# Super Mario

*Princess Peach is imprisoned in the biggest tower. It's up to Mario to save her.*

After Mario gets into the tower, he has to fight his way to the princess. In order to do that, he has to walk through the maze that the dangerous Bowser is guarding, but he also has to be careful not to lose all his lives and not be able to proceed with his mission. If Mario successfully reaches the throne, he saves princess Peach.

The castle maze may look like this:

|  |  |
| --- | --- |
| **The Maze** | **Legend** |
| ------P--- -------B-- --B------- ---------- ----M----- | **M** 🡺 **Mario**, **the player character**  B🡺 **Bowser, the enemy**  P 🡺 **Princess Peach**  - 🡺 **Empty space** |

Each turn proceeds as follows:

* **First**, Bowser **spawns** on the given index.
* **Then, Mario** moves in a direction, which **decreases** his lives by 1.
  + It can be "**W**" (up), "**S**" (down), "**A**" (left), "**D**" (right).
  + If Mario tries to move **outside** of the maze, he **doesn’t** move but **still** has his lives **decreased**.
* If an enemy is in the **same cell** where Mario moves, Bowser fights him, which **decreases** his lives by 2. If Mario’s lives **drops** at 0 or below, he **dies** and you should mark his position with ‘**X**’.
* If Mario **kills** the enemy successfully, the enemy **disappears**.
* If Mario reaches the **index** where **the throne** is, **he saves Princess Peach and they both run away** (disappear from the field)**, even if his lives are 0 or below.**

## Input

* On the **first line** of input, you will receive **e** – **the lives** Mario has.
* On the **second line** of input, you will receive **n** – the **number of rows** the castle’s maze will consist of.  
  Range: **[5-20]**
* On the next **n lines**, you will receive how each row looks.
* Then, **until** Mario dies, or reaches the princess, you will receive a **move command** and **spawn row and column**.

## Output

* If Mario **runs out of lives**, print "Mario died at {row};{col}."
* If Mario **reaches the throne**, print "Mario has successfully saved the princess! Lives left: {lives}"
* Then, in all cases, **print** the **final state of the field** on the **console**.

## Constraints

* The field will always be **rectangular**.
* Mario will **always** run out of lives or reach the throne.
* There will be **no case** with spawn on an **invalid** index.
* There will be **no case** with **two enemies in the same cell**.
* There will be **no case** with the enemy **spawning** on the index **where Mario or the princess are**.

## Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 100  5  --P--  -----  -----  -----  --M--  W 3 0  W 3 1  W 3 2  W 3 3 | Mario has successfully saved the princess! Lives left: 96  -----  -----  -----  BBBB-  ----- | Turn 1: An enemy spawns at [3;0], Mario moves to [3;2], his lives decrease by 1.  Turn 2: An enemy spawns at [3;1], Mario moves to [2;2], his lives decrease by 1.  Turn 3: An enemy spawns at [3;2], Mario moves to [1;2], his lives decrease by 1.  Turn 4: An enemy spawns at [3;3], Mario moves to [0;2], his lives decrease by 1, but he also moves to the index where the princess is – they run away. |
| 3  5  --P--  -----  -----  -----  --M--  W 3 2 | Mario died at 3;2.  --P--  -----  -----  --X--  ----- | Turn 1: An enemy spawns at [3;2], Mario moves to [3;2], his lives decrease by 1 and fights the enemy at that index. Mario's lives are decreased by 2, dropping it to 0 or below => Mario dies. |