Time limit: 5.00 s **Memory limit:** 512 MB

Problem X: Frozen Labyrinth

You are given a map of a labyrinth. From a floor cell, if you move left, right, up, or down, you **slide** in that direction until the next square would be a wall or outside the map, and stop on the last valid cell. Each slide counts as one move. Your task is to find a path from start to end.

Input

The first input line has two integers n and m: the height and width of the map.

Then there are n lines of m characters describing the labyrinth. Each character is `"."` (floor), `"#"` (wall), `A` (start), or `B` (end). There is exactly one `A` and one `B`.

Output

First print `YES`, if there is a path, and `NO` otherwise.

If there is a path, print the length of the shortest such path (number of slides).

Constraints

$1 \le n, m \le 1000$

Examples

Example 1:

```
Input:
3 5
.....
.A.B.
.....
Output:
NO
```

Example 2:

```
Input:
5 5
#####
#A..#
#.#B#
#..##
#####
Output:
YES
2
```

Example 3:

```
Input:
5 7
.....#.
.......
.A..B..
....#..
.......
Output:
YES
3
```