Online Judge
F.A.Q
Hand In Hand
Online Acmers
Forum | Discuss
Statistical Charts

Online Exercise
Problem Archive
Realtime Judge Status
Authors Ranklist
[ ] Search

Online Teaching
C/C++/Java Exams
ACM Steps
Go to Job
Contest LiveCast
ICPC@China

Online Contests
Best Coder beta
VIP | STD Contests
Virtual Contests
DIY | Web-DIY beta
Recent Contests

Exercise Author
用QQ帐号登录
Author ID [ ]
Password [ ]
Sign In | Register new ID

Nightmare II

Time Limit: 2000/1000 MS (Java/Others)   Memory Limit: 32768/32768 K (Java/Others)
Total Submission(s): 2790   Accepted Submission(s): 781

Problem Description

Last night, little erriyue had a horrible nightmare. He dreamed that he and his girl friend were trapped in a big maze separately. More terribly, there are two ghosts in the maze. They will kill the people. Now little erriyue wants to know if he could find his girl friend before the ghosts find them.
You may suppose that little erriyue and his girl friend can move in 4 directions. In each second, little erriyue can move 3 steps and his girl friend can move 1 step. The ghosts are evil, every second they will divide into several parts to occupy the grids within 2 steps to them until they occupy the whole maze. You can suppose that at every second the ghosts divide firstly then the little erriyue and his girl friend start to move, and if little erriyue or his girl friend arrive at a grid with a ghost, they will die.
Note: the new ghosts also can devide as the original ghost.

Input

The input starts with an integer T, means the number of test cases.
Each test case starts with a line contains two integers n and m, means the size of the maze. (1<n, m<800)
The next n lines describe the maze. Each line contains m characters. The characters may be:
'.' denotes an empty place, all can walk on.

'X' denotes a wall, only people can't walk on.
'M' denotes little erriyue
'G' denotes the girl friend.
'Z' denotes the ghosts.
It is guaranteed that will contain exactly one letter M, one letter G and two letters Z.

Output

Output a single integer S in one line, denotes erriyue and his girlfriend will meet in the minimum time S if they can meet successfully, or output -1 denotes they failed to meet.

Sample Input

```
3
5 6
XXXXXX
XZ..ZX
XXXXXX
M.G...
......
5 6
XXXXXX
XZZ..X
XXXXXX
M.....
..G...

10 10
..........
..X.......
..M.X...X.
X.........
.X..X.X.X.
.........X
..XX....X.
X....G...X
...ZX.X...
...Z..X..X
```

Sample Output

```
1
1
-1
```

Author

二日月

Source

HDU 2nd "Vegetable-Birds Cup" Programming Open Contest

Recommend

lcy

Statistic | Submit | Discuss | Note

Home | Top

Administration