Qualification Round 2010

A. Snapper Chain

B. Fair Warning

C. Theme Park

Contest Analysis

Questions asked 3

Submissions

Snapper Chain

10pt | Not attempted **9461/11212 users** correct (84%)

23pt | Not attempted **7957/9406 users** correct (85%)

Fair Warning

10pt | Not attempted **3312/4340 users** correct (76%)

23pt | Not attempted **2469/3001 users** correct (82%)

Theme Park

10pt | Not attempted **8033/8501 users** correct (94%)

23pt | Not attempted **3050/7644 users** correct (40%)

Top Scores

neal.wu	99
LayCurse	99
eireksten	99
agus.mw	99
lympanda	99
pmnox	99
levlam	99
ZhukovDmitry	99
kmod	99
stubbscroll	99

Problem A. Snapper Chain

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 10 points	Solve A-small
Large input 23 points	Solve A-large

Problem

The *Snapper* is a clever little device that, on one side, plugs its input plug into an output socket, and, on the other side, exposes an output socket for plugging in a light or other device.

When a *Snapper* is in the ON state and is receiving power from its input plug, then the device connected to its output socket is receiving power as well. When you snap your fingers -- making a clicking sound -- any *Snapper* receiving power at the time of the snap toggles between the ON and OFF states.

In hopes of destroying the universe by means of a singularity, I have purchased **N** *Snapper* devices and chained them together by plugging the first one into a power socket, the second one into the first one, and so on. The light is plugged into the **N**th *Snapper*.

Initially, all the *Snapper*s are in the OFF state, so only the first one is receiving power from the socket, and the light is off. I snap my fingers once, which toggles the first *Snapper* into the ON state and gives power to the second one. I snap my fingers again, which toggles both *Snapper*s and then promptly cuts power off from the second one, leaving it in the ON state, but with no power. I snap my fingers the third time, which toggles the first *Snapper* again and gives power to the second one. Now both *Snapper*s are in the ON state, and if my light is plugged into the second *Snapper* it will be *on*.

I keep doing this for hours. Will the light be *on* or *off* after I have snapped my fingers **K** times? The light is *on* if and only if it's receiving power from the *Snapper* it's plugged into.

Input

The first line of the input gives the number of test cases, **T**. **T** lines follow. Each one contains two integers, **N** and **K**.

Output

For each test case, output one line containing "Case #x: y", where x is the case number (starting from 1) and y is either "ON" or "OFF", indicating the state of the light bulb.

Limits

$1 \le \mathbf{T} \le 10{,}000$.

Small dataset

$1 \le \mathbf{N} \le 10$;
$0 \le \mathbf{K} \le 100$;

Large dataset

$1 \le \mathbf{N} \le 30$;
$0 \le \mathbf{K} \le 10^8$;

Sample

Input	Output
4 1 0 1 1 4 0 4 47	Case #1: OFF Case #2: ON Case #3: OFF Case #4: ON

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