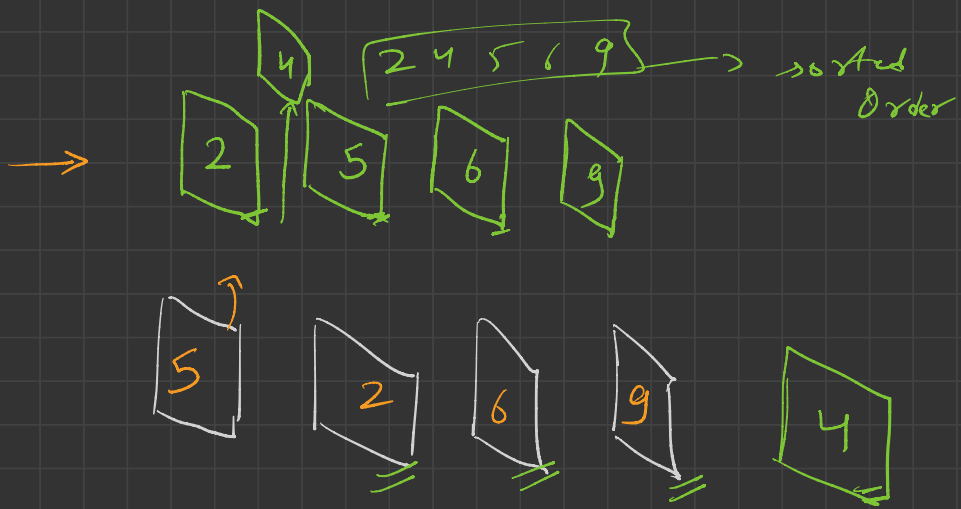
Insertion Sort

Card example

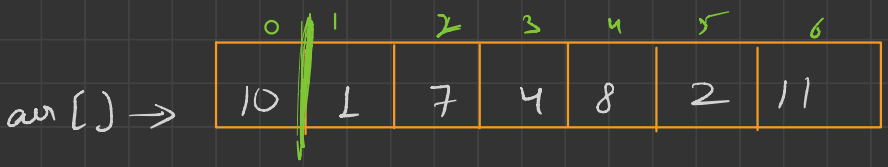


arr[] - {4 12 11 20}

{4, 11, 12, 20}

6 5 4 3 2 1

3 4 5 6



10

Round 1

i = 1

1 < 10 → left side

10 → 1 place

0th index → 1 copy krna

1 10 | 7 4 8 2 11 (2)

Round 2

i = 2

7 < 10 → left

7 > 1 → right

Round 3

i = 3

1 7 10 | 4 8 2 11 (3)

4 < 10 → left

Round 4

i = 4

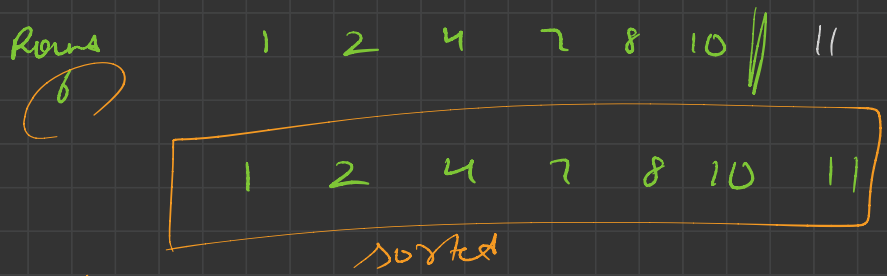
1 4 7 8 10 | 2 11 (5)

1 shift

Round 5

i = 5

1 2 4 7 8 10 | 11



n → no of elements

(n-1) → passes

Why ?

