## Codenavirus

#### Assignment

Codenavirus is strange contagious disease. This is why:

* **One** infected person will infect only **one healthy** person next to him **each day**
* If a person is infected, he will infect the person on his **right**, **unless** the latter is already infected, then he will infect the person on his **top** instead, but if that person is also already infected, then he will infect the one on his **left**, lastly if this one is also already infected, the he will infect the one **below** if this one is still healthy. (The examples will clarify)
* A newly infected person will start infecting other people **one day** after the infection.
* An infected person will **recover** after exactly **3 days** of illness, counting from the day he got infected, and he will become immune to the virus (he won't be infected anymore)

To help the [WHO](https://www.who.int/" \t "https://edu.protal.biz/mod/assign/_blank) study this new virus, you must create a program that simulates the spread of the virus.

Inputs

* world: a matrix of characters representing the proximity of people in a the world. A person is represented by "#" and empty spaces are represented by ".". One person is next to another one if they share the same row OR the same column and there is no empty space or another person between them.
* firstInfected: an array of integer of size 2 ([row, col]) storing the coordinates of the first person to contract the virus on **day 1**.

Output  
An array of **4** integers [a, b, c, d] where:

* a : number of **days** until the virus stops spreading
* b : number of **infected** people at the end of the spread
* c : number of **recovered** people at the end
* d : number of **uninfected** people

Prioritize lower indexes if there is a case where one person is about to be infected by two neighbors, in that case the neighbor with lower row/col will win (Eg. Day 3 of [test](https://edu.protal.biz/mod/quiz/view.php?id=223" \o "Test) 4).

Example

* For

world = [["#","#","#"],

["#","#","#"],

["#","#","#"]]

and firstInfected = [1, 1], the answer is [7, 3, 6, 0]  
Explanation: H for healthy, I for infected, R for recovered

DAY 0:

[

["H", "H", "H"],

["H", "H", "H"],

["H", "H", "H"],

]

DAY 1:

[

["H", "H", "H"],

["H", "I", "H"],

["H", "H", "H"],

]

DAY 2:

[

["H", "H", "H"],

["H", "I", "I"],

["H", "H", "H"],

]

DAY 3:

[

["H", "I", "I"],

["H", "I", "I"],

["H", "H", "H"],

]

DAY 4:

[

["I", "I", "I"],

["H", "R", "I"],

["H", "H", "I"],

]

DAY 5:

[

["I", "I", "I"],

["I", "R", "R"],

["H", "I", "I"],

]

DAY 6:

[

["I", "R", "R"],

["I", "R", "R"],

["I", "I", "I"],

]

DAY 7:

[

["R", "R", "R"],

["I", "R", "R"],

["I", "I", "R"],

]

**[input] array.array.char world**

**[input] array.integer firstInfected**

**[output] array.integer**

#### Deliverables

* a single .cs file
* the file **must** contain the following method signature, otherwise your submission is considered **invalid**

int[] Codenavirus (char[][] world, int[] firstInfected) {

}

3. The application is tested **automatically** and global variables are **forbidden**.

Passed tests: 1 of 5

Failed tests:

#1 Input: world:

[["#","#","#","#",".",".",".","#","."], ["#","#","#","#","#","#","#",".","#"], [".",".",".",".",".",".",".","#","#"], [".",".","#",".",".","#",".",".","."], [".",".",".",".","#","#",".","#","#"], ["#",".",".",".",".",".","#","#","#"], ["#",".",".",".","#","#","#","#","."], ["#",".",".",".",".","#",".",".","."], [".",".","#","#","#",".","#","#","."]]

firstInfected: [3, 5]

Output: [4, 2, 1, 78]

Expected Output: [4, 2, 1, 34]

#2 Input: world:

[["#","#","."],

[".","#","#"],

["#",".","#"]]

firstInfected: [1, 1]

Output: [5, 3, 2, 4]

Expected Output: [5, 3, 2, 1]

#3 Input: world:

[["#",".","."],

[".","#","."],

["#",".","#"]]

firstInfected: [1, 1]

Output: [2, 1, 0, 8]

Expected Output: [2, 1, 0, 3]

#4 Input: world:

[["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"],

["#","#","#","#","#","#","#"]]

firstInfected: [1, 1]

Output: System.IndexOutOfRangeException: Index was outside the bounds of the array.

Expected Output: [15, 3, 60, 0]