(DM) Malvezz 🗸

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## Reckless drivers

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A digital company developed the mobile app ktm that rewards drivers cursing at other drivers.

Every time the app detects a swear word, it starts recording the sounds in the cabin for some time and then sends the clip to a remote backend for scoring.

For example, if the app is set up to record for  $\mathbf{5}$  seconds and it detects a swear word at second  $\mathbf{2}$  then it records from  $\mathbf{2}$  to  $\mathbf{2} + \mathbf{5} = \mathbf{7}$ .

The revolutionary part is the support for *combos*: detecting new swear words while the recording is ongoing makes the app join them together. In the example, if the app detects a different swear word at second  $\bf 4$ , it joins the current recording (from  $\bf 2$  to  $\bf 7$ ) and the new one (from  $\bf 4$  to  $\bf 9$ ) together, making a  $\bf 7$ -second clip (basically, from  $\bf 2$  to  $\bf 9$ ).

Given the recording duration and a time series of N detections, print the total number of seconds recorded by the app, even discontinuously. Your program will be crucial for optimizing the backend of the system.

Input Format

The first line contains N and duration.

The second line contains  $m{N}$  space-separated seconds corresponding to the detections (the time series  $m{ts}$ ).

Constraints

- $1 \le N \le 10^5$
- $1 \leq duration, ts[i] \leq 3 \cdot 10^5$
- **ts** is sorted in non-decreasing order

**Output Format** 

One integer, denoting the total number of seconds recorded

Sample Input 0

2 2

1 2

Sample Output 0

3

Explanation 0

We have duration = 2 and N = 2 detections.

The app starts recording at second 1 for 2 seconds (up to second 3). While the first recording is ongoing, a new swear word gets detected at second 2, thus the app merges the current recording (from 1 to 3) with the new one (from 2 to 4). The total number of seconds recorded is 3.

Sample Input 1

1 of 3

```
3 2
1 4 8
```

Sample Output 1

6

Explanation 1

We have duration = 2 and N = 3 detections.

The app records at second  $\bf 3$  for  $\bf 2$  seconds. Then it triggers again at second  $\bf 4$  for  $\bf 2$  seconds. Finally, the last recording starts at second  $\bf 8$  for  $\bf 2$  seconds. The total number of seconds recorded is  $\bf 6$ .

Sample Input 2

```
3 5
2 4 10
```

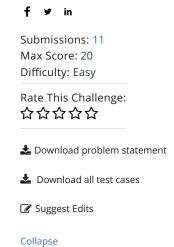
Sample Output 2

12

Explanation 2

We have duration = 5 and N = 3 detections.

The app starts recording at second 2 for 5 seconds. At second 4 a new swear word gets detected then the app extends the recording up to second 9 (total of 7 seconds). Finally, the app records from secondd 10 to 15 (total of 5 seconds). The total length of the clip is 12 seconds.



```
C++
                                                                                                      \Diamond
 1 ▼ #include <cmath>
 2 #include <cstdio>
3 #include <vector>
4 #include <iostream>
5 #include <algorithm>
6 using namespace std;
7
9▼int main() {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT */
10▼
        return 0;
11
12 }
13
```

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