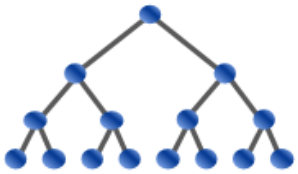
USA Computing Olympiad



USACO 2016 February Contest, Bronze
Problem 2. Circular Barn

Return to Problem List

Contest has ended.

Submitted; Results below show the outcome for each judge test case

1	2	3	4	5	6	7	8	9	10
*	*	*	*	*	*	*	*	*	*
32.0mb 182ms	32.5mb 179ms	32.2mb 169ms	31.9mb 168ms	32.2mb 169ms	32.0mb 176ms	32.3mb 163ms	32.4mb 213ms	32.3mb 217ms	32.6mb 228ms

English (en)

Being a fan of contemporary architecture, Farmer John has built a new barn in the shape of a perfect circle. Inside, the barn consists of a ring of n rooms, numbered clockwise from $1 \ldots n$ around the perimeter of the barn ($3 \le n \le 1,000$). Each room has doors to its two neighboring rooms, and also a door opening to the exterior of the barn.

Farmer John wants exactly r_i cows to end up in each room i ($1 \le r_i \le 100$). To herd the cows into the barn in an orderly fashion, he plans to unlock the exterior door of a single room, allowing the cows to enter through that door. Each cow then walks clockwise through the rooms until she reaches a suitable destination. Farmer John wants to unlock the exterior door that will cause his cows to collectively walk a minimum total amount of distance. Please determine the minimum total distance his cows will need to walk, if he chooses the best such door to unlock. The distance walked by a single cow is the number of interior doors through which she passes.

INPUT FORMAT (file cbarn.in):

The first line of input contains n. Each of the remaining n lines contain $r_1 \ldots r_n$.

OUTPUT FORMAT (file cbarn.out):

Please write out the minimum total amount of distance the cows collectively need to travel.

SAMPLE INPUT:

```
5
4
7
8
6
4
```

SAMPLE OUTPUT:

```
48
```

In this example, the best solution is to let the cows enter through the door of the room that requires 7 cows.

Problem credits: Brian Dean

Language: C

Source File: Choose File No file chosen

Submit Solution

Note: Many issues (e.g., uninitialized variables, out-of-bounds memory access) can cause a program to produce different output when run multiple times; if your program behaves in a manner inconsistent with the official contest results, you should probably look for one of these issues. Timing can also differ slightly from run to run, so it is possible for a program timing out in the official results to occasionally run just under the time limit in analysis mode, and vice versa. Note also that we have recently changed grading servers, and since our new servers run at different speeds from the servers used during older contests, timing results for older contest problems may be slightly off until we manage to re-calibrate everything properly.