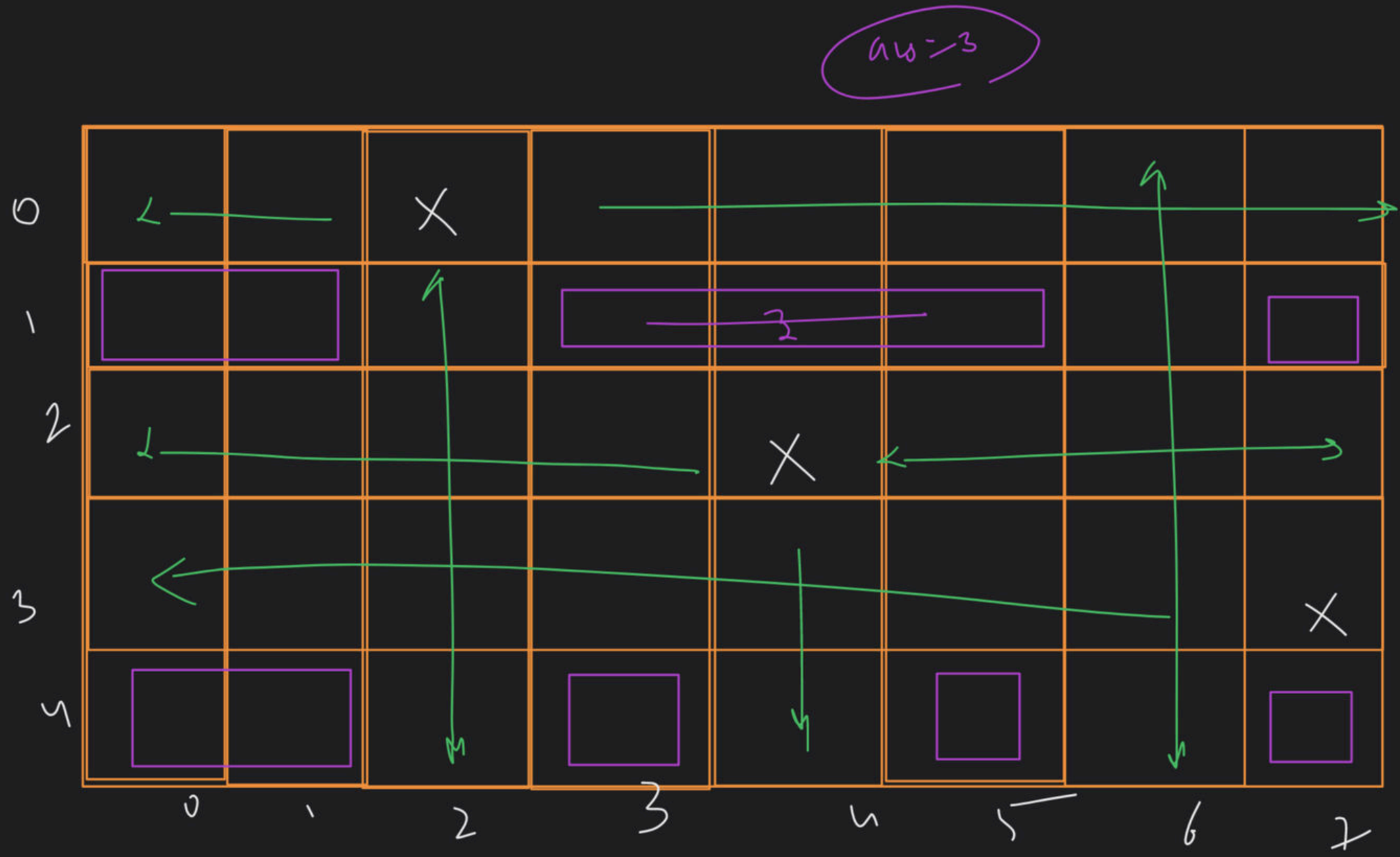
after sorting

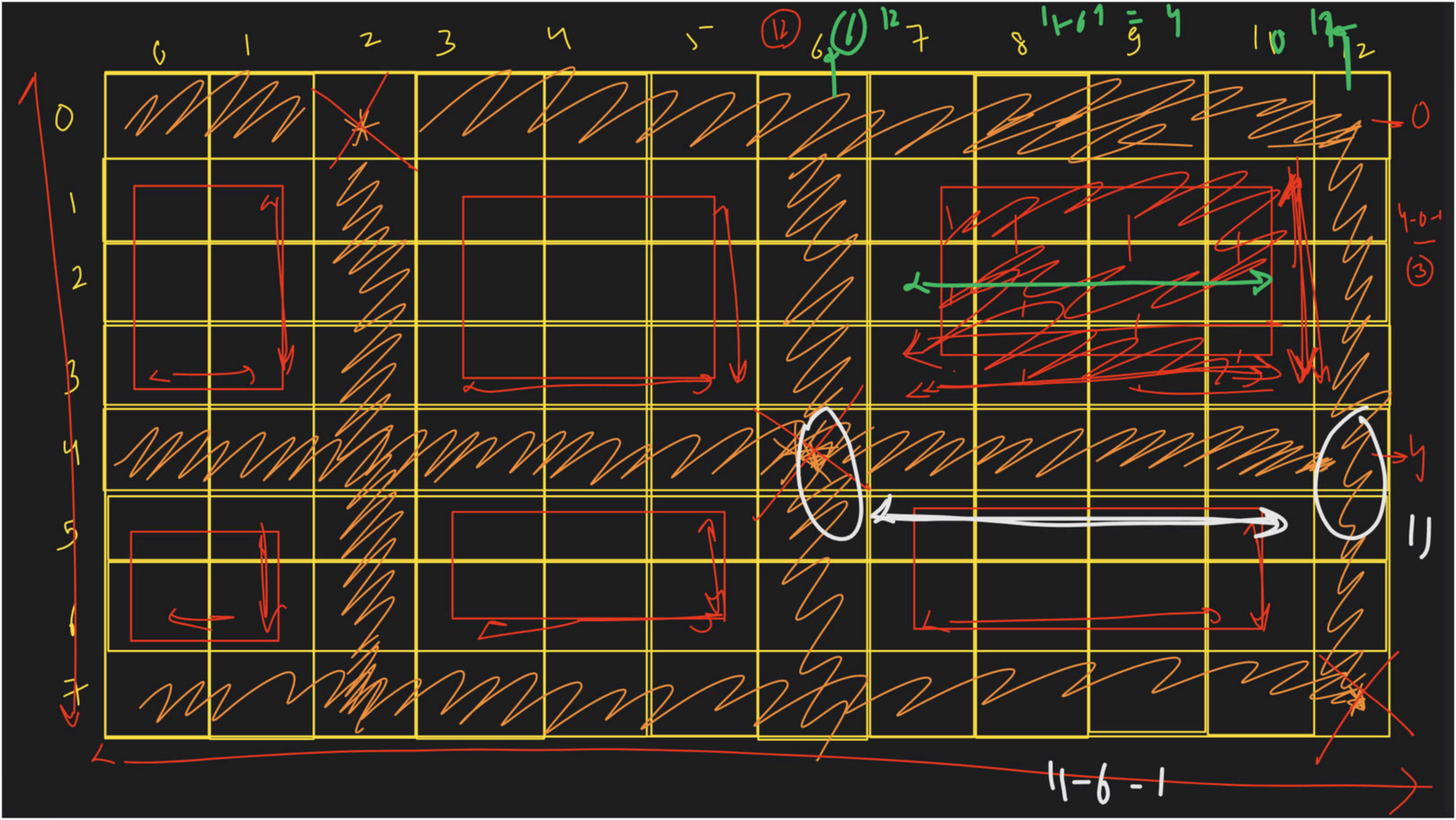


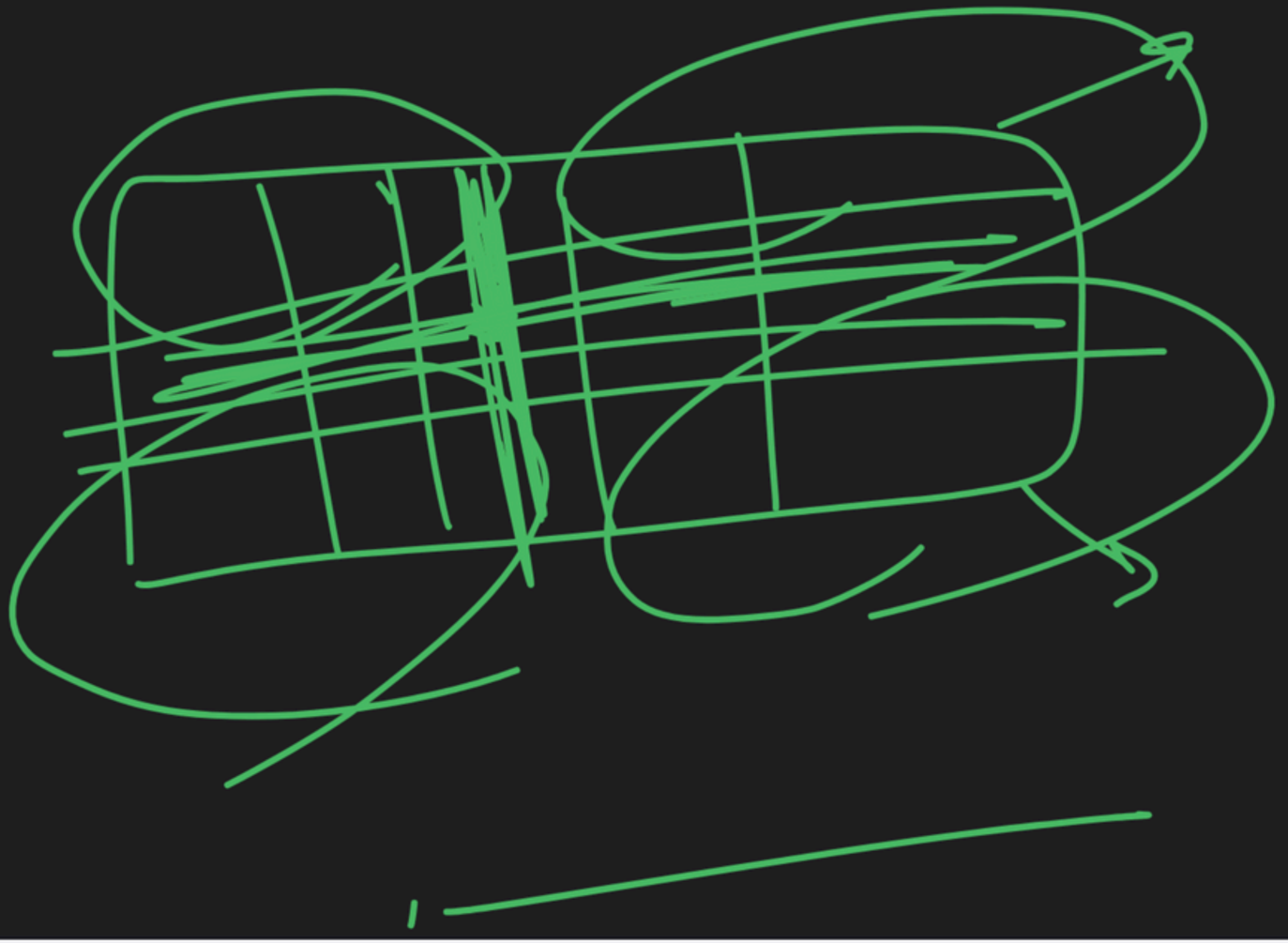
