HW5

助教：

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HW5 BFS - Rotten Apple

Description

- You are given an m x n matrix, where each cell can have one of the following values:
  a) -1 represents an empty cell.
  b) 0 represents a freshly picked apple.
  c) 1 represents a fresh apple.
  d) 2 represents a rotten apple.
- A rotten apple spreads rot to its 4-directionally adjacent cells (up, down, left, and right) every minute. Only a freshly picked apple (0) 4-directionally adjacent to a rotten apple (2) will take 1 minute to turn into a fresh apple (1) before it can be affected by rotting.
- You need to calculate the minimum number of minutes required to make all fresh apples (including freshly picked apples) rotten. If it is impossible to rot all apples, return -1.

Input / Output

- Input
  - m n
  - m* n size Matrix
- Output
  - Return an integer representing the minimum number of minutes required to rot all apples.
  - If it is not possible to rot all apples, return -1.

Sample Input 1

```
3 3
2 1 -1
0 -1 0
1 1 -1
```

Sample Output 1

```
-1
```

Example

第0秒		第1秒		第2秒	
[2, 1, -1]		[2, 2, -1]		[2, 2, -1]	
[1, -1, 1]	→	[2, -1, 1]	→	[2, -1, 1]	Ans = -1
[-1, 1, 1]		[-1, 1, 1]		[-1, 1, 1]	
[2, 1, -1]		[2, 2, -1]		[2, 2, -1]	
[1, -1, -1]	→	[2, -1, -1]	→	[2, -1, -1]	Ans = 1
[-1, -1, -1]		[-1, -1, -1]		[-1, -1, -1]	

Example

第0秒

[2, 1, -1]
[0, -1, -1]
[1, 1, -1]

→

第1秒

[2, 2, -1]
[1, -1, -1]
[1, 1, -1]

→

第2秒

[2, 2, -1]
[2, -1, -1]
[1, 1, -1]

→

第3秒

[2, 2, -1]
[2, -1, -1]
[2, 1, -1]

→

第4秒

[2, 2, -1]
[2, -1, -1]
[2, 2, -1]

→

第5秒

[2, 2, -1]
[2, -1, -1]
[2, 2, -1]

Ans = 4

Example

第0秒

[2, 1, -1]
[0, -1, 0]
[1, 1, -1]

→

第1秒

[2, 2, -1]
[1, -1, 0]
[1, 1, -1]

→

第2秒

[2, 2, -1]
[2, -1, 0]
[1, 1, -1]

→

第3秒

[2, 2, -1]
[2, -1, 0]
[2, 1, -1]

→

第4秒

[2, 2, -1]
[2, -1, 0]
[2, 2, -1]

→

第5秒

[2, 2, -1]
[2, -1, 0]
[2, 2, -1]

Ans = -1

作業規定

- 分數：7%
- 作業密碼 : 11131223
- OJ 網址: https://nlp.csie.ntust.edu.tw:2021/contest
- OJ 截止日期：2024/12/23 11:00 (截止前無限制上傳次數)
- 請將上傳到OJ的程式碼壓縮成 zip 檔，並命名為「學號_姓名.zip」 (例如：b1234567890_王小明.zip)上傳至 Moodle，遲交 0 分。
- 程式語言開放使用 C (gcc 5.4)、C++ (g++ 5.4)，除了標準輸入輸出 (例如：stdio.h)和字串 (例如：string.h)相關的 library，請勿使用其他 library，請自行實作基礎資料結構。
- 請務必注意作業時限，超過時限或沒有在moodle和OJ都繳交作業者皆以0分計算！
- 請勿抄襲他人程式碼