D. Monthly Expense

Time Limit: 1.0 Seconds Memory Limit: 65536K Multiple test files

Farmer John is an astounding accounting wizard and has realized he might run out of money to run the farm. He has already calculated and recorded the exact amount of money ($1 \le money_i \le 10{,}000$) that he will need to spend each day over the next N ($1 \le N \le 100{,}000$) days. FJ wants to create a budget for a sequential set of exactly M ($1 \le M \le N$) fiscal periods called "fajomonths". Each of these fajomonths contains a set of 1 or more consecutive days. Every day is contained in exactly one fajomonth.

FJ's goal is to arrange the fajomonths so as to minimize the expenses of the fajomonth with the highest spending and thus determine his monthly spending limit.

Input

* Line 1: Two space-separated integers: N and M

* Lines 2..N + 1: Line i+1 contains the number of dollars Farmer John spends on the ith day

Output

* Line 1: The smallest possible monthly limit Farmer John can afford to live with.

Sample Input

```
7 5
100
400
300
100
500
101
400
```

Sample Output

```
500
```

Input Details

There are 7 days to be spread across 5 fajomonths. He spends $100, $400, $300, $100, $500, $101, and $400 on sequential days.

Output Details

If Farmer John schedules the months so that the first two days are a month, the third and fourth are a month, and the last three are their own months, he spends at most $500 in any month. Any other method of scheduling gives a larger minimum monthly limit.

```
100 400   300 100   500   101   400   Daily spending
---1---   ---2---   -3-   -4-   -5-   Month Number
  500       400     500   101   400   Monthly spending
```

Source: USACO 2007 March Competition

Problem ID in problemset: 2789

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