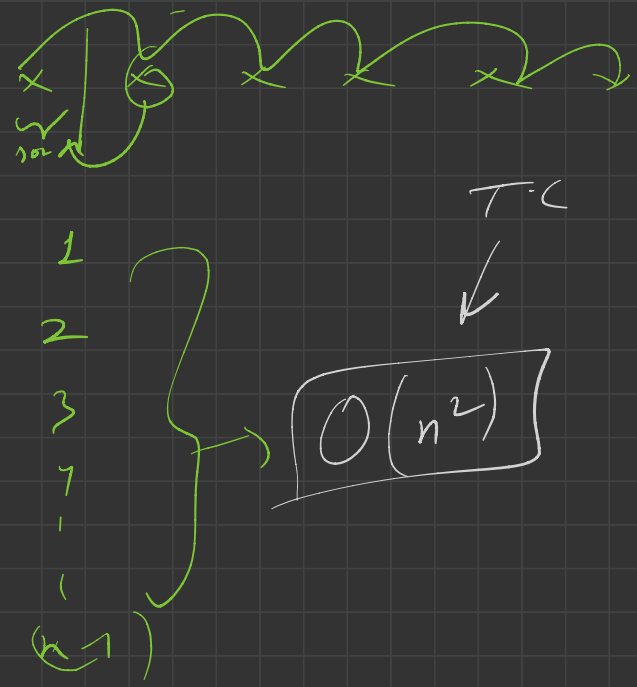
→ Adaptable → ?

→ Stable → ?

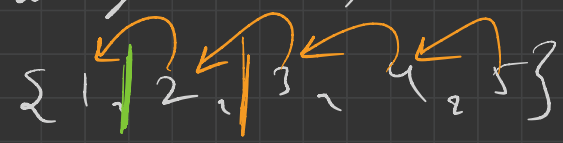
→ n (small)
partially sorted ( )

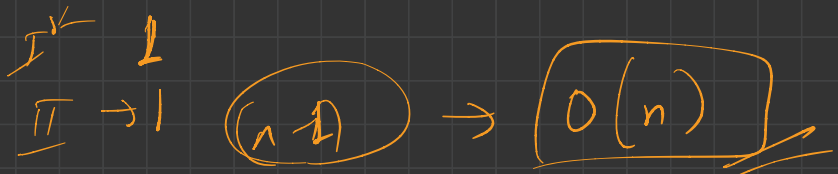
T.C →

S.C → O(1)

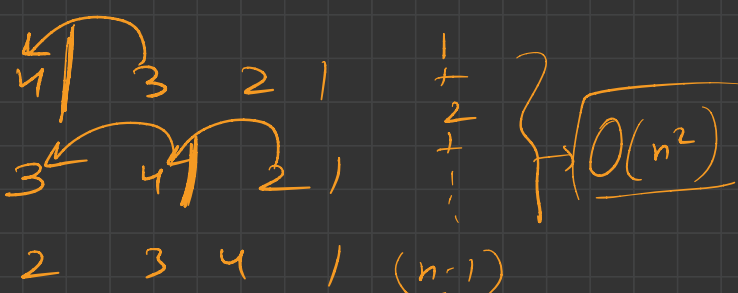


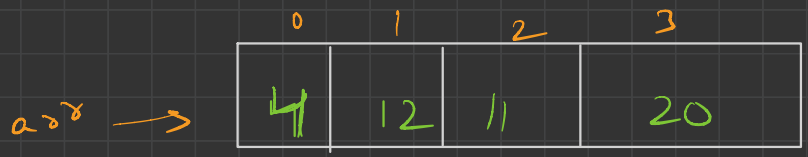
B.C → already sorted →





worst →





4 | 12 | 11 | 20

j x i

RL

i = 1

j = 0

12 > 4 → 4 x right

break

temp = 11

RR

i = 2

j = 1

11 < 12 →

0	1	2	3
4	12	12	20

i = 2

j = 0

11 > 4 → break;

arr[j+1] = temp

arr[0+1] = arr[1] = 11

0	1	2	3
4	11	12	20

j i

temp = arr[i] = 20

RR

i = 3

j = 2

20 > 12 → break;

arr[j+1] = temp

arr[2+1] = arr[3] = 20