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 $(A_l \land A_{l+1} \land \ldots \land A_r) \leq X$.

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 $[3,5], [4,5]$.