Friday, 2 April 2021 8:29 PM

Q Given a stream of characters, find the first non-repeating character from the stream.

I → " aabc "
O → " a -1 b b "

" a " → a
" aa " → -1
" aab " → b
" aabc " → b

I → " abacac "
→ a a b b b b

Brute force approach

abba → aaa-1

str = " a " → | a | 1 | → " a "

str = " ab " → | a | 1 |, | b | 1 | → a

str = " abb " → | a | 1 |, | b | 2 | → a

str = " abba " ... → | a | 2 |, | b | 2 | → (-1)

Intuitions: lets say char 'a' has been repeated,

| a | b | a | . . . .

a xxx

abaccct

aabbbb-1

a	1 (2)
b	1 → 2
c	1 → 2 → 3

queue

first char of the queue will be the unique char so far.

1

| 0 | | | | | | |
0 1 2 3 4 25

26

a → 97 − 97 = 0

b → 98 − 97 = 1

c → 2

d → 3

(a)

count [str.charAt(i) − 'a' (97)] ++

'a' − 'a' = 0

count [0] ++

(4) length of array, (6) queries

| 8 | 5 | 3 | 1 | → array

1 → 8
2 → 5
3 → 4
4 → 3
6 → 2
8 → 1

queries

8	5	3	1
4	5	3	1
4	2	3	1
2	2	3	1
2	2	1	1
2	1	1	1
1	1	1	1
1	1	1	1

5 → 2
6 → 2
7 → 1
8 → 1

0 = 4

1/2 = 0

1 max ele

(16)

| 8 | 5 | 3 | 1 |

8/2 → (4) xx

| 16 | 5 | 3 | 1 |

16/2 → (8)

Two queues → q1, q2

[27, 24, 15, 12, 10] → sort it

1 → 27
2 → 24
3 → 15
4 → 13
5 → 12
6 → 12
7 → 10
8 → 7
9 → 6

q1

q2 | 6 | 6 | 6 | 5 | 3 | 3 | 3 |

27/2 = 13

24/2 → 12

15/2 = 7

13/2 = 6

Q Given an array

2	3	1	10	4	11	6	3	2	0

k = 3

Print the maximum element inside all subarrays of size k.

[3, 10, 10, 11, 11, 6, 3]

Deque   first k ele

2, 3, 7, -10, -4, 11, 6, [3, 2, 0]

| 3 | 2 | 0 |

pop

(1) 2, 3, 7

(2) 3, 7, -10

-10, -4,

-4 < -4 < -4

< top

k = 3 − 3

6 —

3 —

(7) (7) (7) (11) (11) (11) (6) (3)

(1) 3, 7, -10

(2) 7, -10, -4

(3) -10, -4, 11

pop

< -10