Search in a Rotated Sorted Array

arr[] = [4, 5, 6, 7, 8, 9, 10, 1, 2, 3]

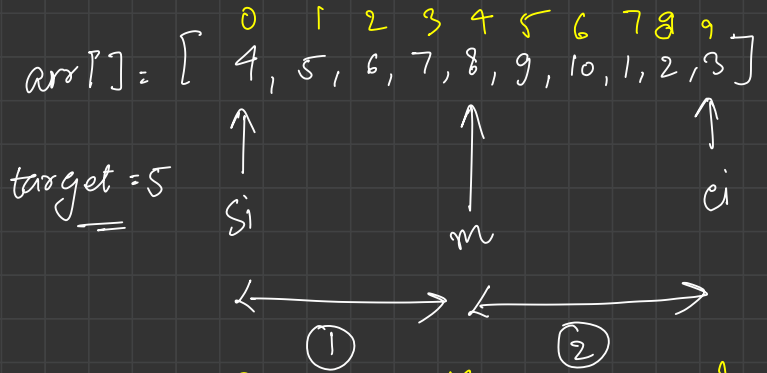
target = 5

Approach 1

① to get pivot Index TC : log(N)

② Binary search over two arrays (sorted) TC : log(N)

TC : log(N)



if (arr[mid] == target)

if (arr[si] <= arr[mid])

if (target in Range of left side)
move left;

else
move Right;

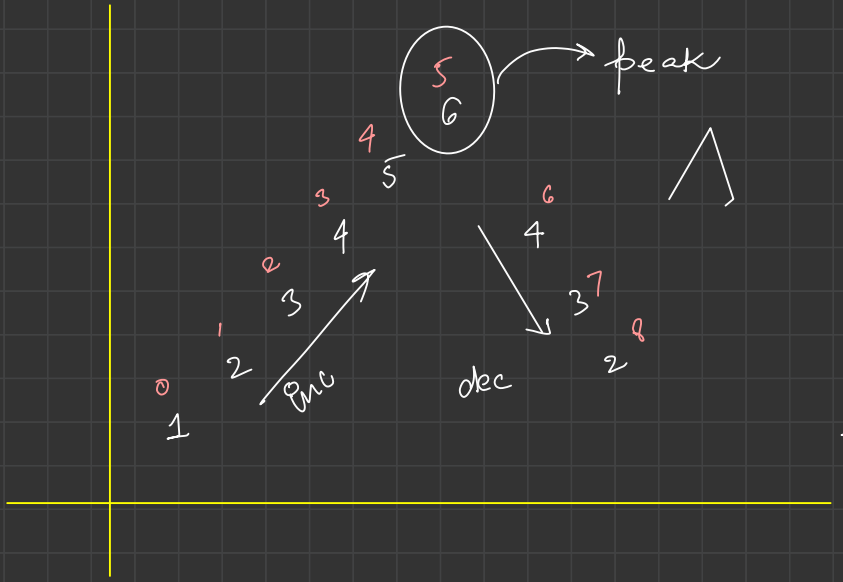
else

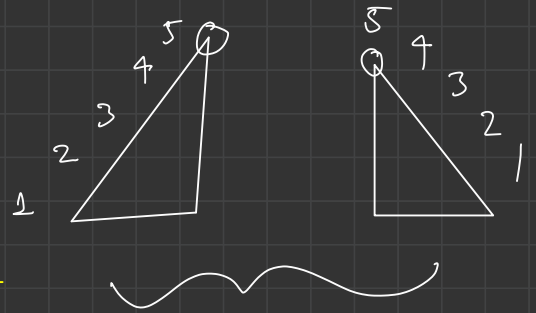
if (target in Range of Right side)
move Right;

(else move left;

