



Beautiful Segments

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Problem

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You are given an array, A , consisting of N integers.

A segment, $[l, r]$, is *beautiful* if and only if the *bitwise AND* of all numbers in A with indices in the inclusive range of $[l, r]$ is not greater than X . In other words, segment $[l, r]$ is *beautiful* if $(A_l \wedge A_{l+1} \wedge \dots \wedge A_r) \leq X$.

You must answer Q queries. Each query, Q_j , consists of 3 integers: L_j , R_j , and X_j . The answer for each Q_j is the number of *beautiful* segments $[l, r]$ such that $L_j \leq l \leq r \leq R_j$ and $X = X_j$.

Input Format

The first line contains two space-separated integers, N (the number of integers in A) and Q (the number of queries).

The second line contains N space-separated integers, where the i^{th} integer denotes the i^{th} element of array A .

Each line j of the Q subsequent lines contains 3 space-separated integers, L_j , R_j , and X_j , respectively, describing query Q_j .

Constraints

- $1 \leq N \leq 4 \times 10^4$
- $1 \leq Q \leq 10^5$
- $1 \leq L_j \leq R_j \leq N$
- $0 \leq X_j \leq 2^{17}$
- $0 \leq A_i < 2^{17}$
- $1 \leq N, Q \leq 2000$ holds for test cases worth at least 10% of the problem's score.
- $0 \leq A_i < 2^{11}$ holds for test cases worth at least 40% of the problem's score.

Output Format

Print Q lines, where the j^{th} line contains the number of beautiful segments for query Q_j .

Sample Input

```
5 3
1 2 7 3 4
1 5 3
2 4 6
3 5 2
```

Sample Output

```
13
5
2
```

Explanation

The beautiful segments for all queries are listed below.

Query 0: The beautiful segments are [1, 1], [1, 2], [1, 3], [1, 4], [1, 5], [2, 2], [2, 3], [2, 4], [2, 5], [3, 4], [3, 5], [4, 4], [4, 5].

Query 1: The beautiful segments are [2, 2], [2, 3], [2, 4], [3, 4], [4, 4].

Query 2: The beautiful segments are [3, 5], [4, 5].

[f](#) [t](#) [in](#)

Submissions: 66

Max Score: 120

Difficulty: Expert

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☆☆☆☆☆

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Current Buffer (saved locally, editable)  

Java 7  

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
13
```

Line: 1 Col: 1

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☐ Test against custom input

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