PROBLEMS   SUBMIT   STATUS   STANDINGS   CUSTOM TEST

A. Eugeny and Array

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Eugeny has array $a = a_1, a_2, ..., a_n$, consisting of n integers. Each integer a_i equals to -1, or to 1. Also, he has m queries:

- Query number i is given as a pair of integers l_i, r_i $(1 \le l_i \le r_i \le n)$.
- The response to the query will be integer 1, if the elements of array a can be rearranged so as the sum $a_{l_i} + a_{l_i + 1} + ... + a_{r_i} = 0$, otherwise the response to the query will be integer 0.

Help Eugeny, answer all his queries.

Input

The first line contains integers n and m $(1 \le n, m \le 2 \cdot 10^5)$. The second line contains n integers $a_1, a_2, ..., a_n$ $(a_i = -1, 1)$. Next m lines contain Eugene's queries. The i-th line contains integers l_i, r_i $(1 \le l_i \le r_i \le n)$.

Output

Print m integers — the responses to Eugene's queries in the order they occur in the input.

Examples

input
```
2 3
1 -1
1 1
1 2
2 2
```
output
```
0
1
0
```

input
```
5 5
-1 1 1 1 -1
1 1
2 3
3 5
2 5
1 5
```
output
```
0
1
0
1
0
```