amount = 4 2 14 = 60 Rs

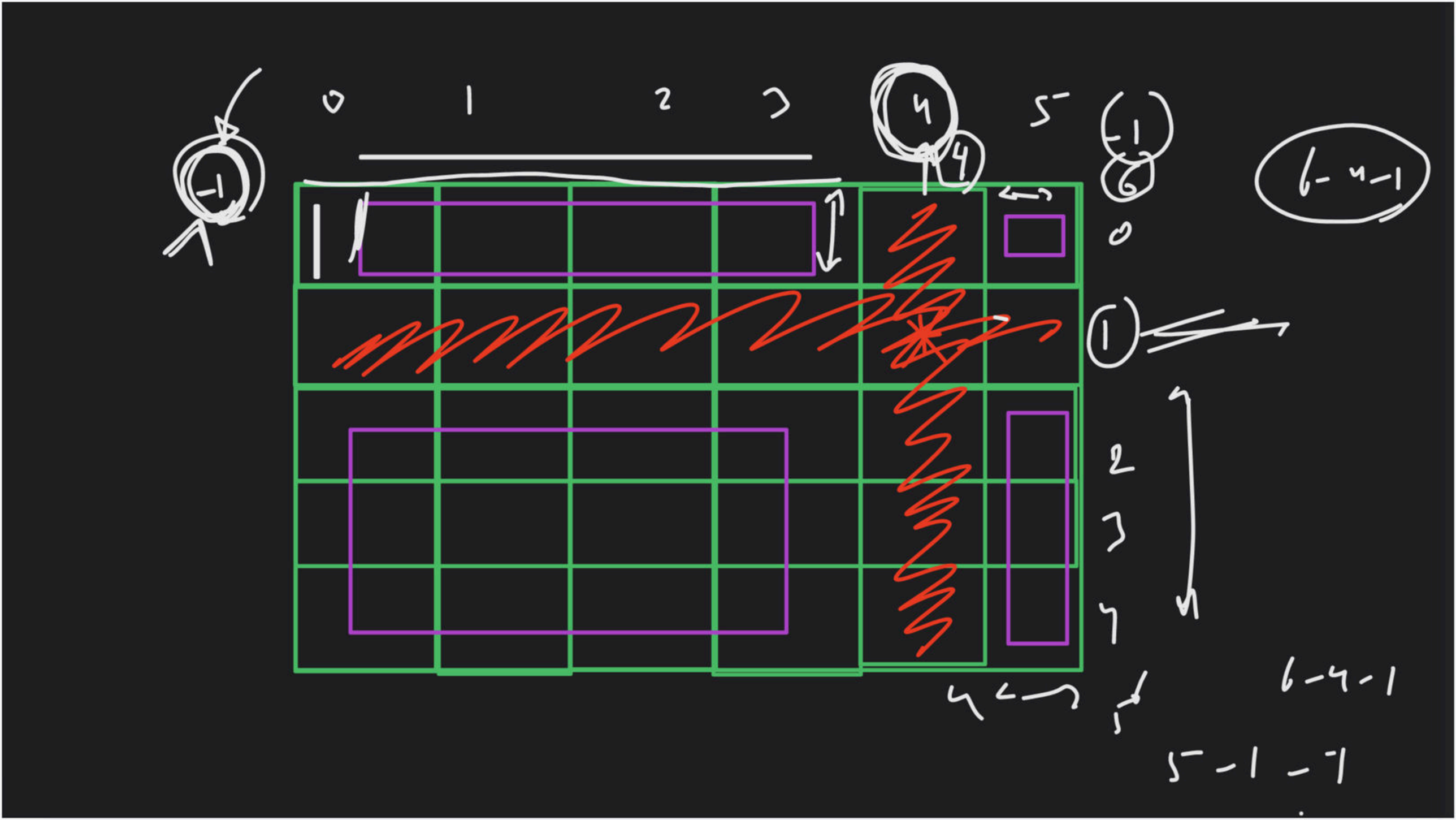
buy > free

shop cardio


ans=3
0
1
2
3
4
0
1
