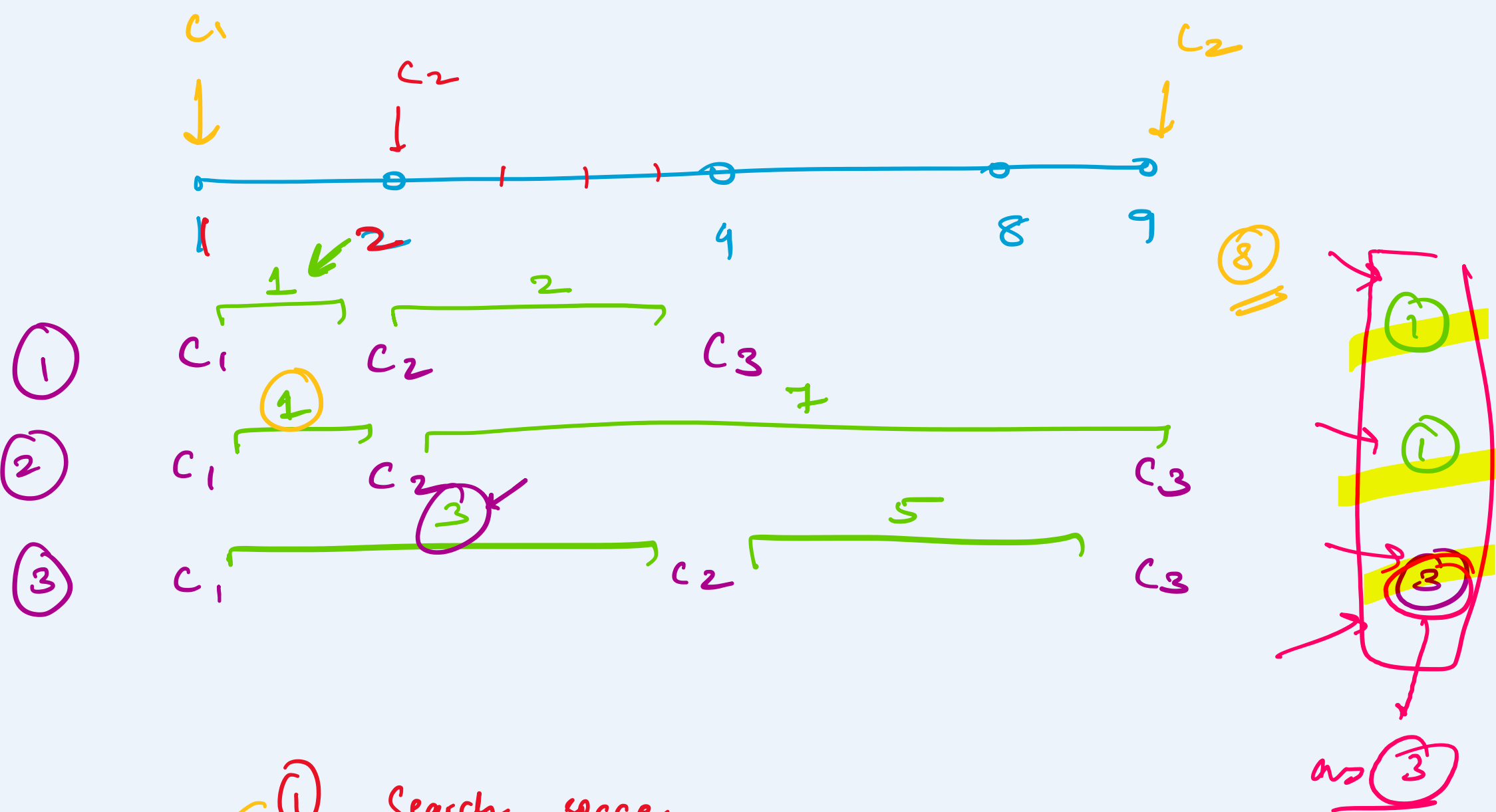
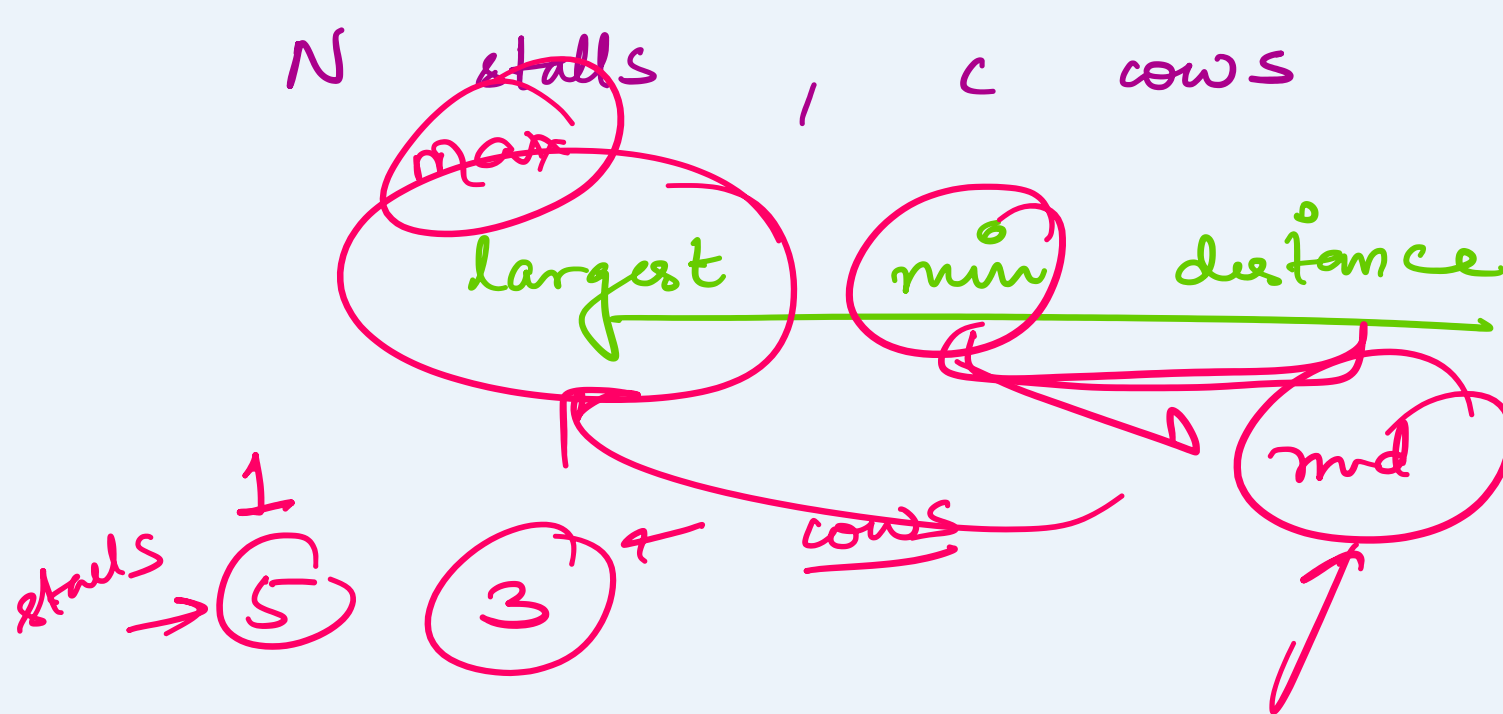


