# 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**.

Furion обича природата и затова има красива градина. Той иска да го засади с магически цветя, така че може да бъде още по-красива. Никой не знае защо, но той всъщност се нуждае от софтуерна програма, за да направи това, ето защо ще напишете един за него. Ще ви бъдат дадени N и M – цели числа, показващи размерите на квадратната градина. Градината е празна в началото – няма цветя. Furion иска всяко място за цвете да бъде представено с нула (0), когато е празно. След като приключите създаването на градината, ще започнете да получавате две цели числа – ред и колона, разделени от едно пространство - които представляват позицията, на която Furion в момента засажда цвете. Ако получите позиция, която е извън градината, трябва да отпечатате "Невалидни координати", и да продължи със следващата позиция. Това се случва, докато не получите командата "Блум Plow". Когато получите този вход, всички засадени цветя трябва да цъфтят. Цветята са магически. Когато едно цвете го разцъфтява...

### 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 contains ~~be~~ 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…*