DMOPC '20 Contest 1 P2 - Victor's Moral Dilemma

Time limit: 0.6s **Memory limit:** 128M

> Is killing an innocent person strictly wrong? ~ Victor, 2019

Victor has become obsessed with the Trolley Problem! Victor found the original trolley problem too boring, so he has devised his own version. In Victor's trolley problem, there is initially an array of N trolleys, D days, and the kth trolley contains A_k people. On the ith day, Victor lines up all the remaining trolleys, and picks a number n_i. He will then partition his array into two subarrays, $F = [A_1, A_2, \ldots, A_{n_i}]$ and $S = [A_{n_i+1}, A_{n_i+2}, \ldots, A_{m_i}]$ (where m_i is the total number of trolleys on day i). If $\text{sum}(F) \geq \text{sum}(S)$, then Victor will snap all the trolleys in F out of existence and set A equal to S. Otherwise, he will snap all the trolleys in S out of existence and set A equal to F.

Calculate the number of people Victor snaps on each day!

Constraints

- $1 \leq N \leq 10^6$
- $1 \leq D \leq N$
- $1 \leq a_k \leq 10^3$
- $m_i \geq 1$ for all i.
- The order of the trolleys will always remain the same.
- $1 \leq n_i \leq m_i$ for all i.

Input Specification

The first line will contain two space-separated integers N and D, denoting the initial number of trolleys and the number of days respectively.

The next line will contain N space-separated integers $a_1, a_2, \ldots, a_N$, denoting the number of people in each trolley.

The next D lines will each contain a single integer n_i.

Output Specification

For each day, output the number of people that Victor will snap out of existence on a new line.

Sample Input

```
8 3
6 1 3 2 9 10 2 4
4
1
1
```

Sample Output

```
25
6
5
```

Explanation of Sample Output

On the first day, $F = [6, 1, 3, 2]$ and $S = [9, 10, 2, 4]$. Then, $\text{sum}(F) = 12$ and $\text{sum}(S) = 25$. Since $12 < 25$, Victor will snap trolleys 5 to 8 out of existence, leaving $[6, 1, 3, 2]$ as our array of trolleys.

On the second day, $F = [6]$ and $S = [1, 3, 2]$. Then, $\text{sum}(F) = 6$ and $\text{sum}(S) = 6$. Since $6 \geq 6$, Victor will snap the first trolley and leave $[1, 3, 2]$ as our array.

On the third and last day, $F = [1]$ and $S = [3, 2]$. Then, $\text{sum}(F) = 1$ and $\text{sum}(S) = 5$. Since $1 < 5$, Victor will snap the last two trolleys and leave $[1]$ as our array.