Trapped

Over the last few weeks, Lea was hiking almost every day. She loves walking around in the nature and enjoys the feeling of freedom and the silence on top of the mountains. She knows most of the mountains close to her home quite good, but recently, she found a way she did not know before. Following the unknown trail, Lea suddenly stood in front of a big cave. Following her curiosity, Lea walked into the cave when she suddenly heard a loud noise. Stones were falling down and crashing everything in their way.

Luckily Lea was safe inside the cave, but the entry was blocked by a huge rock. Having no other possibilities, Lea started to explore the cave and found some tools lying around. If she can find all the tools in the cave, she would be able to move the rock far enough to slip out of her prison. Since she needs to remember where she came from, Lea uses the following technique: She divides the cave into squares of 1x1 meter each and walks only from each field to one of its four neighbouring fields. To remember the position of the cave's entry, she uses a piece of chalk and draws an arrow on each field pointing to the direction she came from. She does not want to walk a field twice since two arrows on one field would mean that Lea might take the wrong direction when going back. Also, she is not able to erase the arrows she painted.

Is there such a way through the cave, that starts at Lea's position and visits all tools, but does not use a field twice? After collecting the tools she will follow her arrows back to the entry of the cave, open it and enjoy her regained freedom.

Input

The first line of the input contains an integer t. t test cases follow, each of them separated by a blank line.

Each test case (better to say test cave in this case) starts with a line containing two integers w and h, the cave's width and depth, respectively, in meters.

h lines follow describing the cave, each of them containing w characters. The i-th character in the j-th line describes the field (i, j) where the characters could mean the following:

- "#": a non-walkable field or wall. All other fields are walkable.

- "_": a normal walkable field

- "L": Lea's starting position

- "T": a position of a tool

Output

For each test case, output one line containing "Case #i: x" where i is its number, starting at 1, and x is "yes" if there is such a way through the cave or "no" otherwise. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$

- $1 \leq w, h \leq 10$

- There will be exactly one "L" and at least one "T" per test case.

- There will be at most 25 walkable fields per test case.

Sample Input 1

```
2
4 3
T___
____
T__L

5 3
T___T
_____
L____
```

Sample Output 1

```
Case #1: yes
Case #2: yes
```

Sample Input 2

```
5
7 7
###___#
_##_#T#
_##___#
_###_##
__L#__#
_####_#
_____#

8 6
__T#####
TT_##__#
LT###T_#
_____##
_####_##
_####TTT

9 6
#######_#
##____#_T
#####____
__L__#_#_
####_#_##
####____#

9 8
T____T_T#
_#L###TT#
T########
T########
_########
_########
T__##T###
##____T##

6 6
_L_TT#
##_T_#
_#T__#
_#_T_#
_#__T#
T___T#
```

Sample Output 2

```
Case #1: yes
Case #2: no
Case #3: yes
Case #4: no
Case #5: yes
```