{Binary Search Over Soln}

Allocate Minⁿ Number of Pages

{ minⁿ of maxⁿ no. of pages read by a student among all permutation

Permutations

books[] = { 0: 12, 1: 34, 2: 67, 3: 90 } Students = 2

S1 → 12
S2 → 34, 67, 90 } → 191

S1 → 12, 34 }
S2 → 67, 90 } → 157

S1 → 12, 34, 67 }
S2 → 90 } → 113 → ans

Rules

1. Each stud. should have minⁿ one book to read
2. Books allocated to a student should be in a contegenous manner
3. All the Books should be given away

books[] = { 0: 12, 1: 34, 2: 67, 3: 90 } Students = 2

N M

TC: Exponential time Complex

Brute force

you have to put (M-1) dividers in N positions.

you have (N-1) locations

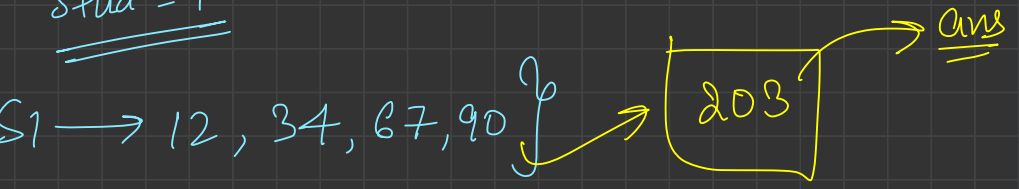
$^{N}C_{M} \longrightarrow \frac{N!}{M!(N-M)!}$

By using DP

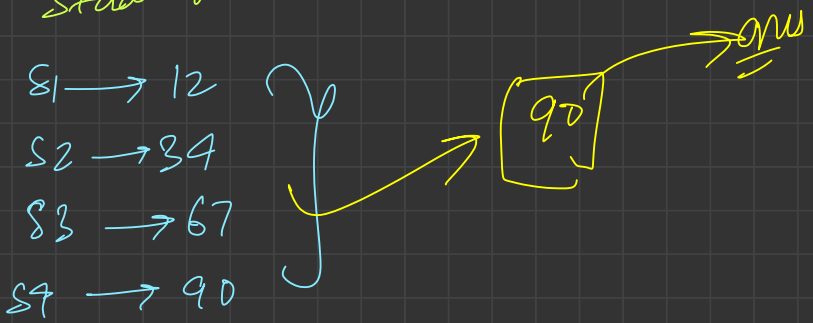
TC: O(N^2)

books[] = { 0: 12, 1: 34, 2: 67, 3: 90 } Students = 2

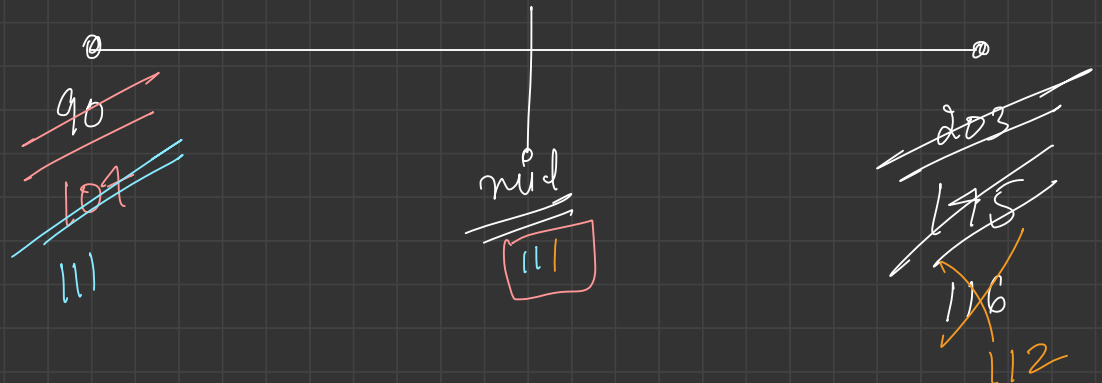
Case Stud = 1



Case Stud = N



Define Range
Eliminate Region



pAns = 116
117
113

books[] = {12, 34, 67, 90} limit = 146

S1 → 12 + 34 + 67

S2 → 90

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books[] = {12, 34, 67, 90} limit = 117