2
3
4
5
6
7


0 1 2 3 4 5 6 7 8 9 10 11 12
0 1 2 3 4 5 6 7
11-6-1




0 1 2 3 4 5
6-4-1
5-1-7

Chocolate Distribution Problem

packets

$N = 8$, $M = 2$ students

arr = { 3, 4, 1, 9, 56, 7, 9, 12 }

0 ← ^ → number of chocolate

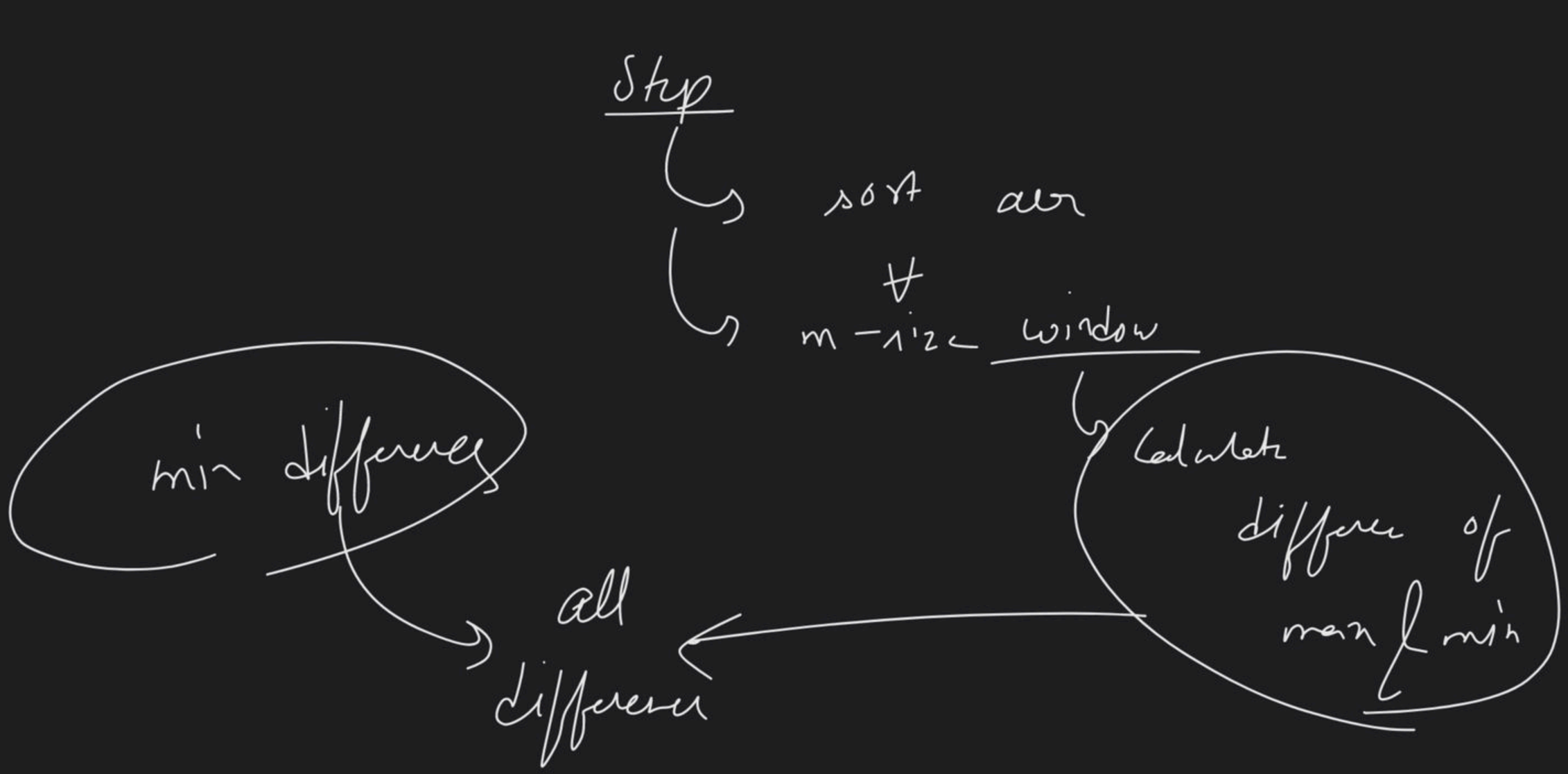