Binary search

- ① Binary search over answers
- ② Minimax problem

Problems when you need to minimize a value which is a maximum of some other values.

$$\min(\max(\dots))$$



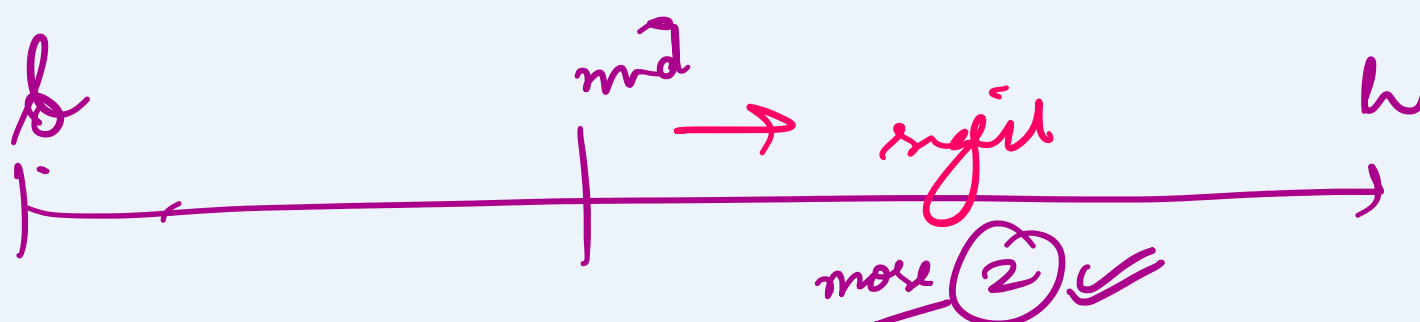
- ① Search space
- ② mid
- ③ Decision based on mid value