S1 → 12 + 34 + 67

S2 → 90

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books[] = {12, 34, 67, 90} limit = 103

S1 → 12 + 34

S2 → 67

S3 → 90

books[] = {12, 34, 67, 90} Limit = 110

S1 → 12 + 34

S2 → 67

S3 → 90

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books[] = {12, 34, 67, 90} Limit = 113

S1 → 12 + 34 + 67

S2 → 90

Suppose $x < M$

books → x

100

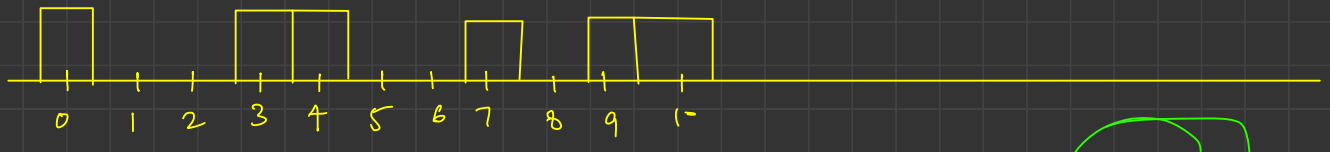
M = 10 students

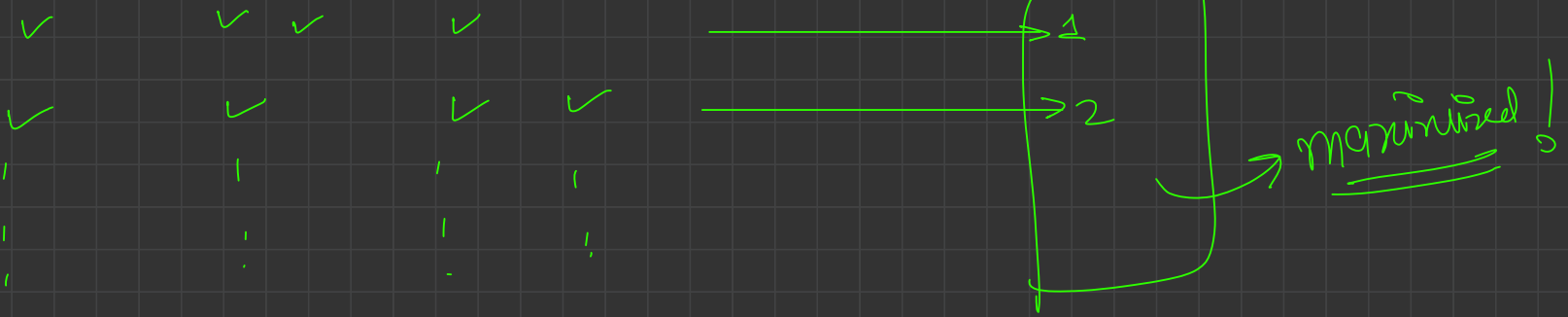
x = 3 students

Aggressive Cows

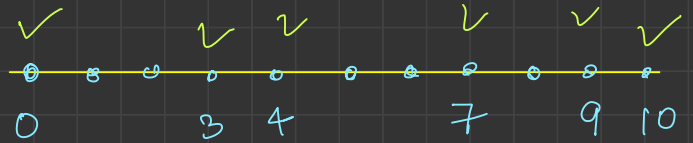
$pos[] = \{0, 7, 4, 9, 3, 10\}$ $\quad cows = 4$

→ sort!





