Compulsive Shopping (shopping)

William's girlfriend is a compulsive shopper. Every time she notices a nice item while on a walk with her significant other, she desperately wants to have it! It goes without saying that William should pay for it, as a true gentleman... and this habit is wreaking havoc on his precarious finances, now limited to merely E euros total.

Figure 1: William's girlfriend after noticing a must-have pair of shoes.

In order to avoid bankruptcy, William went for a patrol before the next walk, and listed N items of price P_i that his girlfriend will want to have (in appearance order). William knows very well that he can refuse to buy an item desired by his beloved in two cases only:

1. if he cannot afford it, as it costs more than his current total finances;
2. if he bought the last item encountered.

Refusing to buy an item in any other case would result in an prompt breakup, that is not an option. Help William plan how much euros to waste before the walk and then which items to buy, in order to complete the walk with as much remaining euros as possible, without breaking up with his girlfriend!

☞ Among the attachments of this task you may find a template file `shopping.*` with a sample incomplete implementation.

Input

The first line contains two integers N, E. The second line contains N integers P_i.

Output

You need to write a single line with an integer: the maximum amount of euros William can save without breaking up with his girlfriend.

Constraints

- $1 \leq N \leq 100\,000$.
- $0 \leq E \leq 10^9$.
- $0 \leq P_i \leq 1\,000\,000$ for each $i = 0 \ldots N-1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) $P_i = P_j$ for all i, j.

– **Subtask 3** (15 points) $E = 10^9$, $P_i \leq 1000$.

– **Subtask 4** (25 points) $N \leq 20$, $E \leq 2000$.

– **Subtask 5** (20 points) $N \leq 200$, $E \leq 2000$.

– **Subtask 6** (15 points) $N, E \leq 10\,000$.

– **Subtask 7** (5 points) $N \leq 10\,000$.

– **Subtask 8** (10 points) No additional limitations.

Examples

input	output
3 35 20 5 10	14
5 80 10 50 90 30 20	40

Explanation

In the **first sample case**, if William starts the walk with all of its 35€, he is able to afford everything so case (1) does not apply. By (2), he has to buy item 1 but then he can choose between items 2 and 3, the best being buying the first two items for a final $35 - 20 - 5 = 10$€. However, William can do better by wasting 16€ before the walk, thus starting with $35 - 16 = 19$€: in this case, he cannot afford the first item and buys the second ending with $19 - 5 = 14$€.

In the **second sample case**, William can buy the first and fourth item, ending with $80 - 10 - 30 = 40$€. In this case, wasting money before the walk does not help in improving the result.