Peak Index In A Mountain Array

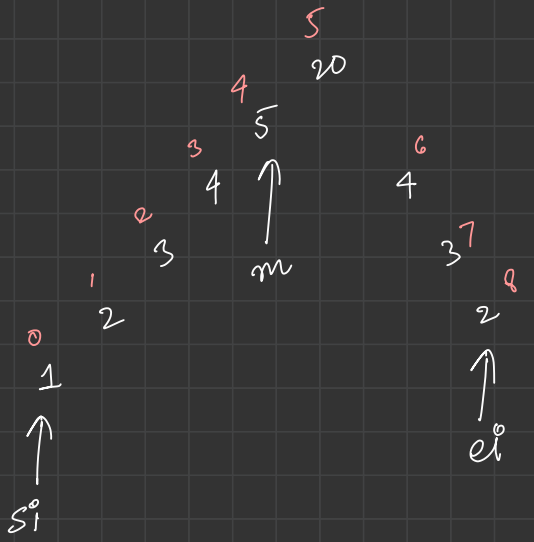
[1, 2, 3, 4, 5, 6, 4, 3, 2]





if peak is at x

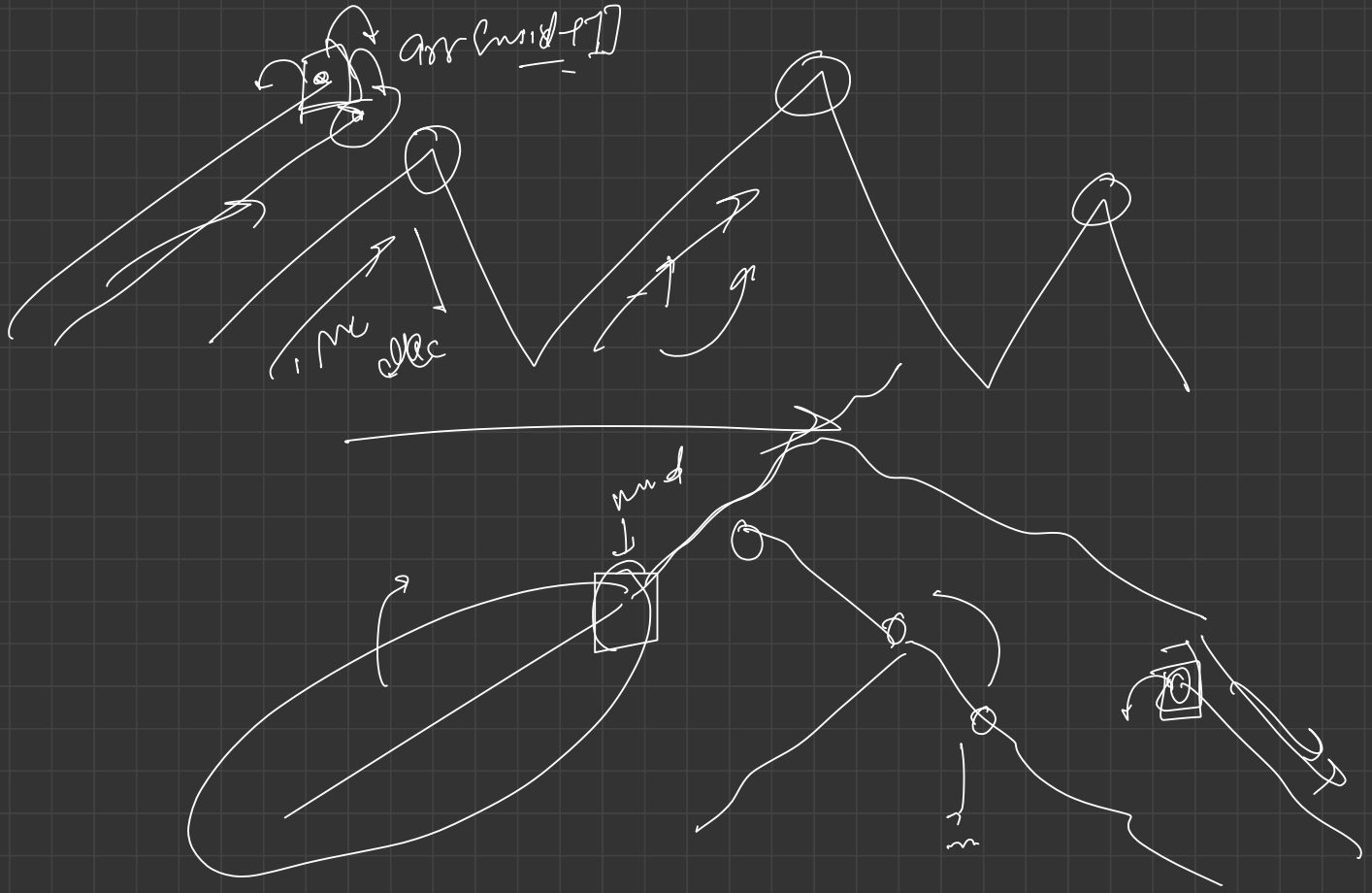
if (arr[x+1] < arr[x] && arr[x-1] < arr[x])



