

Bus Stops

Problem ID: bus

Problem Statement

A school bus travels along a straight road with N bus stops, numbered from 1 to N . At each stop:

- First, some students get off the bus.
- Then, some students get on the bus.

The bus starts empty before stop 1. Your task is to determine the **maximum number of students on the bus at any time**.

In some subtasks, additional rules apply (such as bus capacity). Read the constraints carefully.

Input

- The first line contains an integer N ($1 \leq N \leq 1000$), the number of bus stops.
- The second line contains N integers $\text{on}_1, \text{on}_2, \dots, \text{on}_N$ ($0 \leq \text{on}_i \leq 10^4$), where on_i is the number of students boarding at stop i .
- The third line contains N integers $\text{off}_1, \text{off}_2, \dots, \text{off}_N$ ($0 \leq \text{off}_i \leq 10^4$), where off_i is the number of students getting off at stop i .
- The fourth line contains an integer C , the bus capacity. For subtasks where no capacity restriction applies, C will be very large (e.g. 10^9), so it does not affect the result.

Output

Print a single integer: the maximum number of students on the bus at any point in time. In subtasks requiring the stop index, print two integers: `max_students` `stop_index`.

Constraints and Subtasks

Subtask	Constraints / Additional Rules	Points
1	$N \leq 3$, $\text{on}_i, \text{off}_i \leq 10$, $C = 10^9$	10
2	$N \leq 100$, $\text{on}_i, \text{off}_i \leq 100$, $C = 10^9$	20
3	$N \leq 1000$, $\text{on}_i, \text{off}_i \leq 10^4$, $C = 10^9$	20
4	Same as Subtask 3, but $C \leq 10^4$. If more students attempt to board than seats available, only as many as possible get on. The rest are left behind permanently.	30
5	Same as Subtask 3. Additionally, print the first stop index at which the maximum occupancy occurs. Output format: two integers, <code>max_students stop_index</code> .	20

Sample Input 1

```
5
0 3 4 0 2
0 0 2 3 4
1000000000
```

Sample Output 1

```
5
```

Explanation for Sample 1

- Stop 1: 0 off, 0 on \rightarrow 0
- Stop 2: 0 off, 3 on \rightarrow 3
- Stop 3: 2 off, 4 on \rightarrow 5
- Stop 4: 3 off, 0 on \rightarrow 2
- Stop 5: 4 off, 2 on \rightarrow 0

Maximum = 5.

Sample Input 2 (Capacity Example)

```
4
5 5 5 5
0 0 0 0
8
```

Sample Output 2

```
8
```

Explanation for Sample 2

- Stop 1: 5 board \rightarrow 5
- Stop 2: 5 try to board, but capacity is 8 \rightarrow 3 board, 2 left behind \rightarrow total = 8
- Stops 3 and 4: bus remains full at 8

Maximum = 8.

End of Problem A