sort

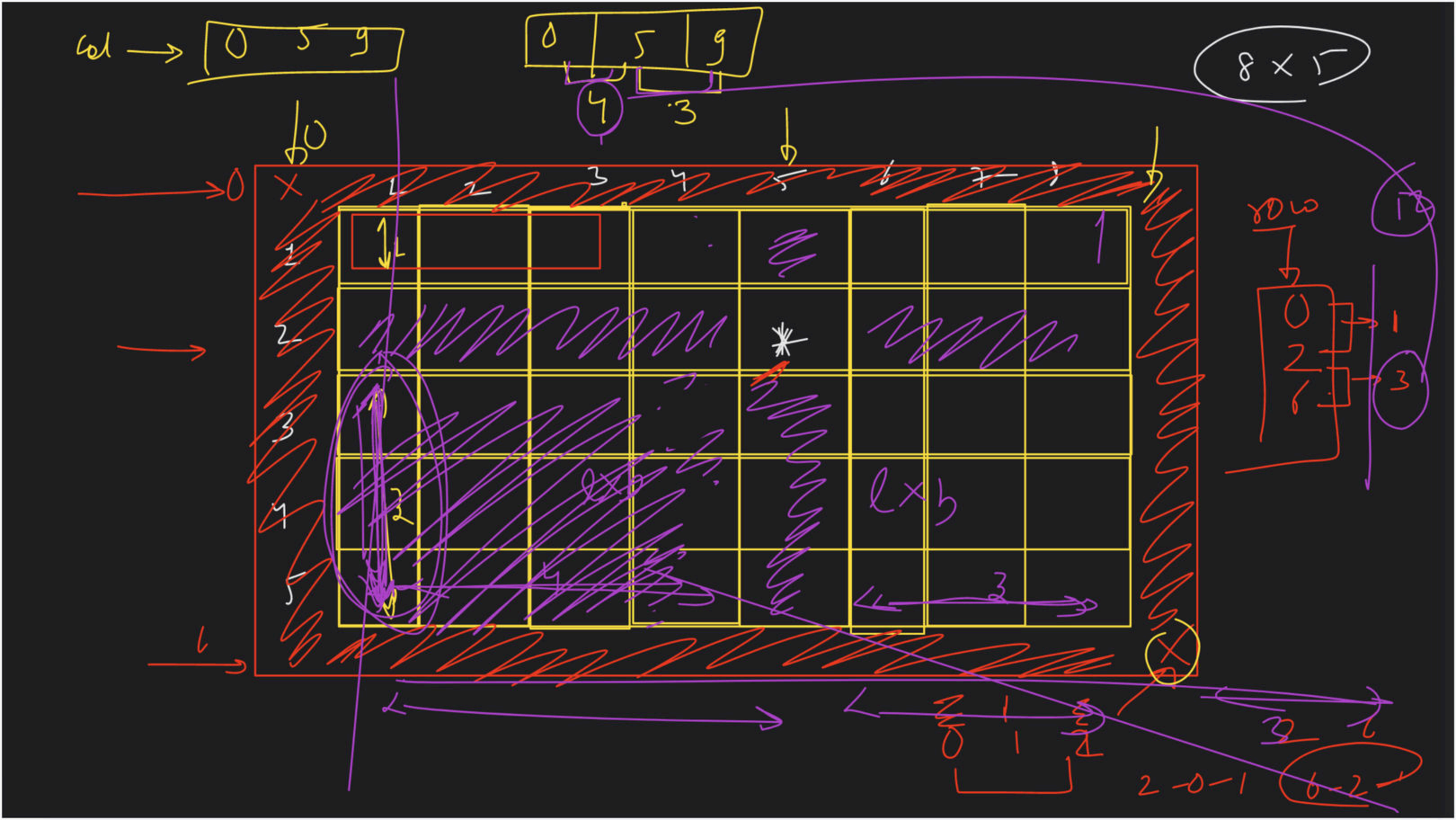
8, 9, 9, 1, 4, 9

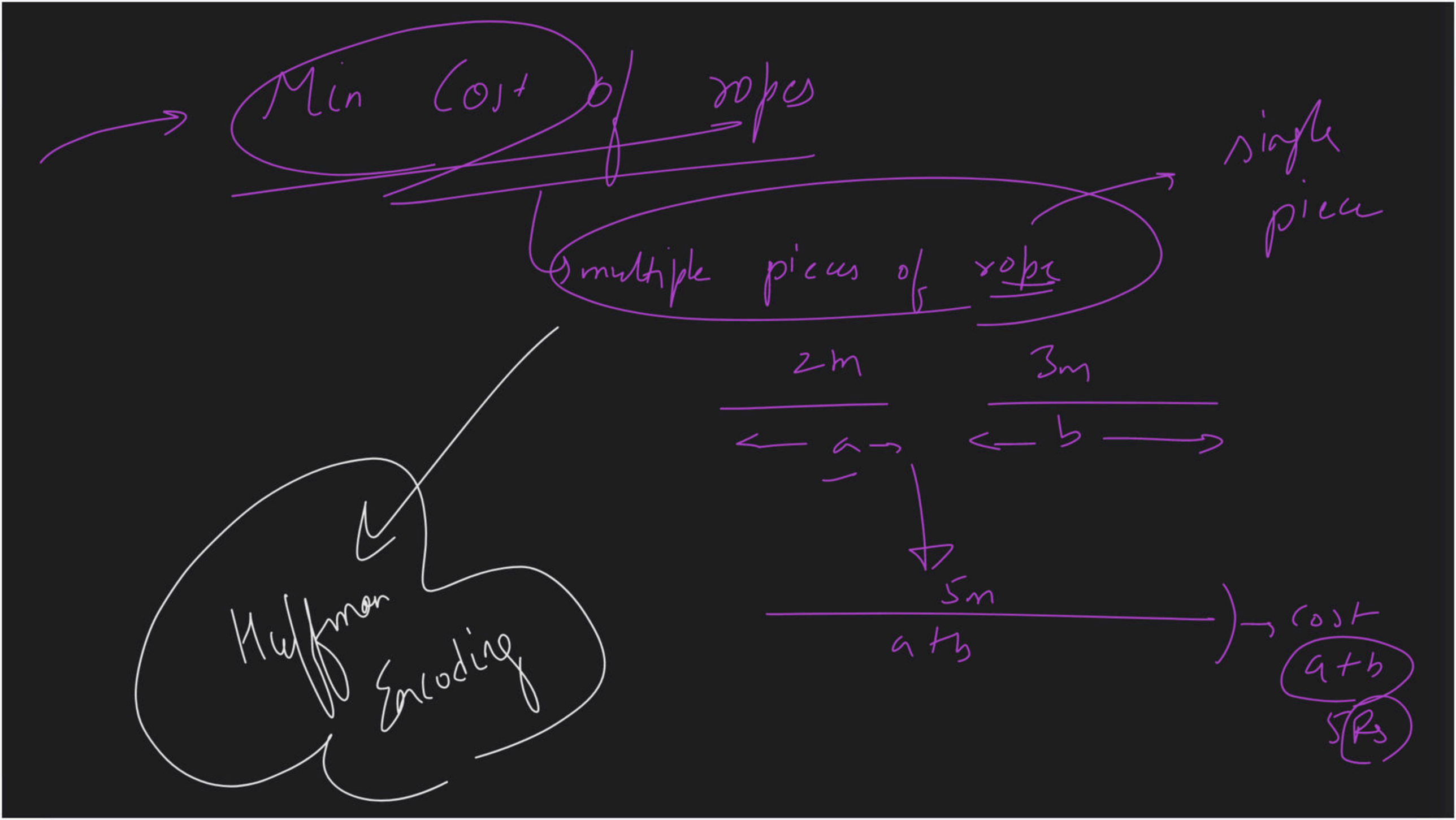
