E Array Transformer

Input: Standard Input
Output: Standard Output

Write a program to transform an array **A[1], A[2], ..., A[n]** according to **m** instructions. Each instruction **(L, R, v, p)** means: First, calculate how many numbers from **A[L]** to **A[R]** (inclusive) are strictly less than **v**, call this answer **k**. Then, change the value of **A[p]** to **u*k/(R-L+1)**, here we use integer division (i.e. ignoring fractional part).

Input

The first line of input contains three integer **n, m, u (1≤n≤10,0000, 1≤m≤20,000, 1≤u≤1,000,000,000)**. Each of the next **n** lines contains an integer **A[i] (1≤A[i] ≤u)**. Each of the next **m** lines contains an instruction consisting of four integers **L, R, v, p(1 ≤ L ≤ R ≤ n, 1 ≤ v ≤ u, 1 ≤ p ≤ n)**.

Output

Print **n** lines, one for each integer, the final array.

Sample Input	Output for Sample Input
10 1 11 1 2 3 4 5 6 7 8 9 10 2 8 6 10	1 2 3 4 5 6 7 8 9 6

Explanation
There is only one instruction: L=2, R=8, v=6, p=10. There are 4 numbers (2,3,4,5) less than 6, so k=4. The new number in A[10] is 11*4/(8-2+1)=44/7=6.

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