

Submissions

Oversized Pancake Flipper

5pt	Not attempted 19627/23633 users correct (83%)
10pt	Not attempted 17799/19074 users correct (93%)

Tidy Numbers

5pt	Not attempted 24252/26070 users correct (93%)
15pt	Not attempted 17755/22161 users correct (80%)

Bathroom Stalls

5pt	Not attempted 13982/16042 users correct (87%)
10pt	Not attempted 10822/13226 users correct (82%)
15pt	Not attempted 5954/8864 users correct (67%)

Fashion Show

10pt	Not attempted 996/2522 users correct (39%)
25pt	Not attempted 591/843 users correct (70%)

Top Scores

FatalEagle	100
ACMonster	100
y0105w49	100
johngs	100
HellKitsune123	100
SergeyRogulenko	100
spnautilus	100
BudAlNik	100
mjy0724	100
pwild	100

Problem C. Bathroom Stalls

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 1 5 points	Solve C-small-1
Small input 2 10 points	Solve C-small-2
Large input 15 points	Solve C-large

Problem

A certain bathroom has $N + 2$ stalls in a single row; the stalls on the left and right ends are permanently occupied by the bathroom guards. The other N stalls are for users.

Whenever someone enters the bathroom, they try to choose a stall that is as far from other people as possible. To avoid confusion, they follow deterministic rules: For each empty stall S , they compute two values L_S and R_S , each of which is the number of empty stalls between S and the closest occupied stall to the left or right, respectively. Then they consider the set of stalls with the farthest closest neighbor, that is, those S for which $\min(L_S, R_S)$ is maximal. If there is only one such stall, they choose it; otherwise, they choose the one among those where $\max(L_S, R_S)$ is maximal. If there are still multiple tied stalls, they choose the leftmost stall among those.

K people are about to enter the bathroom; each one will choose their stall before the next arrives. Nobody will ever leave.

When the last person chooses their stall S , what will the values of $\max(L_S, R_S)$ and $\min(L_S, R_S)$ be?

Solving this problem

This problem has 2 Small datasets and 1 Large dataset. You must solve the first Small dataset before you can attempt the second Small dataset. You will be able to retry either of the Small datasets (with a time penalty). You will be able to make a single attempt at the Large, as usual, only after solving both Small datasets.

Input

The first line of the input gives the number of test cases, T . T lines follow. Each line describes a test case with two integers N and K , as described above.

Output

For each test case, output one line containing Case $\#x$: y z , where x is the test case number (starting from 1), y is $\max(L_S, R_S)$, and z is $\min(L_S, R_S)$ as calculated by the last person to enter the bathroom for their chosen stall S .

Limits

$1 \leq T \leq 100.$
 $1 \leq K \leq N.$

Small dataset 1

$1 \leq N \leq 1000.$

Small dataset 2

$1 \leq N \leq 10^6.$

Large dataset

$1 \leq N \leq 10^{18}.$

Sample

Input	Output
5	Case #1: 1 0
4 2	Case #2: 1 0
5 2	Case #3: 1 1
6 2	Case #4: 0 0

```
1000 1000 Case #5: 500 499
1000 1
```

In Case #1, the first person occupies the leftmost of the middle two stalls, leaving the following configuration (0 stands for an occupied stall and . for an empty one): 0.0..0. Then, the second and last person occupies the stall immediately to the right, leaving 1 empty stall on one side and none on the other.

In Case #2, the first person occupies the middle stall, getting to 0..0..0. Then, the second and last person occupies the leftmost stall.

In Case #3, the first person occupies the leftmost of the two middle stalls, leaving 0..0...0. The second person then occupies the middle of the three consecutive empty stalls.

In Case #4, every stall is occupied at the end, no matter what the stall choices are.

In Case #5, the first and only person chooses the leftmost middle stall.

All problem statements, input data and contest analyses are licensed under the [Creative Commons Attribution License](#).

© 2008-2017 Google [Google Home](#) - [Terms and Conditions](#) - [Privacy Policies and Principles](#)

Powered by



Google Cloud Platform