Problem 1

Problem Description

You go out to buy some mangoes. You see that you can buy them in two ways:

- You pay Rs. X for each mango meaning that you spend $X \times S$ for buying S mangoes
- You pay Rs Y and obtain a membership pass which lets you obtain any number of mangoes at no cost (apart from the Rs Y spent on the pass).

You want to buy N mangoes. What is the minimum that you'll have to spend?

Input Format

The first and only line of input contains three space-separated integers N, X, Y denoting the number of mangoes that you want to buy and X, Y as discussed in the problem statement.

Input constraints

- $1 \leq N \leq 20$
- $1 \leq X \leq 100$
- $1 \leq Y \leq 2000$

Output Format

Output on a single line, the minimum amount you'll hve to spend to buy N mangoes.

Sample Input 1

```
6 18 100
```

Copy

Sample Output 1

```
100
```

Copy

Sample Input 2

```
5 20 100
```

Copy

Sample Output 1

```
100
```

Copy

Submit solution

My submissions
All submissions
Best submissions

Points: 100 (partial)
Time limit: 2.0s
Memory limit: 256M

Author:
root

Problem type

Allowed languages
C

Problem 2

Problem Description

The Vindhya building at IIITH can be represented as a grid of size $N \times M$. Let us denote a cell on the i^{th} row and j^{th} column as (i, j). You are currently standing on the cell (R, C). However, some cells cannot be accessed by students, we'll call such cells as obstacles. In the grid, these will be represented by a 1. Similarly, a cell with no obstacle would be represented by a 0.

You call a cell good if you can reach that cell by starting from (R, C) and walking in a single direction without encountering any obstacles on the way. Note that this also means that a good cell cannot have any obstacles on it.

For example, say that a row of the grid looked like $A_R = \{1, 0, 0, 0, 0, 1, 0\}$ where you are standing on the third cell from the left. If you start walking to the right, then you notice that the third, fourth and fifth cells are good. But, because of the obstacle on the sixth cell, cells 6 and 7 fail to be considered as good. Similarly, walking left tells you that the third and second cells are good. The total number of good cells in this case would be 4 representing the cells 2 through 5.

Notice that unlike the above example, in general, you may have the option to walk either in the upward or downward direction as well along with left and right.

Input Format

The first line of input contains four space-separated integers N, M, R, C where, $N \times M$ is the size of the grid and (R, C) is your starting position. Then, the description of the grid follows:

The description consists of N lines where, the i^{th} line contains M space separated integers $A_{i1}, A_{i2}, \ldots, A_{iM}$ where, the j^{th} integer being a 1 represents that there is an obstacle on cell (i, j) and 0 otherwise.

Input constraints

- $1 \leq N, M \leq 100$
- $1 \leq R \leq N, 1 \leq C \leq M$
- $A[R][C] = 0$

Output Format

Output on a single line, an integer denoting the total number of good cells.

Sample Input 1

```
4 4 2 2
1 1 0 0
0 0 0 1
1 0 1 0
0 1 0 1
```

Sample Output 1

```
4
```

Sample Input 2

```
3 5 1 4
1 0 0 0 0
1 1 1 1 1
0 0 0 0 1
```

Sample Output 2

```
4
```

Submit solution

My submissions
All submissions
Best submissions

Points: 100 (partial)
Time limit: 2.0s
Memory limit: 1G

Author:
root

Problem type

Allowed languages
C

Problem 3

Problem Description

You received your marks for CPro mid-sem. The marks may be described by an integer array of size N where each element has a value in the range $[1, N]$. However, you think that some of the marks received have been shuffled around because you know that the i^{th} question should have a score of i. In particular, a pair of questions (i, j) are considered good if:

- $1 \leq i < j \leq N$
- $\min(a_i, a_j) = i$
- $\max(a_i, a_j) = j$.

In other words, a pair of questions is good if they received the appropriate marks (question i receiving i) or if they could be swapped so that they both receive their appropriate marks.

You want to find the number of such pairs in the given array.

Input Format

The first line of input contains a single integer N that denotes the number of questions. The second line of input contains N space-separated integers $A_1, A_2, \ldots, A_N$ denoting the N marks received.

Input constraints

- $2 \leq N \leq 5 \times 10^5$
- $1 \leq A_i \leq N$ for all $1 \leq i \leq N$

Output Format

Output on a single line, the number of pairs satisfying the conditions mentioned above.

Sample Input 1

```
4
1 3 2 4
```

Copy

Sample Output 1

```
2
```

Copy

Submit solution

My submissions
All submissions
Best submissions

Points: 100 (partial)
Time limit: 2.0s
Memory limit: 1G

Author:
root

Problem type

Allowed languages
C