$$\begin{bmatrix} l = 1 \\ h = \text{max} \end{bmatrix}$$

mid → distance b/w cows

↓ good ✓

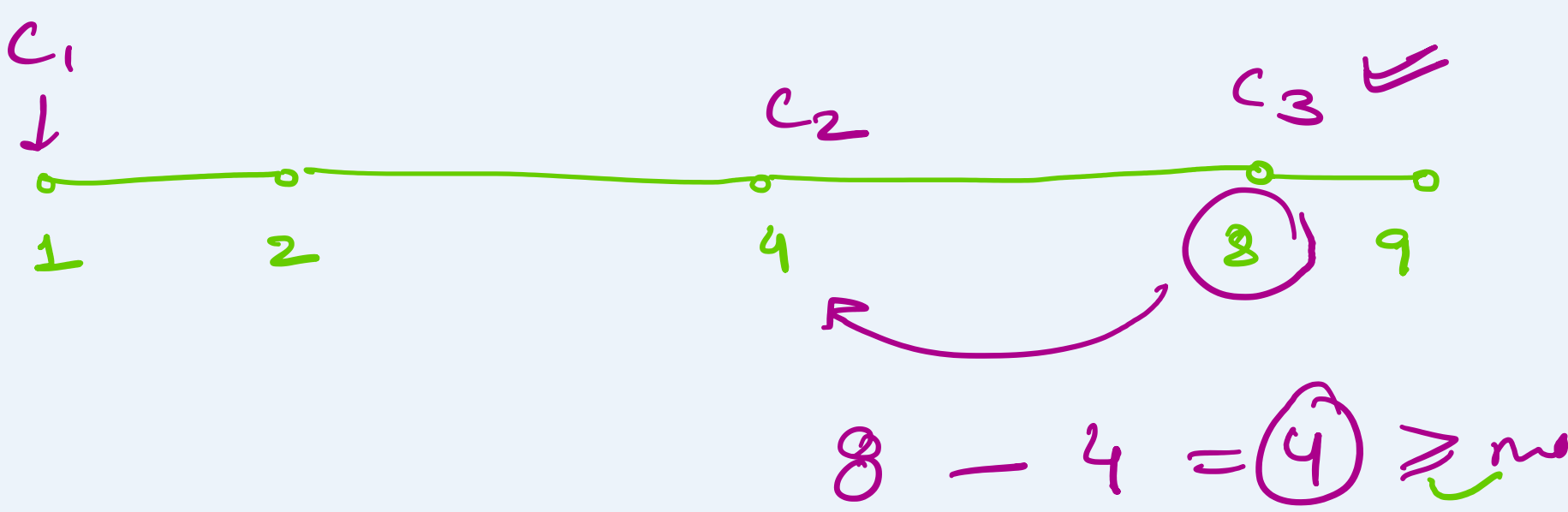
✓ can place all cows at least mid distance apart.



$$\text{mid} = 3$$

$$\text{count} = 1, 2, 3$$

$$\text{last pos} = 4$$



Given the no. of pages in n different books and m students.

The books are arranged in ascending order of no. of pages.

→ Every student is assigned to read some consecutive books.

→ The task is to assign books in such a way that the max. no. of pages assigned to a student is minimum.

pages → [12, 34, 67, 90]

n = 2

output → 113

2 students →

① [12] [34, 67, 90] → 191

② [12, 34] [67, 90] → 157

③ [12, 34, 67] [90] → 113

① Range / Search space

② mid

③ Decision based on mid value.

