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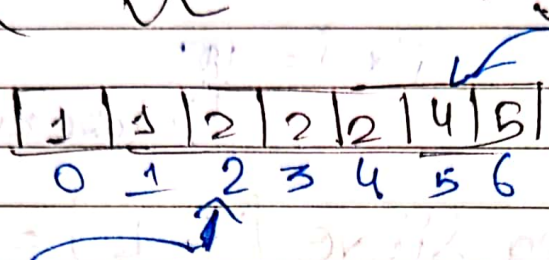
Doubt class

Lower Bound & upper Bound



lowerbound (start, end, integer)

first occurance → lower bound (v.begin(), v.end(), 2)

upperbound (v.begin(), v.end(), 2)

last occurance →

Total = upperbound − Lowerbound

No → Need to do +1

because upper bound returns Next best to searched element

→ lower & upper bound returns address

So, to print its *

ex → auto lower = lowerbound(

cout << *lower

or

cout << lower − v.begin();

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class 8 Doing without using erase()

Question (2) => Remove all occurance of substring

Part = abc

ex => d a a b c b a a b c b c

dab

0	1	2	3	4	5	6	7	8	9	10	11
d	a	a	b	c	b	a	a	b	c	b	c

find -> abc left Right

cannot pop from middle

New string => left (Concat) Right =>

=> we used extra space but erase also use extra space.

found => find(abc) = 2

LP = s.substr(0, found)

RP => s.substr(found + part.size(), s.size())

Erase

Erase

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Substr -> start end
first Loop 0 to found
Copy in new string

Concat -> string s1, string s2

```
for (auto w : s1)
    s.push_back(w);

for (auto w : s2)
    s.push_back(w);
```

Decode the Message -> Done

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Majority Element :-

→ appears more than $n/2$

| 2 | 2 | 3 | 3 | 3 | 1 | 2 | 2 |

i) Sorting

| 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |

$n/2$ → element is always Majority.

TC = O(nlogn)

(ii) Optimal Hashing :-

map

| 2 | 2 | 3 | 3 | 3 | 2 | 2 | 1 |

2 → 1 2 3 4

3 → 1 2 3

1 →

iterate & find element → value greater than $n/2$

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(iii) Moore's Voting Algorithm

	1					2		3				4			
arr =	7	7	5	7	5	5	5	7	5	5	7	7	5	5	5	5

el = 7 → assume that this is ans

cnt = 0 1 2 1 2 1 0

(S1) → whenever find 7 ↑ see

(S2) → If cnt reach 0 change el if found anything ↓ see else

(i) el = 5
cnt = 1 0 1

(ii) el = 5
cnt = 1 2 1 0

(iii) el = 5 → Ans didnot get cancel
cnt = 1 2 3 4.

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