SCS 1201 - Compulsory Take Home Assignment
Guidelines

This document provides a detailed explanation of the test case given in the assignment. Students who find the scenario to be implemented difficult, are advised to read this document.

Sample Input

A. 2
B. 2
C. 1 2
D. 2
E. 0 1 2 1
F. 0 1 2 2
G. 4
H. 4 3 2 1
I. 4
J. 0 1 1 1
K. 1 1 1
L. 0 1 1 1
M. 0 1 4 3

Sample Output

I. 1
II. 2
III. 4
IV. 1
V. 2

Each line of the Sample Input and Sample Output have been numbered for the purpose of explanation **only**.

Line A in the Sample Input indicates the number of test cases (T). Therefore, in the given example there are 2 test cases.

Line B in the Sample Input indicates the number of shelves (N) corresponding to the first test case. So, the first test case has 2 shelves.

Line C in the Sample Input indicates the number of books in each shelf. So, the 1st shelf has 1 book and the 2nd shelf has 2 books.

1 book	2 books

Line D in the Sample Input indicates the number of queries (Q). So, in the first test case there are 2 queries.

Line E in the Sample Input indicates the first query; **0 1 2 1,** which could be read as "Find the number of books on the shelf between the shelves 1 and 2 (both inclusive) with the 1st rank". In order to obtain the answer to this query, sort the shelves between 1 and 2 (that is sort the 2 shelves). Then the shelves would be as follows (You could observe that the shelves have already been sorted).

1 book	2 books

The shelf with 1st rank is the 1st shelf which has **1 book**. So, the answer is **1 (Line I in the sample output).**

Line F in the Sample Input indicates the second query; **0 1 2 2,** which could be read as "Find the number of books on the shelf between the shelves 1 and 2 (both inclusive) with the 2nd rank". Since we sorted the shelves between 1 and 2 for the previous query, let us consider the shelves shown above. The shelf with 2nd rank is the 2nd shelf which has **2 books**. So, the answer is **2 (Line II in the sample output).**

This marks the end of the 1st test case. Now let us try to understand the 2nd test case.

Line G in the Sample Input indicates the number of shelves (N) corresponding to the second test case. So, the second test case has 4 shelves.

Line H in the Sample Input indicates the number of books in each shelf. So, the 1st shelf has 4 book, the 2nd shelf has 3 books, 3rd shelf has 2 book and the 4th shelf has 1 book.

4 books	3 books	2 books	1 book

Line I in the Sample Input indicates the number of queries (Q). So, in the second test case, there are 4 queries.

Line J in the Sample Input indicates the first query; **0 1 1 1,** which could be read as "Find the number of books on the shelf between the shelves 1 and 1 (both inclusive) with the 1st rank". In order to obtain the answer to this query, sort the shelves between 1 and 1 (that is, sort the 1st shelf). Since only one shelf needs to be sorted, you can consider it as it is.

4 books

The shelf with 1st rank is the 1st shelf which has **4 books**. So, the answer is **4 (Line III in the sample output).**

Line K in the Sample Input indicates the second query; **1 1 1,** which could be read as "Update the number of books in the 1st shelf to 1". After executing the query, the 4 shelves look as follows. Note that this query does not output anything.

1 book	3 books	2 books	1 book

Line L in the Sample Input indicates the third query; **0 1 1 1,** which could be read as "Find the number of books on the shelf between the shelves 1 and 1 (both inclusive) with the 1st rank". In order to obtain the answer to this query, sort the shelves between 1 and 1 (that is, sort the 1st shelf). Since only one shelf needs to be sorted, you can consider it as it is.

1 book

The shelf with 1st rank is the 1st shelf which has **1 book**. So, the answer is **1 (Line IV in the sample output).**

Line M in the Sample Input indicates the fourth query; **0 1 4 3,** which could be read as "Find the number of books on the shelf between the shelves 1 and 4 (both inclusive) with the 3rd rank". In order to obtain the answer to this query, sort the shelves between 1 and 4 (that is, sort all the shelves). After sorting the shelves in ascending order the shelves look as follows.

1 book	1 book	2 books	3 books

The shelf with 3rd rank is the 3rd shelf which has **2 books**. So, the answer is **2 (Line V in the sample output).**