

Problem D

Tree Luck

Input File: *testdata.in*
Time Limit: 10 seconds

Problem Description

Augur Communication Maple (ACM) is a special kind of plant on a small island. The plant starts as a single “root” bud with one leaf attached. In the first morning, the leaf falls down, and two branches grow from the bud. One branch would grow vertically upwards, and the other would grow horizontally in a random direction. The original bud is then inactive, but new buds are alive at the other end of the two new branches. Each new bud then grows a leaf during the day. The next morning, the leaves fall down; two branches grow from each bud, and the process continues. Each branch is one centimeter long and you can assume that the horizontal branches will not be interfering with each other.

The islanders do not like their ACM plant to grow too tall. So if any plant is of height K cm in the evening, the path (series of branches) from the root to any bud at height K would be pruned by physically removing the bud. When a bud is removed, the original leaf does not fall down and a new leaf still grows and falls every day, but no new branches would be coming from the bud.

For instance, an ACM plant of 3 days old and height at most 2 cm would grow like this:

1. In the morning of the first day, 1 leaf falls down; two branches (one at height 1 cm called A and the other at height 0 cm called B) grow; two leaves grow on the buds of those two branches.
2. In the morning of the second day, 2 leaves fall down; two branches A_h and A_v grow from A ; two branches B_h and B_v grow from B ; four leaves

grow on those branches; the vertical branch A_v from A is at height 2 and hence pruned. So there are only three active branches (A_h , B_h and B_v , with A_h and B_v at height 1).

3. In the morning of the third day, 4 leaves fall down; two branches grow from A_h , B_h and B_v , respectively. The branches A_h -vertical and B_v -vertical are pruned.

In the morning of the fourth day, the leaves on A_v , A_h -vertical, A_h -horizontal, B_h -vertical, B_h -horizontal, B_v -vertical, B_v -horizontal will fall down. So there are 7 leaves. The islanders use those leaves in the following way. He first takes the leaves to a wizard. The wizard would grasp all the leaves on his hand. He first removes one leaf, and shouts “LUCKY!” Then, the wizard removes another leaf, and shouts “UNLUCKY!” The process continues until there are no leaves on his hand, and the last shout predicts the luckiness of the day. For instance, for the owner of an ACM plant with height at most 2 cm, it is his “LUCKY!” day because there are 7 leaves.

Given D , the day of gathering the leaves ($D = 4$ in the example above), and K , the maximum height of the plant ($K = 2$ in the example above), can you rapidly determine the luckiness of the day?

Technical Specifications

1. The number of test cases would be smaller than or equal to 20.
2. The day D for gathering the leaves would satisfy $1 \leq D \leq 10000$.
3. The maximum height K of the plant would satisfy $1 \leq K \leq 10000$.

Input Format

The first line of the input file contains an integer indicating the number of test cases to follow. Each test case contains two integers D and K , separated by spaces.

Output Format

For each test case, output LUCKY! in a line if it's a lucky day, and UNLUCKY! otherwise.

Sample Input

```
2
4 2
4 3
```

Sample Output

```
LUCKY!
UNLUCKY!
```