Problem C2

Static Range Sum

Problem Statement

You are given a non-negative integer sequence $A = (a_0, a_1, \ldots, a_{N-1})$ with the length N. Process the following Q queries in order:

- You are given integers l_i and r_i. Print $\sum_{k=l_i}^{r_i-1} a_k$.

Note

The difference between C1 and C2 is only constraints of N and Q.

Input

```
N  Q
a0   a1   ...  aN−1
l1   r1
⋮
lQ   rQ
```

- All inputs are integers.
- $1 \le N \le 100\,000$
- $1 \le Q \le 100\,000$
- $-10^9 \le a_i \le 10^9$
- $1 \le l_i < r_i \le N$

Sample

Sample Input

```
5 5
1 10 100 1000 10000
2 3
0 3
2 5
3 4
0 5
```

Sample Output

```
100
111
11100
1000
11111
```