

# USA Computing Olympiad



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## USACO 2025 FEBRUARY CONTEST, GOLD PROBLEM 1. BESSIE'S FUNCTION

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Time Remaining: 3 hrs, 59 min, 05 sec

Not submitted yet

English (en) ▼

Bessie has a special function  $f(x)$  that takes as input an integer in  $[1, N]$  and returns an integer in  $[1, N]$  ( $1 \leq N \leq 2 \cdot 10^5$ ). Her function  $f(x)$  is defined by  $N$  integers  $a_1 \dots a_N$  where  $f(x) = a_x$  ( $1 \leq a_i \leq N$ ).

Bessie wants this function to be idempotent. In other words, it should satisfy  $f(f(x)) = f(x)$  for all integers  $x \in [1, N]$ .

For a cost of  $c_i$ , Bessie can change the value of  $a_i$  to any integer in  $[1, N]$  ( $1 \leq c_i \leq 10^9$ ). Determine the minimum total cost Bessie needs to make  $f(x)$  idempotent.

### INPUT FORMAT (input arrives from the terminal / stdin):

The first line contains  $N$ .

The second line contains  $N$  space-separated integers  $a_1, a_2, \dots, a_N$ .

The third line contains  $N$  space-separated integers  $c_1, c_2, \dots, c_N$ .

### OUTPUT FORMAT (print output to the terminal / stdout):

Output the minimum total cost Bessie needs to make  $f(x)$  idempotent.

### SAMPLE INPUT:

```
5
2 4 4 5 3
1 1 1 1 1
```

### SAMPLE OUTPUT:

```
3
```

We can change  $a_1 = 4$ ,  $a_4 = 4$ ,  $a_5 = 4$ . Since all  $c_i$  equal one, the total cost is equal to 3, the number of changes. It can be shown that there is no solution with only 2 or fewer changes.

### SAMPLE INPUT:

```
8
1 2 5 5 3 3 4 4
9 9 2 5 9 9 9 9
```

### SAMPLE OUTPUT:

```
7
```

We change  $a_3 = 3$  and  $a_4 = 4$ . The total cost is  $2 + 5 = 7$ .

### SCORING:

Subtasks:

- Input 3:  $N \leq 20$
- Inputs 4-9:  $a_i \geq i$
- Inputs 10-15: All  $a_i$  are distinct.
- Inputs 16-21: No additional constraints.

Additionally, in each of the last three subtasks, the first half of tests will satisfy  $c_i = 1$  for all  $i$ .

Problem credits: Avnith Vijayram

Language:

C ▼

Source File:

 选择文件  未选择文件

Source: USACO

Submit Solution

Submit Solution

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