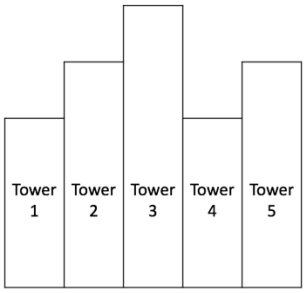
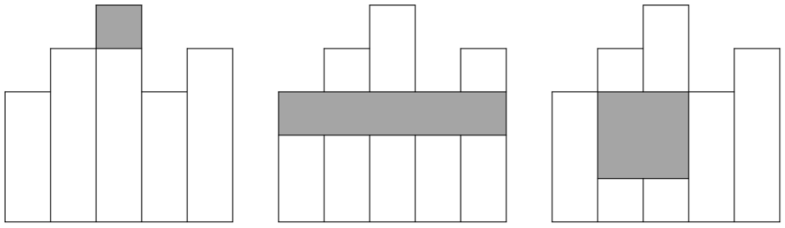
My Beautiful Office

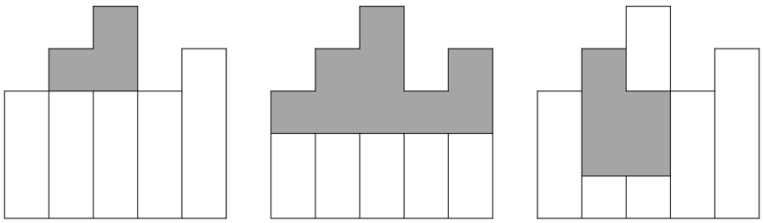
The Children Party Federation (CPF) have just bought a new office building. Their new office building consists of a series of towers standing side-by-side as illustrated below:



The CPF wants to construct a room inside the office building. A room can be constructed within a single tower or it can span multiple towers. It can also be built on a single level or span across multiple levels. However, a room must be rectangular in shape. Below are example of **valid** rooms that can be made in the office building illustrated above:



On the other hand, below are some examples of **invalid** rooms since they are not rectangular:



The CPF now wants to ask you, their lead programmer, a simple question: "How many different possible (valid) rooms can be built inside the new office?" As a programmer and a brilliant thinker, you quickly write a program to calculate the correct answer.

Good luck!

Input

The first line contains a single integer **N (1 <= N <= 100,000),** the number of towers in the office building. The next line contains N space-separated integers, h_i, the height of each tower from left to right, where $1 <= h_i <= 10^9$.

Output

Print the number of different possible rooms in the office building. Your output should contain a newline character. It is guaranteed that the answer fits in a **64-bit signed integer** data type.

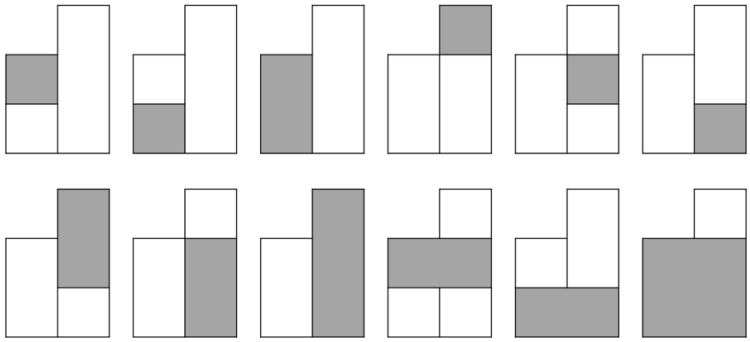
Sample Input 1
```
2
2 3
```

Sample Output 1
```
12
```

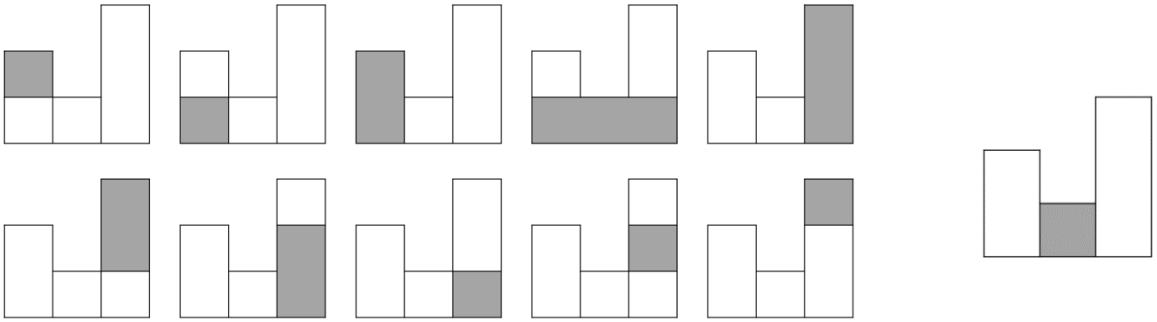
Sample Input 2
```
3
2 1 3
```

Sample Output 2
```
13
```

Explanation
In the first sample input, all the possible rooms are illustrated below:



For the second sample input, some of the possible rooms are illustrated below. Two rooms are not illustrated below:



Skeleton
You are given the skeleton file `Office.java`.

Notes
1. You are free to use anything to solve this problem.
2. To pass all test cases on CodeCrunch, your code needs to run in O(N).