Satellite

The media company you work for decided to place a satellite into orbit. Since the satellite is too large to be launched there at once, it was split into n consecutive modules of different sizes. In order to ensure the proper functioning of the satellite, the modules need to be launched and assembled in a fixed order.

In the tight schedule of the project there is time for at most k space shuttle flights, so some of the modules must be launched together. Since the project's budget is also tight, you are given the task of computing the minimal possible carrying capacity of the space shuttle that would allow to put all the modules in orbit, in the desired order, in at most k flights.

Input

The first line of input contains two integers n and k ($1 \leqslant k \leqslant n \leqslant 100,000$), the number of modules and the number of flights, respectively. The second line contains n positive integers denoting the mass of the subsequent modules in the order in which they have to be launched and assembled. The total mass of all the modules does not exceed 10^9.

Output

Print the minimal capacity of a space shuttle that allows to put the satellite into orbit in at most k flights.

Sample input

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

Sample output

```
7
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