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# 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  $w_i$  ( $1 \leq i \leq N$ ). 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  $N, M$  ( $1 \leq N, M \leq 10^6$ ) — the number of algorithmic books and the number of days.

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

Next  $M$  lines contain three integers  $l_i, r_i$ , and  $k_i$  ( $1 \leq l_i \leq r_i \leq N$  and  $0 \leq k_i \leq 2 \cdot 10^9$ ). 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.  $1 \leq N, M \leq 500$ . Scored 8 points.
2.  $1 \leq N, M \leq 5000$ . Scored 9 points.
3.  $1 \leq N, M \leq 10^6, 0 \leq k < w_i$  where  $1 \leq i \leq N$ . Scored 13 points.
4.  $1 \leq N, M \leq 10^5, 0 \leq w_i \leq 1000$ . Scored 17 points.
5.  $1 \leq N, M \leq 2 \cdot 10^5$ . Scored 30 points.
6. Constraints from problem statement above. Scored 23 points.

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## Example

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

## Note

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

[3, 5, 1, 8, 2]

[3, 1, 5, 8, 2]

[1, 3, 5, 8, 2]