A gas station too far P23800_en

There is just one road connecting the $n+1$ cities $c_0, \ldots, c_n$ consecutively. You want to go from c_0 to c_n stopping at most s times to fill the tank of the car. There are gas stations at the cities, but none on the roads. The length of each road is $\ell_0, \ldots, \ell_{n-1}$. Which is the minimum range for your car? Suppose that you start with a full tank.

Input

Input consists of several cases. Every case begins with n and s, which are followed by n natural numbers $\ell_0, \ldots, \ell_{n-1}$. Suppose $1 \leq n \leq 10^5$, $0 \leq s \leq n-1$, and $1 \leq \ell_i \leq 10^4$.

Output

For every case, print the minimum range for a car to reach c_n starting from c_0 stopping at most s times to fill the tank.

Hint

Consider a decisional version of this problem.

Sample input 1

```
5 0
100 300 500 200 400
5 1
100 300 500 200 400
5 2
100 300 500 200 400
5 3
100 300 500 200 400
5 4
100 300 500 200 400
```

Sample output 1

```
1500
900
600
500
500
```

Problem information

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