$$mid = \frac{0+8}{2} = 4$$

if (mid is peak)

else if (arr[mid-1] < arr[mid])
    move right;
else
    move left;



Allocate Min. number of Pages

0	1	2	3
12	34	67	90

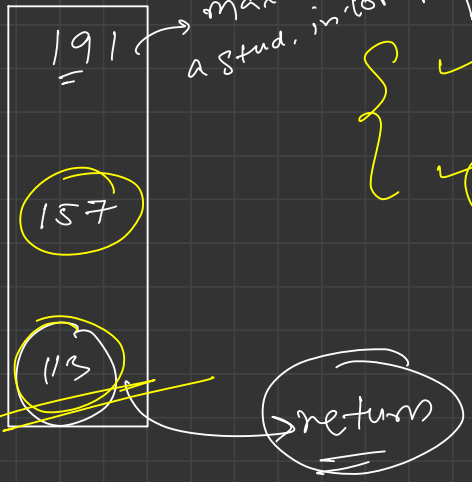
books[] = [12, 34, 67, 90]

students = 2

S1 → 12
S2 → 34, 67, 90

S1 → 12, 34
S2 → 67, 90

S1 → 12, 34, 67
S2 → 90

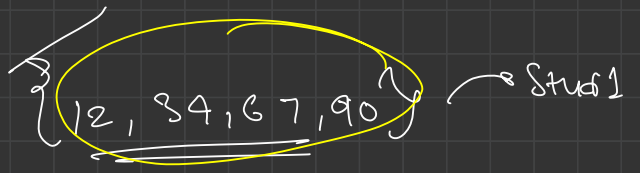


1. Each Student Should get Minimum 1 book
2. Book allotment to a student should be a contigeous book

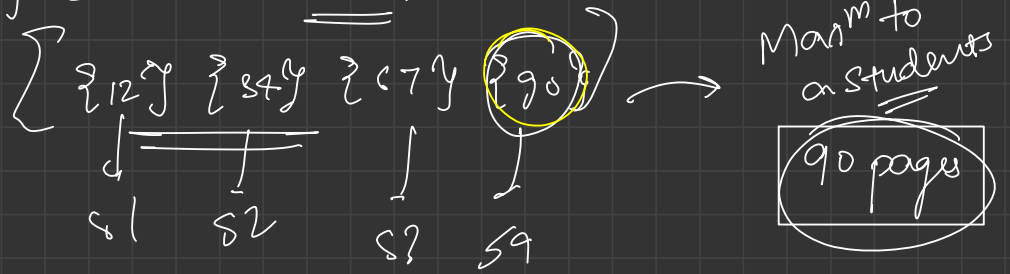
books[] = [12, 34, 67, 90] (0 1 2 3) students = 2

