

Question 2**Max. score: 20.00** Au**1 Minimum length OR****2 You are given the following:**

- Integer array A of size N
- Q queries in which each query consists of two integers $indx$, val

Task

Your task is to determine the minimum index / such that:

- $I \geq indx$
- bitwise *OR* of all the numbers from $indx$ to I is greater than or equal to val .

If no such index exists, print -1.

Note: 1-based indexing is used.

Example*Assumptions*

- $N = 3$
- $A = [2, 4, 8]$

**Search**

- bitwise *OR* of all the numbers from *Idx* to *l* is equal to *val*.

Successfully

If no such index exists, print -1.

1

Note: 1-based indexing is used.

2

Example

Assumptions

- $N = 3$
- $A = [2, 4, 8]$
- $Q = 1$
- $Queries = [[1, 6]]$

Approach

You must determine the minimum *l* that meets the following conditions:

- l* must be greater than or equal to 1
- Bitwise *OR* of all the elements from 1 to *l* should be greater than or equal to *val*=6

If we take *l*=1, then bitwise *OR* of all the elements from index 1 to 1 is 2, which is less than 6.

If we take *l*=2, then bitwise *OR* of all the elements from index 1 to 2

1 26°C
Haze



Search

You must determine the minimum l / that meets the following conditions:

- 1 • l must be greater than or equal to 1
- 2 • Bitwise OR of all the elements from 1 to l should be greater than or equal to $val=6$

If we take $l=1$, then bitwise OR of all the elements from index 1 to 1 is 2, which is less than 6.

If we take $l=2$, then bitwise OR of all the elements from index 1 to 2 is 6, which is greater than or equal to 6.

$l = 2$ is the minimum index that meets the above conditions, so the answer would be 2.

Function description

Complete the *solve* function provided in the editor. This function takes the following 4 parameters and returns an integer array of size Q representing the answer to each query.

- N : Represents the size of the given array
- A : Represents the given array
- Q : Represents the number of queries
- *Queries*: Represents the Q queries

Input format



Search



Function description

1 Complete the *solve* function provided in the editor. This function
2 takes the following 4 parameters and returns an integer array of size
3 Q representing the answer to each query.

2

- N : Represents the size of the given array
- A : Represents the given array
- Q : Represents the number of queries
- *Queries*: Represents the Q queries

Input format

13 **Note:** This is the input format that you must use to provide custom
14 input (available above the **Compile and Test** button).

- The first line contains an integer N , representing the size of the array.
- The second line contains N space-separated integers, representing array A .
- The third line contains an integer Q , representing the number of queries.
- The next Q lines contain two space-separated integers, representing each query.

Output format



Search

array.

- The second line contains N space-separated integers, representing array A .
- The third line contains an integer Q , representing the number of queries.
- The next Q lines contain two space-separated integers, representing each query.

Output format

Print Q space-separated integers representing the answer to each query.

Constraints

$$\begin{aligned}1 &\leq N, Q \leq 10^5 \\0 &\leq A_i, val < 2^{20} \\1 &\leq idx \leq N\end{aligned}$$

Code snippets (also called starter code/boilerplate code)

This question has code snippets for C, CPP, Java, and Python.

Sample input 

```
5  
1 2 3 4 5  
3  
1 3
```

 Sample output

 Sample output

```
2 4 -1
```



Code snippets (also called starter code/boilerplate)

This question has code snippets for C, CPP, Java, and Python.

1

Sample input ↗



Sample output ↗



2

```
5  
1 2 3 4 5  
3  
1 3  
2 4  
1 100
```

```
2 4 -1
```

Explanation

For the 1st test case

- As $(A[1] / A[2]) = 3$, 2 is the minimum index that meets the given condition.

For the 2nd test case

- As $(A[2] / A[3] / A[4]) = 7$, 4 is the minimum index that meets the given condition.

For the 3rd test case

- No such index exists, so the answer is -1.



Explanation

1

For the 1st test case

2

- As $(A[1] / A[2]) = 3$, 2 is the minimum index that meets the given condition.

For the 2nd test case

- As $(A[2] / A[3] / A[4]) = 7$, 4 is the minimum index that meets the given condition.

For the 3rd test case

- No such index exists, so the answer is -1.

① The following test cases are the actual test cases of this question that may be used to evaluate your submission.

Sample input 1 

```
8  
10 25 18 4 9 2 17 17  
5  
2 22  
8 7  
1 3  
8 29  
8 9
```

Sample output 1 

```
2 8 1 -1 8
```



Sample input 1 ↢

1

8
10 25 18 4 9 2 17 17
5
2 22
8 7
1 3
8 29
8 9



Sample output 1



2 8 1 -1 8

2

Sample input 2 ↢



Sample output 2



5
16 10 17 27 0
4
4 29
4 4
4 21
4 9

-1 4 4 4

Note:



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Search



5
16 10 17 27 0
1
4
4 29
4 4
4 21
4 9

-1 4 4 4

2

Note:

Your code must be able to print the sample output from the provided sample input. However, your code is run against multiple hidden test cases. Therefore, your code must pass these hidden test cases to solve the problem statement.

Limits

Time Limit: 0.5 sec(s) for each input file

Memory Limit: 256 MB

Source Limit: 1024 KB

Scoring

Score is assigned if any testcase passes

Allowed Languages

Bash, C, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java 8, Java 14, JavaScript(Node.js), Julia, Kotlin, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, R(RScript), Racket, Ruby, Rust, Scala, Swift, TypeScript, Visual Basic



Search