Problem 1349: Maximum Students Taking Exam

Problem Information

Difficulty: Hard
Acceptance Rate: 53.04%
Paid Only: No
Tags: Array, Dynamic Programming, Bit Manipulation, Matrix, Bitmask

Problem Description

Given a `m * n` matrix `seats` that represent seats distributions in a classroom. If a seat is broken, it is denoted by `'#'` character otherwise it is denoted by a `'.'` character.

Students can see the answers of those sitting next to the left, right, upper left and upper right, but he cannot see the answers of the student sitting directly in front or behind him. Return the **maximum** number of students that can take the exam together without any cheating being possible.

Students must be placed in seats in good condition.

Example 1:

Input: seats = [["#",".","#","#",".","#"], [".","#","#","#","#","."], ["#",".","#","#",".","#"]]
Output: 4 **Explanation:** Teacher can place 4 students in available seats so they don't cheat on the exam.

Example 2:

Input: seats = [[".","#"], ["#","#"], ["#","."], ["#","#"], [".","#"]] **Output:** 3 **Explanation:** Place all students in available seats.

Example 3:

Input: seats = [["#",".","**.** ",".","#"], ["**.** ","#","**.** ","#","**.** "], ["**.** ",".","#",".","**.** "], ["**.** ","#","**.** ","#","**.** "], ["#",".","**.** ",".","#"]] **Output:** 10 **Explanation:** Place students in available seats in column 1, 3 and 5.

Constraints:

* `seats` contains only characters `'.'` and``'#'.` * `m == seats.length` * `n == seats[i].length` * `1 <= m <= 8` * `1 <= n <= 8`

Code Snippets

C++:

```cpp
class Solution {
public:
    int maxStudents(vector<vector<char>>& seats) {


    }
};
```

Java:

```java
class Solution {
public int maxStudents(char[][] seats) {


    }
}
```

Python3:

```python
class Solution:
    def maxStudents(self, seats: List[List[str]]) -> int:
```