A Game of Robots

Problem Statement

You've built some robots and placed them on a one-dimensional grid with n cells. Their arrangement is given by a string s of length n. Each character of the string is either '.' or a digit in the range '0' to '9'. A '.' represents that there is no robot at that cell initially. A digit represents a robot initially in that cell. Specifically, the digit x denotes that the range of the robot is from x cells to the left of its starting point to x cells to the right of its starting point.

For example, suppose the 7th character of the string is '3', then that means there is a robot starting from the 7th cell, and its range is from the 4th cell ($7 - 3 = 4$) to the 10th cell ($7 + 3 = 10$) (both end points inclusive). The robots can only move within their range, and even if their range allows it, they cannot move out of the grid.

You want to play a game with these robots. Before starting the game, you can give each robot a starting direction (either left or right). When the robot is initialized with a direction, it will move in that direction until it can't (i.e., it can't go past its range, and neither can it go outside the grid) and will reverse its direction and go as far as possible in that direction, then reverse again. It will continue moving like this forever, changing direction instantaneously.

However, each robot can start their journey at any time. They don't all have to start at the same second. A robot, once started, moves at a speed of one cell per second.

The robots have gained consciousness and have begun questioning their purpose in life. Given a chance, they will collide with each other to end their misery. They can coordinate and decide when to start their journeys. Two robots are said to have collided if they are at the same cell at the same moment.

You are wondering whether it is possible to give the robots the initial directions in such a way that no robots collide with each other (i.e., they will all be safe), or if some of them will inevitably collide regardless of the initial directions (i.e., unsafe).

Input

- The first line of the input contains an integer T denoting the number of test cases.

- The only line of each test case contains a string s.

Output

For each test case, output a single line containing "safe" if no robots will collide, or "unsafe" if a collision is inevitable (without quotes).

Constraints

- $1 \leq T \leq 3 \times 10^4$

- $1 \leq$ length of $s \leq 50$

- $s[i]$ will be one of the following characters: {'.', '0', '1', '2', '3', '4', '5', '6', '7', '8', '9'}

Examples

Input

```
4
....
.2.....
.2...2..
1.1.1.
```

Output

```
safe
safe
unsafe
unsafe
```

Explanation

Example 1: No robots are present, so everything is safe.

Example 2: Only one robot is present, so everything is safe. Suppose you give it the starting direction as left and it decides to start moving at time $= 5$ seconds. Until $t = 5$, it remains at cell 2 (its starting position, 1-based indexing). At $t = 6$, it moves to cell 1. At $t = 7$, it returns to cell 2, then moves to cell 3 at $t = 8$, and so on, oscillating within its range.

Example 3: No matter the initial directions, the two robots will eventually collide at cell 4.