if students = 1

Max^m book in permutation = 203 pages



if students = N = 4

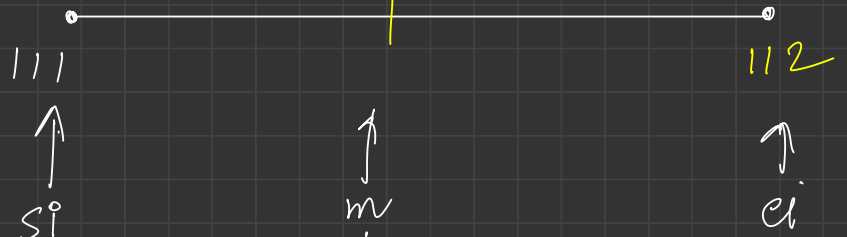


Max^m to a students

90 pages

$1 \leq \text{No. of Stud} \leq N$

$M \longrightarrow [90, 203]$ → ans lies in this range? yes!



$\frac{90+203}{2}$

{max^m no. of pages to a student.}

pAns = ~~116~~ ~~117~~ 113

books[] = [12, 34, 67, 90]
(indices: 0, 1, 2, 3)

max^m = 146 pages

S1 → 12 + 34 + 67
S2 → 90

→ 2 students

---

books[] = [12, 34, 67, 90]
(indices: 0, 1, 2, 3)

max^m = 117 pages

S1 → 12 + 34 + 67
S2 → 90

→ 2 students

books[] = [12, 34, 67, 90] (0, 1, 2, 3)

max^m = 103 pages

S1 → 12 + 34
S2 → 67
S3 → 90

} 3 students

---

books[] = [12, 34, 67, 90] (0, 1, 2, 3)

max^m = 110 pages

S1 → 12 + 34
S2 → 67
S3 → 90

} Students 3

books[] = [12, 34, 67, 90]

