

F - Mean Sequence

Consider a nondecreasing sequence of integers s_1, \dots, s_{n+1} ($s_i \leq s_{i+1}$ for $1 \leq i \leq n$). The sequence m_1, \dots, m_n defined by $m_i = \frac{1}{2}(s_i + s_{i+1})$, for $1 \leq i \leq n$, is called the *mean sequence* of sequence s_1, \dots, s_{n+1} . For example, the mean sequence of sequence 1, 2, 2, 4 is the sequence 1.5, 2, 3. Note that elements of the mean sequence can be fractions. However, this task deals with mean sequences whose elements are integers only.

Given a nondecreasing sequence of n integers m_1, \dots, m_n , compute the number of nondecreasing sequences of $n + 1$ integers s_1, \dots, s_{n+1} that have the given sequence m_1, \dots, m_n as mean sequence.

Task

Write a program that reads nondecreasing sequences of integers. For each sequence, your program must calculate and print the number of nondecreasing sequences for which the given sequence is a mean sequence. For example, there are four nondecreasing integer sequences for which 2, 5, 9 is a mean sequence. The sequences are: [2, 2, 8, 10], [1, 3, 7, 11], [0, 4, 6, 12], and [-1, 5, 5, 13].

Input

The first line contains an integer that indicates the number of test cases. Then, each test case begins with an integer n , where $0 < n \leq 100$. The following input line contains the sequence m_1, \dots, m_n . Each value of m_i is an integer between 0 and 100,000.

Output

For each test case, output a single integer that indicates the number of nondecreasing integer sequences that have the input sequence as the mean sequence.

Sample Input

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2
3
2 5 9
3
1 7 8
```

Sample Output

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4
2
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