Problem B. Hedgehog Daniyar and Algorithms

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

Hedgehog Daniyar wants to learn new algorithms. To help his friend, Invisible Zhanadil gave Daniyar N algorithmic books, each book having its own weight w_i ($1 \le i \le N$). Hedgehog Daniyar arranged the books from 1 to N on the shelf.

Hedgehog Daniyar's learning journey is spread out to M days: during day i, he is interested in reading the books from l_i to r_i. As a perfectionist, he first tries to rearrange the books from l to r in non-decreasing order of their weights. To achieve that, the hedgehog can swap **any two adjacent books** within the range l_i and r_i as long as **their total weight doesn't exceed** his mood k_i. Luckily, he already knows his mood for each of the upcoming M days. At the end of each day, again due to his perfectionism, he returns all the books back to their original positions.

Help the hedgehog to improve his plan - find out for each day whether his mood is enough to rearrange books in non-decreasing order of their weights.

For example, assume that hedgehog Daniyar is planning to read three books, currently arranged as $[3, 5, 4]$ and his mood is 8. Then, sadly, it's not possible since he can't swap books with weights 5 and 4 (because $5 + 4 > 8$). But if his mood is 9, then it's possible to rearrange the books in non-decreasing order of their weights.

Note that each day is independent of other days, meaning that at the start of each day arrangement of books will be **in its original state**.

Input

The first line of input contains two integers N, M ($1 \le N, M \le 10^6$) — the number of algorithmic books and the number of days.

The second line of input contains N integers $w_1, w_2, ..., w_N (0 \le w_i \le 10^9$ for all $1 \le i \le N$) separated with a single space — weight of each book.

Next M lines contain three integers l_i, r_i, and k_i ($1 \le l_i \le r_i \le N$ and $0 \le k_i \le 2 \cdot 10^9$). Hedgehog Daniyar plans to read the books from l_i to r_i with mood k_i on specific day i.

Output

Output M lines, each containing a single digit. The line i should contain 1 if it's possible for hedgehog Daniyar to read those books on day i and 0 otherwise.

Scoring

This task contains six sub-tasks:

1. $1 \le N, M \le 500$. Scored 8 points.
2. $1 \le N, M \le 5000$. Scored 9 points.
3. $1 \le N, M \le 10^6, 0 \le k < w_i$ where $1 \le i \le N$. Scored 13 points.
4. $1 \le N, M \le 10^5, 0 \le w_i \le 1000$. Scored 17 points.
5. $1 \le N, M \le 2 \cdot 10^5$. Scored 30 points.
6. Constraints from problem statement above. Scored 23 points.

Example

standard input	standard output
5 2 3 5 1 8 2 1 3 6 2 5 3	1 0

Note

In the first query, Hedgehog Daniyar can achieve the right arrangement in the following way:

$[3, \mathbf{5}, \mathbf{1}, 8, 2]$

$[\mathbf{3}, \mathbf{1}, 5, 8, 2]$

$[1, 3, 5, 8, 2]$