

Arrays Challenge-First Repeating Element (Amazon, Oracle)

Problem

Given an array `arr[]` of size `N`. The task is to find the first repeating element in an array of integers, i.e., an element that occurs more than once and whose index of first occurrence is smallest.

Constraints

$1 \leq N \leq 10^6$

$0 \leq A_i \leq 10^6$

Example

Input:

7

1 5 3 4 3 5 6

5

Output:

2

Explanation:

5 is appearing twice and its first appearance is at index 2 which is less than 3 whose first occurring index is 3. (For user's convenience, returned indexing should be such that it starts with 1.)

Solution

Base idea: To check if an element is repeating, we maintain an array `idx[]`, which stores the first occurrence (index) of a particular element `a[i]`.

Steps

1. Initialise the `idx[]` with -1, and `minidx` with `INT_MAX`.

-1	-1	-1	-1	-1	-1	-1	-1
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2. Keep updating `idx[]`, while traversing the given array.

Given Array:	1	5	3	4	3	5	6
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Iterations

• At $i = 0$:

Given Array:	1	5	3	4	3	5	6
	↑						
Idx[]:	-1	0	-1	-1	-1	-1	-1

Handwritten notes: Red numbers 0-6 above the array. Blue arrows from array elements to idx[]: 1 to 0, 5 to 1, 3 to 2, 4 to 3, 3 to 4, 5 to 5, 6 to 6. A handwritten note on the right says $idx[0] = 0$.

• At $i = 1$:

Given Array:	1	5	3	4	3	5	6
	↑						
Idx[]:	-1	0	-1	-1	-1	+1	-1

Handwritten notes: Red number 1 above the array. Blue arrows from array elements to idx[]: 5 to 1, 3 to 2, 4 to 3, 3 to 4, 5 to 5, 6 to 6. A handwritten note on the right says $idx[1] = 1$.

• At $i = 2$:

Given Array:	1	5	3	4	3	5	6
			↑				
Idx[]:	-1	0	-1	2	-1	1	-1

Handwritten notes: Red number 2 above the array. Blue arrows from array elements to idx[]: 5 to 1, 3 to 2, 4 to 3, 3 to 4, 5 to 5, 6 to 6. A handwritten note on the right says $idx[2] = 2$.

at that index we will store index of $a[i]$ value will be used as index of $idx[]$ and
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- At $i = 3$:

Given Array:

1	5	3	4	3	5	6
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Idx[]:

-1	0	-1	2	3	1	-1	-1
----	---	----	---	---	---	----	----

- At $i = 4$:

Given Array:

1	5	3	4	3	5	6
---	---	---	---	---	---	---



Idx[]:

-1	0	-1	2	3	1	-1	-1
----	---	----	---	---	---	----	----

- At $i = 5$:

Given Array:

1	5	3	4	3	5	6
---	---	---	---	---	---	---



Idx[]:

-1	0	-1	2	3	1	-1	-1
----	---	----	---	---	---	----	----

6 1 2 3 4 5

- At $i = 6$:

Given Array:

1	5	3	4	3	5	6
---	---	---	---	---	---	---



Idx[]:

-1	0	-1	2	3	1	6	-1
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