# Garden



*Furion loves nature and that is why he has a beautiful square garden. He wants to plant it with magical flowers, so it can be even more beautiful. No one knows why, but he actually needs a software program to do that, that is why you'll write one for him.*

You will be given **N** and **M** – **integers**, indicating the **dimensions** of the **square garden**. The garden is **empty at the beginning** – it has no flowers. Furion wants every place for a flower to be presented with a **zero (0)** when it is **empty**. After you finishcreating the garden, you will start receiving two integers – **Row** and **Column**, **separated** by a **single space** – which represent the **position** at which Furion **currently plants a flower**. If you receive a position, which is outside of the garden, you should print **"Invalid coordinates."** and move on with the next position. This happens until you receive the command **"Bloom Bloom Plow”**. When you receive that input, **all planted flowers** should **bloom**.

The flowers are **magical**. When a flower **blooms** it instantly **blooms flowers** to **all places** to its **left**, **right**, **up**, and **down**, **increasing** their **value** with **1**. Flowers can bloom **multiple times**, and **each time** the flower blooms – it becomes more and more beautiful, which means its **value increases by 1**.

### Input

* On the first line of input you will receive **two integers, separated by a single space** – indicating the dimensions of the garden.
* On the next several lines you will be receiving **two integers separated by a single space** – indicating the **position** at which Furion **currently plants a flower**.
* When you receive the input line **"****Bloom Bloom Plow”** the input sequence should end.

### Output

* Print **"****Invalid coordinates."** each time you receive positions outside the garden.
* The output is simple. Print the whole garden – each row of it on a new line, and each column – separated by a **single space**.

### Constraints

* The dimensions of the matrix (**N** and **M**) will contain integers in the range [3, 500].
* The amount of input commands will be in the range [0, **N \* M**].
* Flowers will **always** be planted on **empty** places.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| **5 5**  **1 1**  **3 3**  **Bloom Bloom Plow** | **0 1 0 1 0**  **1 1 1 2 1**  **0 1 0 1 0**  **1 2 1 1 1**  **0 1 0 1 0** | **The garden has 5 rows and 5 columns.**  **They are all 0 at the beginning.**  **The planted flowers are at [1, 1] and [3, 3].**  **The affected places are:**  **0 0 0 0 0**  **0 0 0 0 0**  **0 0 0 0 0**  **0 0 0 0 0**  **0 0 0 0 0**  **We receive the blooming command and we bloom the flowers.**  **First, we reach the first flower, and we bloom it, increasing all affected fields' value with 1.**  **0 1 0 0 0**  **1 1 1 1 1**  **0 1 0 0 0**  **0 1 0 0 0**  **0 1 0 0 0**  **Then we bloom the second flower, and we increase all affected fields' (even those from the first flower) value with 1.**  **0 1 0 1 0**  **1 1 1 2 1**  **0 1 0 1 0**  **1 2 1 1 1**  **0 1 0 1 0** |
| **4 4**  **0 0**  **3 3**  **1 1**  **2 2**  **Bloom Bloom Plow** | **1 2 2 2**  **2 1 2 2**  **2 2 1 2**  **2 2 2 1** |  |

*I need some peas and quiet…*