0 1 2 3

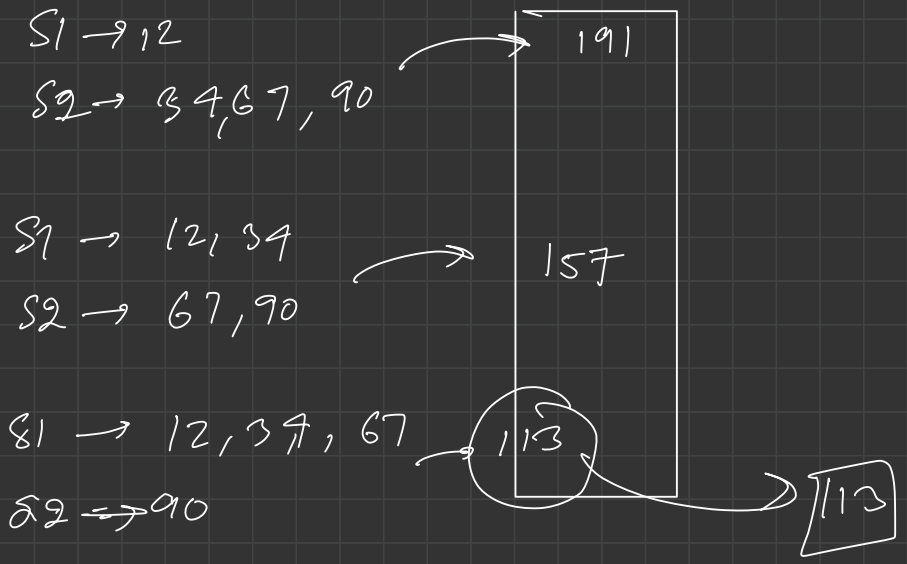
maxm = 113 pages

S1 → 12 + 34 + 67

S2 → 90

} Student 2

books[] = [12, 34, 67, 90] (0 1 2 3) students = 2



books[] = [12, 34, 67, 90]
0 1 2 3

Students = 1

S1 → {12, 34, 67, 90} → 203 pages → min of all

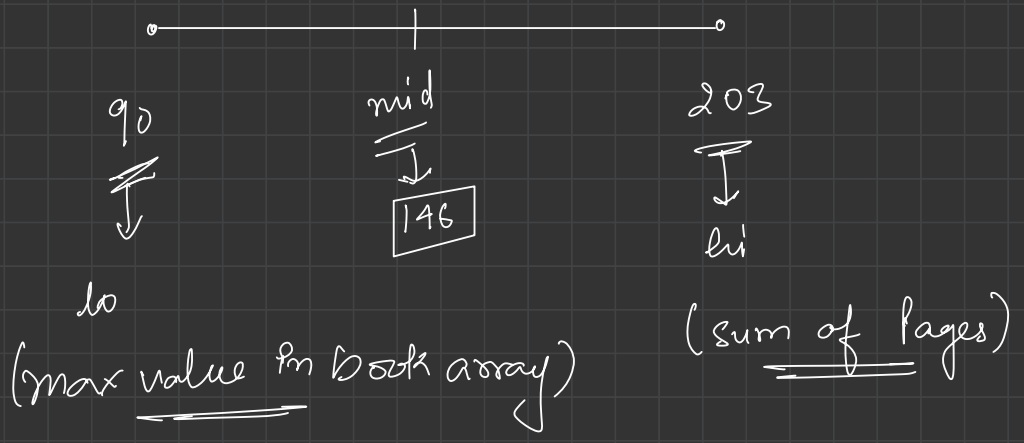
203 pages

Students = 4 → N

S1 → 12 S3 → 67
S2 → 34 S4 → 90

→ 90 pages → min of all

90 pages


90
mid
203
146
lo
hi
(max value in book array)
(sum of pages)