pos[] = {0, 7, 4, 9, 3, 10} cows = 4



No. of agg cows

$2 \le M \le N$

No. of stalls

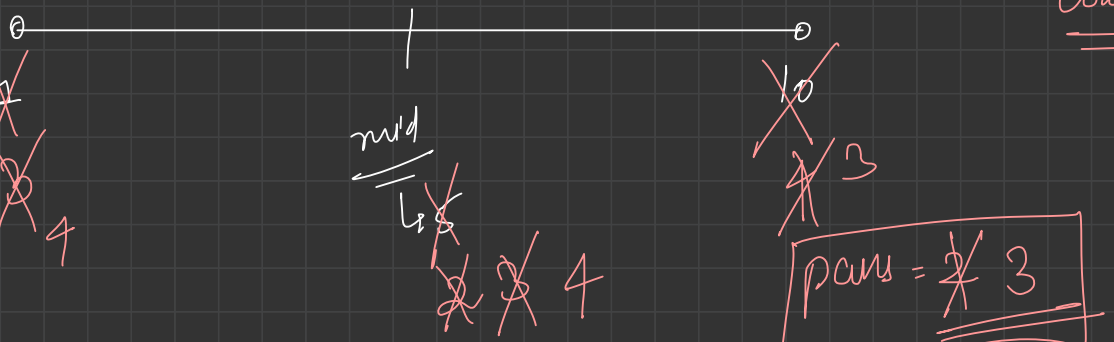
Case 1

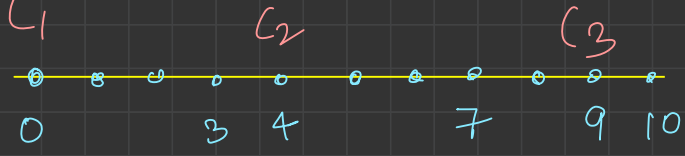
cows = 2 → dist = 10

Case 2

cows = N → dist = 1

Range!





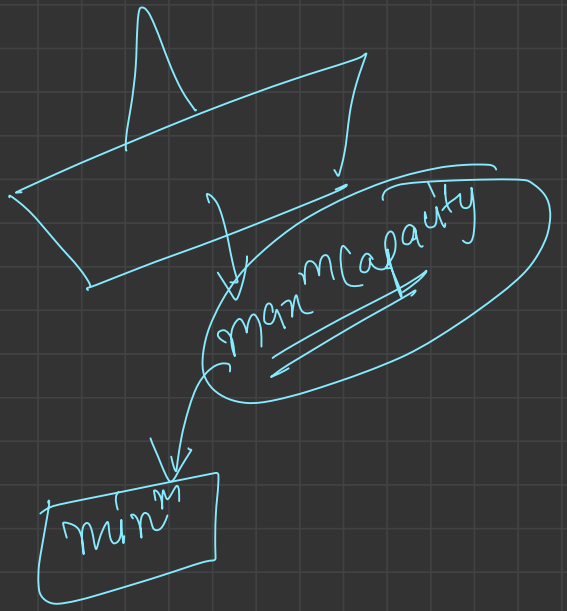
minDist = 4

cow placed =

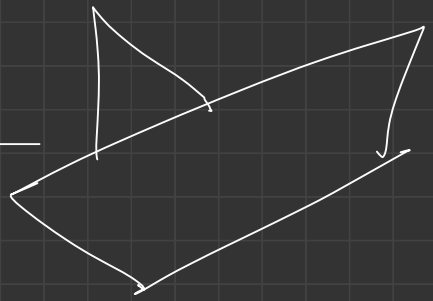
Capacity of ship packages within D days

9 8 7 6 5 4 3 2 1

days = 5



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



Case 1 — days: 5

max^m Cap = 45 kg

Case 2 — days = ∞

max^m Cap = 9 kg

days = 5

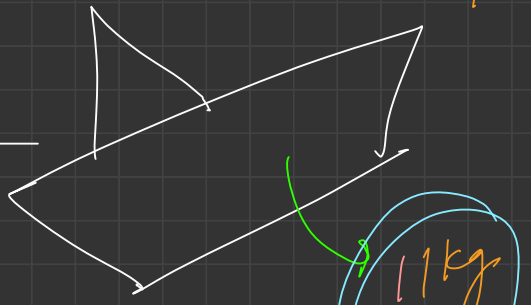
9kg 2kg 5kg

11 12kg 17kg 26kg

10kg 16

11kg 11 10

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



11kg

pans = 27kg

17

12

11kg

9

day1 → 10

day2 → 11

day3 → 7

day4 → 8

day5 = 9