? $\begin{aligned} & \text { international collegiate } \\ & \text { programming contest }\end{aligned}$
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BINUS UNIVERSITY

## Problem B <br> Udin and Ucok

There are $N$ stones numbered from 1 to $N$, lined up orderly in a single line with stone \#1 at the left most and stone \#N at the right most. Udin and Ucok play alternately, and Udin plays first. In each turn, player selects exactly one stone among the existing one. The selected stone and its immediate adjacent stones to the left and right (if any), are thrown away. Player who cannot make any move loses the game; in other words, player who makes the last move wins.

Consider the following example play for $N=6$.


Play explanation. First, Udin selects stone \#3, thus removes stone [2, 3, 4], leaving [1] and [5, 6]. Next, Ucok selects stone \#5, thus removes [5, 6] (note: stone \#4 has been removed before) leaving [1]. Finally, Udin selects stone \#1 and removes [1] (note: there's no stone to the left of \#1, and stone \#2 has been removed before) and wins the game.

For $N=6$, Udin will always win as long as he does not select stone \#2 or \#5 in his first move. For example, let Udin selects stone \#2, thus removes stone [1, 2, 3], leaving [4, 5, 6]. Ucok can win the game in his turn simply by selecting stone \#5 and removes all the remaining stones. Meanwhile, if Udin selects stone \#1, \#3, \#4, or \#5 in his first move, there's no way for Ucok to win the game. Therefore, we call $N=6$ as a winning position for Udin (there exists a sure-win strategy for Udin). On the other hand, if $N=4$, then there's no sure-win strategy for Udin, while there is at least one for Ucok. Thus, we call $N=4$ as a winning position for Ucok. In this kind of game, it is guaranteed that exactly one of the players has a sure-win strategy.

Given $N$, determine whether $N$ is a winning position for Udin or Ucok, i.e. whether there is a sure-win strategy for either Udin or Ucok.

## Input

The first line of input contains an integer $T(T \leq 10,000)$ denoting the number of cases. Each case contains one integer: $N(1 \leq N \leq 1,000,000,000)$ in a line, denoting the number of initial stones in the game.

## Output

For each case, output "Case \#X: Y" (without quotes) in a line where X is the case number (starts from 1 ), and $Y$ is either "UDIN" or "UCOK" (without quotes) representing which player has the sure-win strategy for the respective input.

| Sample Input | Output for Sample Input |
| :--- | :--- |
| 7 | Case \#1: UDIN |
| 3 | Case \#2: UCOK |
| 4 | Case \#3: UDIN |
| 6 | Case \#4: UDIN |
| 100 | Case \#5: UCOK |
| 110 | Case \#6: UCOK |
| 938 | Case \#7: UDIN |
| 1041 |  |

## Explanation for $1^{\text {st }}$ sample case

Udin needs to select stone \#2 in his first move, thus removing [1, 2, 3], and win the game in one turn.
Explanation for $2^{\text {nd }}$ sample case
Whichever stone selected by Udin cannot make him win in one turn.

- Selecting stone \#1, removing [1, 2], leaving [3, 4].
- Selecting stone \#2, removing [1, 2, 3], leaving [4].
- Selecting stone \#3, removing [2, 3, 4], leaving [1].
- Selecting stone \#4, removing [3, 4], leaving [1, 2].

On the other hand, Ucok can win the game in his turn by selecting whichever stone remains and removes all the remaining stones.

