

You are given a sequence a_1, a_2, \dots, a_n . The task is to perform the following queries on it:

Type 1. Given two integers l and r ($1 \leq l < r \leq n$; $r - l + 1$ is even). Reorder the elements of the sequence in such a way (changed part of the sequence is in brackets):

$$a_1, a_2, \dots, a_n \rightarrow a_1, a_2, \dots, a_{l-2}, a_{l-1}, [a_{l+1}, a_l, a_{l+3}, a_{l+2}, \dots, a_r, a_{r-1}], a_{r+1}, a_{r+2}, \dots, a_n$$

That is swap the first two elements of segment $[l, r]$, the second two elements, and so on.

Type 2. Given two integers l and r , print the value of sum $\sum_{i=l}^r a_i$.

Input Format

The first line contains two integers n and q . The second line contains n integers a_1, a_2, \dots, a_n , denoting initial sequence.

Each of the next q lines contains three integers tp_i, l_i, r_i , where tp_i denotes the type of the query, and l_i, r_i are parameters of the query. It's guaranteed that for a first-type query ($r - l + 1$) will be even.

Constraints

$$2 \leq n \leq 2 \times 10^5$$

$$1 \leq q \leq 2 \times 10^5$$

$$1 \leq a_i \leq 10^6$$

$$1 \leq tp_i \leq 2$$

$$1 \leq l_i \leq r_i \leq n$$

Output Format

For each query of the second type print the required sum.

Sample Input

```
6 4
1 2 3 4 5 6
1 2 5
2 2 3
2 3 4
2 4 5
```

Example Output

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5
7
9
```

Explanation

After the first query the sequence becomes $[1, 3, 2, 5, 4, 6]$.