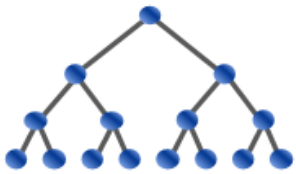
USA Computing Olympiad



USACO 2018 DECEMBER CONTEST, SILVER
PROBLEM 1. CONVENTION

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
*	*	*	*	*	*	*	*	*	*
10.6mb 179ms	14.0mb 878ms	16.0mb 1216ms	15.5mb 1153ms	17.9mb 1461ms	17.5mb 1427ms	15.5mb 1183ms	14.8mb 1064ms	17.1mb 1353ms	16.3mb 1167ms

English (en)

Farmer John is hosting a new bovine grass-eating convention at his farm!

Cows from all over the world are arriving at the local airport to attend the convention and eat grass. Specifically, there are N cows arriving at the airport ($1 \leq N \leq 10^5$) and cow i arrives at time t_i ($0 \leq t_i \leq 10^9$). Farmer John has arranged M ($1 \leq M \leq 10^5$) buses to transport the cows from the airport. Each bus can hold up to C cows in it ($1 \leq C \leq N$). Farmer John is waiting with the buses at the airport and would like to assign the arriving cows to the buses. A bus can leave at the time when the last cow on it arrives. Farmer John wants to be a good host and so does not want to keep the arriving cows waiting at the airport too long. What is the smallest possible value of the maximum waiting time of any one arriving cow if Farmer John coordinates his buses optimally? A cow's waiting time is the difference between her arrival time and the departure of her assigned bus.

It is guaranteed that $MC \geq N$.

INPUT FORMAT (file convention.in):

The first line contains three space separated integers N, M, and C. The next line contains N space separated integers representing the arrival time of each cow.

OUTPUT FORMAT (file convention.out):

Please write one line containing the optimal minimum maximum waiting time for any one arriving cow.

SAMPLE INPUT:

```
6 3 2
1 1 10 14 4 3
```

SAMPLE OUTPUT:

```
4
```

If the two cows arriving at time 1 go in one bus, cows arriving at times 3 and 4 in the second, and cows arriving at times 10 and 14 in the third, the longest time a cow has to wait is 4 time units (the cow arriving at time 10 waits from time 10 to time 14).

Problem credits: Grace Cai

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 product 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.