Distribute chocolate among M students

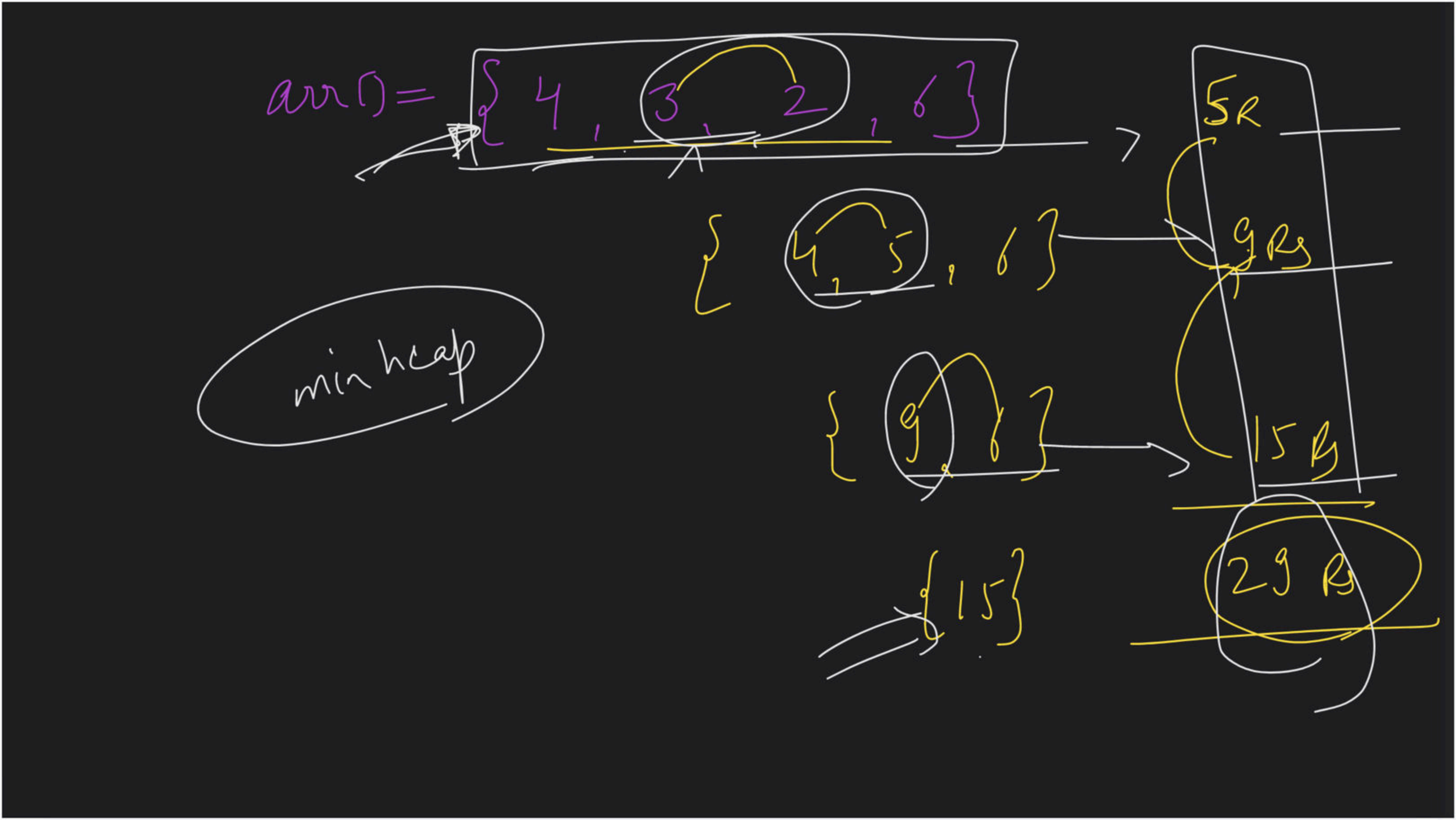
→ Each → exactly 1 packet

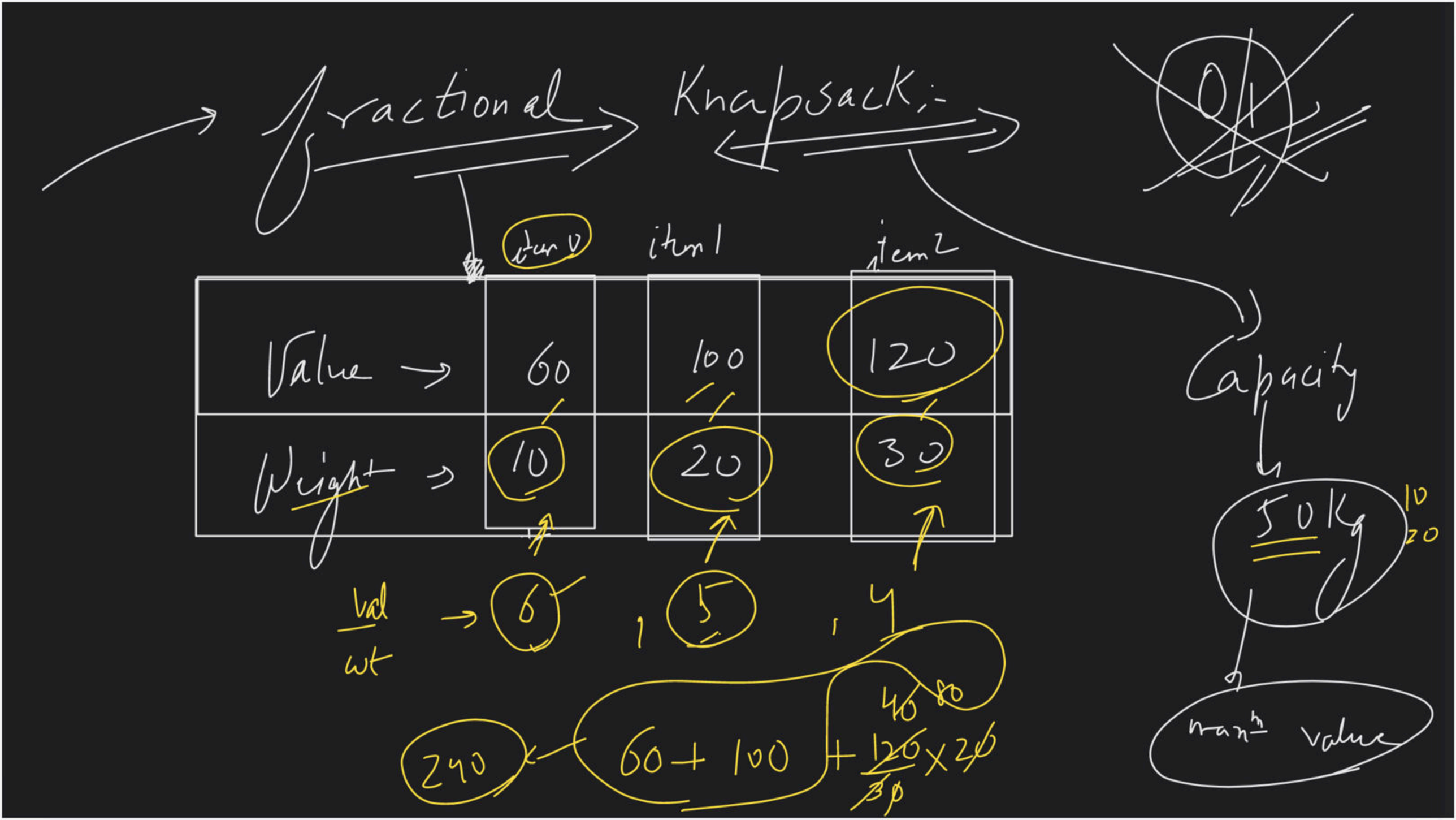
difference b/w max no of chocolates given to a student & min no of chocolate given to a student is minimum


