

# Problem J: Cola Surfing

Filename: `surf`

Time limit: 2 seconds

While at Universal, Brygida, Reid, and Adrian, along with the rest of the group, stumbled across a Coca-Cola kiosk with a touchscreen that had somehow been opened to `edge://surf`, the game built-in to Microsoft Edge web browser! In the `edge://surf` game, you control a surfer, and attempt to move as far down the screen as possible, while avoiding various obstacles, including vicious octopi! The score of an attempt is equal to the number of units that the surfer moved down the screen before taking damage. Taking advantage of this opportunity, they quickly tried to beat the high score. Help them determine if it's possible to beat the high score.

## Problem

Given the high score  $h$ , determine if it is possible to move  $h$  units down the screen, as represented by a  $21 \times (h+1)$  grid (That is, a grid that is 21 spaces wide and  $(h+1)$  spaces tall) without touching any obstacle or being caught by any octopus.

There are 21 octopi that occupy the entire row that is a height of  $p$  above the player's starting position. The player's starting position is on the center of the top row, thus, row 1, column 11, using 1-based indexes. Relative to the player, the octopi occupy (pun intended) all slots in row  $-p+1$ , from column 1 through column 21. As the player and octopi move down the grid, their row number increases.

The game can be described by the following algorithm:

1. The player moves 1 space down and 1 space to the left OR 1 space down and 1 space to the right OR 2 spaces down. If this move gets the player to a position that is on row  $h$  or greater, **the player wins (beats high score) immediately.**
2. If the player did not win in step 1, then all octopi move 2 two rows down.
3. If an octopus occupies your square after it moves in step 2, **then the player loses.**
4. If the player didn't win and the player didn't lose, go back to step 1.

**Note that in order to move 2 spaces down, the space directly below the player must also not contain any obstacles.**

It is always guaranteed that the space the player starts on will not have an obstacle.

## Input

Input will begin with a single integer  $c$  representing the number of test cases that follow.

Each test case will begin with 2 space-separated integers on a single line,  $h$  and  $p$ , representing the high score and the number of spaces behind the player the octopi will start. The following  $h+1$  lines each contain a single string of 21 characters,  $r$ . Every character in  $r$  is either "." or "#" (quotes added for clarity). "." indicates a space without an obstacle, while "#" indicates a space with an obstacle.

## Output

If it is possible to travel from the 11<sup>th</sup> column of the first row to any space on row **h** or **h+1** without traveling over any obstacle or being caught by the octopi, then output, on a line by itself, “tubular” (quotes for clarity). If it is not possible, then output “wipeout” (quotes for clarity).

## Input Bounds and Corresponding Credit

100 Points
<ul style="list-style-type: none"><li>• <math>1 \leq c \leq 20</math></li><li>• <math>2 \leq h \leq 10,000</math></li><li>• <math>1 \leq p \leq 10,000</math></li></ul>

## Samples

Input	Output
4	tubular
5 4	wipeout
#####.#####	tubular
#..#.#..###.##.###.##	wipeout
#####.###.###.###.##.	
##.##...#.###.##.##.##	
.##.##.##.###.###.###.##	
#####.###.###.###...	
5 3	
#####.#####	
#..#.#..###.##.###.##	
#####.###.###.###.##.	
##.##...#.###.##.##.##	
.##.##.##.###.###.###.##	
#####.###.###.###...	
2 1	
#####.#####	
#####.#####	
#####.#####	
2 10	
#####.#####	
#####.#####	
#####.#####	

**Note: Detailed Sample Explanation is included on the next page.**

**Sample Explanation**

In the first and second samples, there is only one viable path for the player due to the obstacles. In the first sample, following that path doesn't lead to the player occupying a position right before an octopus moves to it.

In the second sample, all octopi start on row -2, which is three rows above row 1. On the first time step, the player must move to row 2, column 12. Right afterwards, the octopi will all move from row -2 to row 0, occupying all columns 1 through 21. On the second time step, the player must move to row 3, column 11, which is followed by all the octopi moving to row 2. Finally, on the third time step, the player must move to row 4, column 10, and unfortunately, the octopus that was on row 2, column 10 immediately thereafter moves to row 4, column 10 and eats the player before the player can make it to row 5.

In the third sample, on the first time step, the player moves from row 1, column 11 to row 2, column 10. Since the player's goal was to arrive at row 2, he immediately wins. It doesn't matter that immediately afterwards, the octopus on row 0 column 10 will move onto the player's square at row 2 column 2.