GlobeX Cup '19 S4 - Ninjaclasher's Wrath 2

Time limit: 2.0s **Memory limit:** 256M

You may have heard of "spooky action at a distance", or you may have not. It doesn't matter. There exists a line of N particles, of which the i^{th} particle and the $N-i+1^{\text{th}}$ particle are quantum entangled. *Note that what is described in this problem is not how quantum entanglement really works*. Each particle has an electric charge e_i. You happen to know the electric charges of all N particles in order.

When you look at a particle i, due to the fact that it is entangled, it will instantaneously have the charge of particle $N-i+1$, and particle $N-i+1$ will have the charge of particle i. You can only look at a maximum of K particles before you become blinded. Thus, you are curious: what is the maximum sum of the charges of the particles l to r, inclusive, if I look at **EXACTLY** K particles? Note that you can look at a particle at one position multiple times.

You must answer Q of these questions. **These questions must be answered *online*.**

Input Specification

The first line will contain three integers N, K, Q $(1 \le N, Q \le 10^5, 0 \le K \le N)$.

The second line will contain N integers, e_i $(|e_i| \le 10^9)$.

The next Q lines will each contain two integers, l, r $(1 \le l \le r \le N)$, a question as defined above.

After each question, you must output the answer before you will receive the next question. In some languages, you may need to *flush* in order for the interactor to receive your answer. The interactor may take up to 1.5 seconds of the time limit.

Output Specification

Output Q lines. On the i^{th} line, output one integer: the maximum sum of charges of the particles in $[l, r]$.

Subtasks

Subtask 1 [14%]

$N \le 10^3$

Subtask 2 [27%]

$K \le \min(N, 10^3)$

Subtask 3 [59%]

No additional constraints.

Sample Input 1

```
7 3 5
3 4 -5 8 3 1 0
1 3
1 4
2 7
3 6
3 3
```

Sample Output 1

```
10
18
14
10
3
```

Explanation For Sample 1

For the first question, if we choose $i = 3$ and look $K = 3$ times, we get the line of particles `3 4 3 8 -5 1 0`, whose sum of charges from $l = 1$ to $r = 3$ is $3 + 4 + 3 = 10$. It turns out, this is the maximum possible sum.