Step
sort arr
∀
window
min difference
calculate
difference of
max & min
all
difference


col
0 5 9
0 5 9
4
3
8 × 7
row
l × b
2-0-1
0-2


Min Cost of ropes
single piece
multiple pieces of ropes
Huffman Encoding
2m
3m
a
b
5m
a+b
cost
a+b
5Rs


arr[] = { 4, 3, 2, 6 }
5R
{ 4, 5, 6 }
9B
{ 9, 6 }
15B
{ 15 }
29 B
min heap


Fractional Knapsack :-
0/1
item 0
item 1
item 2
Value →
60
100
120
Weight →
10
20
30
Capacity
50 kg
10
20
val
wt
6
5
4
240
60 + 100 + 120 x 20
30
40
max^m value

items

① $\frac{Val}{wt}$ → sort (desc order)

② one by one item pick

entire item → item wt <= remaining capacity

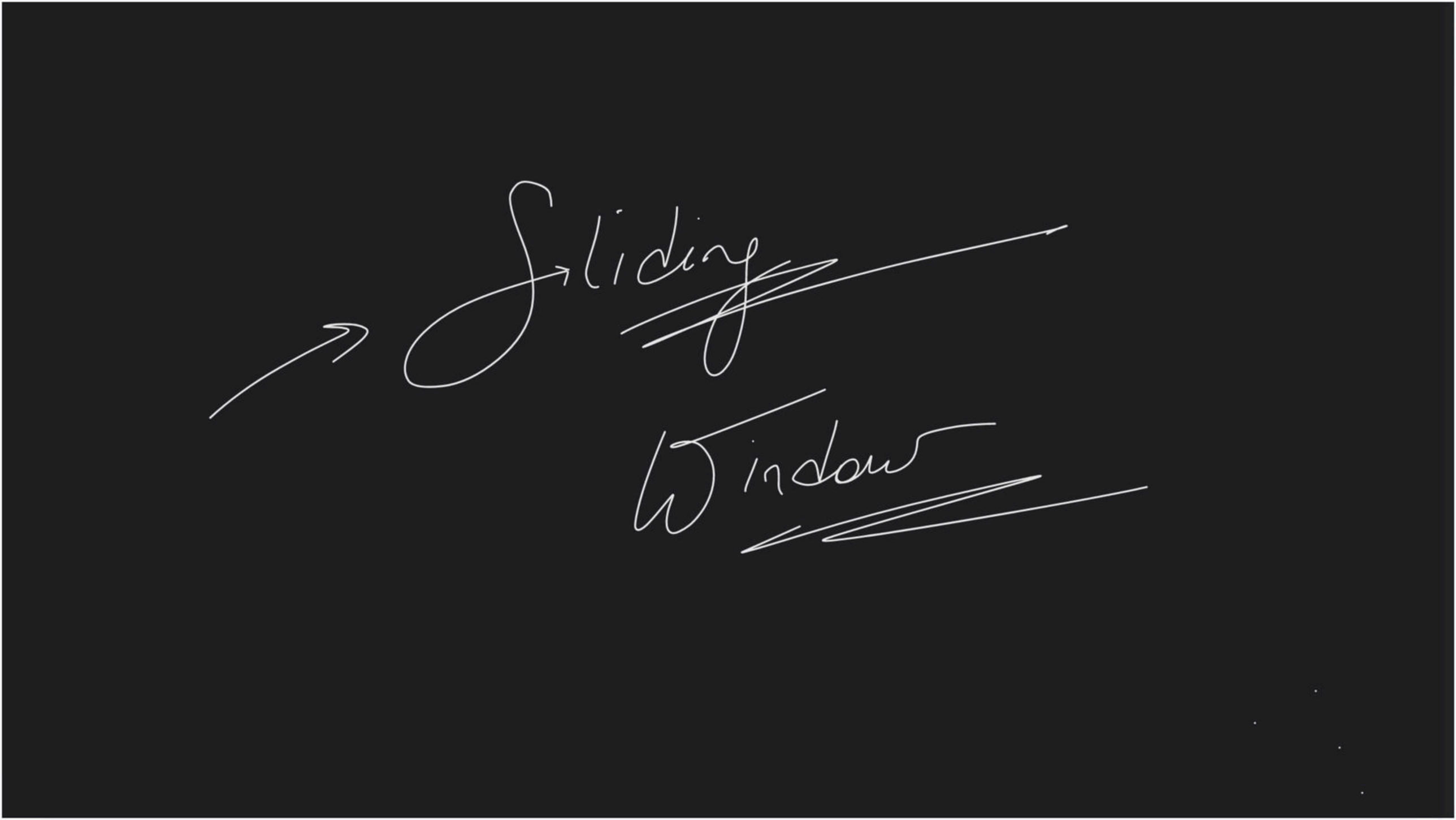
fractional item → value addition → $\frac{Val}{wt} \times$ ram capacity

5Kg Duck 120

1Kg = 120/5 = 24 Rs

7Kg ? pass

7Kg = 7×24 = 168 Rs


Sliding
Window