books[] = [12, 34, 67, 90]
0 1 2 3

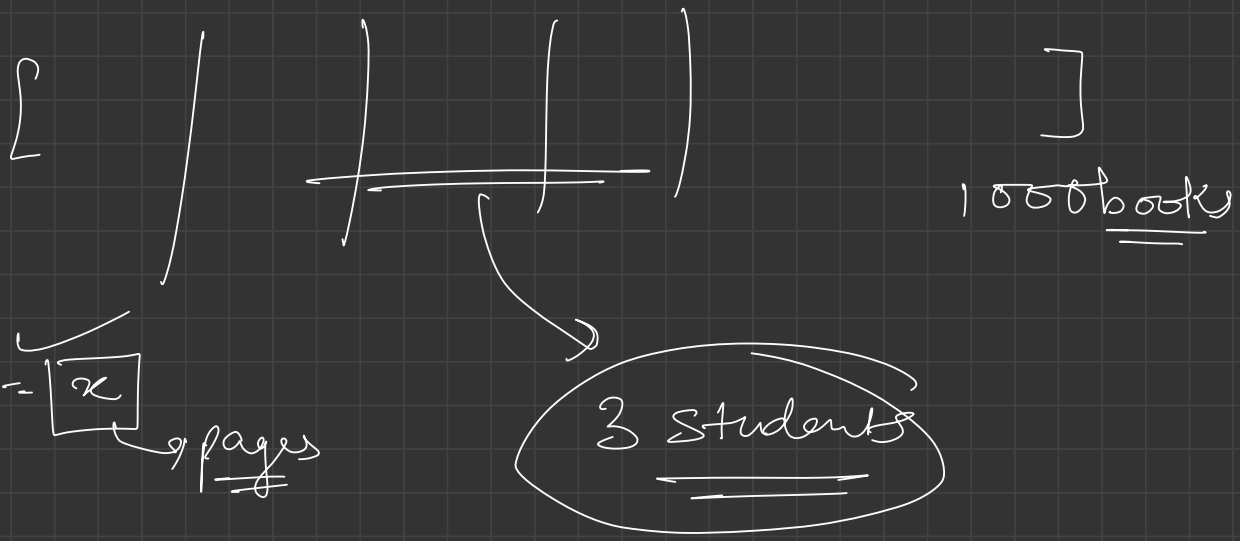
maxm book : 146

S1 → 12 + 34 + 67

S2 → 90

No. of student = 2

pages in Lim : 46 113 90



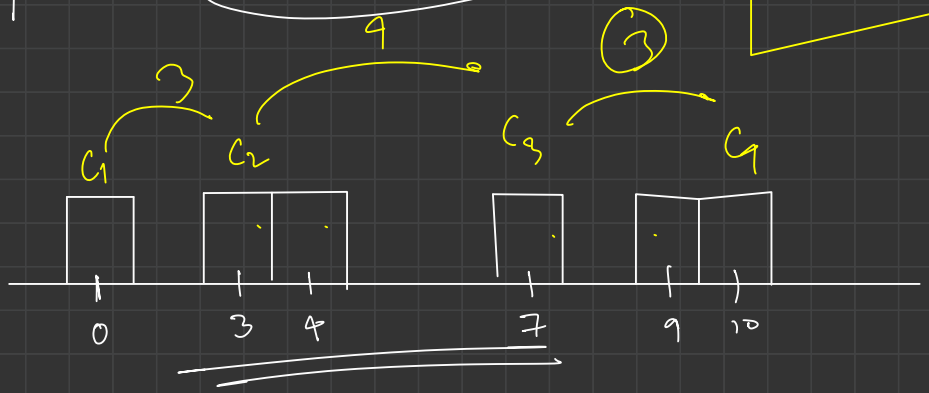
5 students

Aggressive Cows

pos[] : {0, 3, 4, 7, 10, 9} → Sort

Aggressive cows

cows = 4



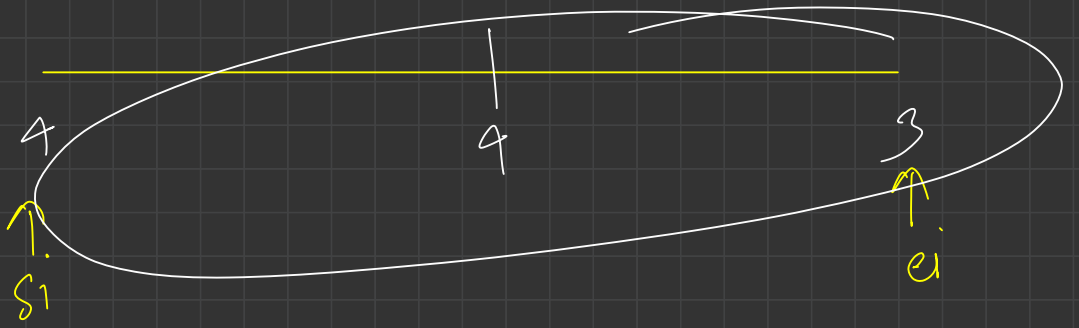
$^6C_4$ ways

pos[] : { 0, 3, 4, 7, 10, 9 } cows = 6

dist = 1

pos[] : { 0, 3, 4, 7, 10, 9 } cows = 2

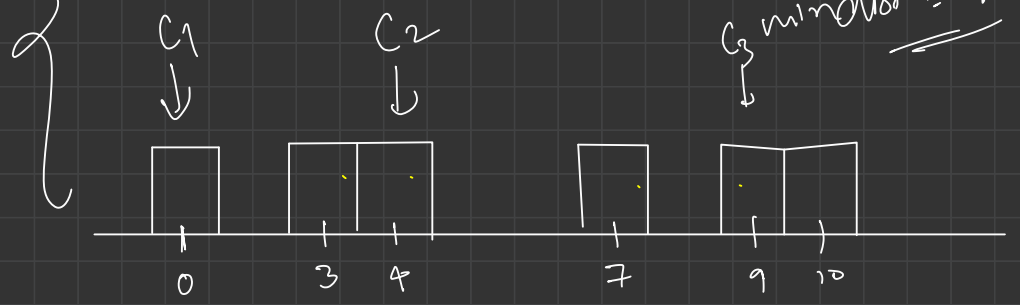
dist = 10



ans = ~~2~~ 3

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

cows = 3



minDist = 4