More Exercise: Arrays

Problems for exercise and homework for the "JS Fundamentals" Course @ SoftUni.
Submit your solutions in the SoftUni judge system at: https://judge.softuni.org/Contests/1272

1. Print N-th Element

Write a function that collects each element of an array, on a given **step**.

The **input** comes as an **array of strings**. The last element is **N - the step**.

The **collections** are every element on the **N-th** step **starting** from the **first one**. If the step is "**3**", you need to print the **1-st**, the **4-th**, the **7-th** … and so on, until you reach the end of the array. Then, print elements in a row, **separated** by a single space.

Examples

Input	Output
['5', '20', '31', '4', '20', '2']	5 31 20
['dsa', 'asd', 'test', 'test', '2']	dsa test
['1', '2', '3', '4', '5', '6']	1

2. Add and Remove

Write a function that **adds** and **removes** numbers **to/from** an array. You will receive a command, which can either be "**add**" or "**remove**".

The **initial number** is **1**. Each input command should **increase that number**, regardless of what it is.

- Upon receiving an "**add**" command, you should add the current number to your array.
- Upon receiving the "**remove**" command, you should remove the **last** entered number, currently existent in the array.

Input

The **input** comes as an array of strings. Each element holds a **command**.

Output

Print elements in a row, separated by a single space. In case of an empty array, just print "**Empty**".

Examples

Input	Output
['add', 'add', 'add', 'add']	1 2 3 4
['add', 'add', 'remove', 'add', 'add']	1 4 5

`['remove', 'remove', 'remove']`	`Empty`

3. Rotate Array

Write a function that rotates an array. The array should be rotated to the **right** side, meaning that the **last** element should become the **first**, upon rotation.

The **input** comes as an **`array`** of strings. The **last element** of the array is the amount of rotation you need to perform.

The **output** is the **resulting** array after the rotations. The elements should be printed on one **line**, **separated** by a **single space**.

Examples

Input	Output
`['1', '2', '3', '4', '2']`	`3 4 1 2`
`['Banana', 'Orange', 'Coconut', 'Apple', '15']`	`Orange Coconut Apple Banana`

Hints

- Check if there is a **built-in function** for inserting elements **at the start** of the array.

4. Non-Decreasing Subset

Write a function that extracts only those numbers that form a **non-decreasing subset**. In other words, you start from the **first element** and continue to **the end** of the given array of numbers. Any number which is **LESS THAN** the **current biggest one** is **ignored**, alternatively if it's **equal or higher** than the **current biggest one** you set it as the **current biggest one** and you **continue** to the next number.

Input

The **input** comes as an array of numbers.

Output

The **output** is the processed array after the filtration, which should be a non-decreasing subset. The elements should be printed on one line, separated by a **single space**.

Examples

Input	Output
`[ 1, 3, 8, 4, 10, 12, 3, 2, 24]`	`1 3 8 10 12 24`
`[ 1, 2, 3, 4]`	`1 2 3 4`
`[ 20, 3, 2, 15, 6, 1]`	`20`

Hints

- The **`Array.filter()`** built-in function might help you a lot with this problem.

5. Tseam Account

As a gamer, Peter has Tseam Account. He loves to buy new games. You are given Peter's account with all of his games-> **strings**, **separated** by space. Until you receive **"Play!"** you will be receiving commands which Peter does with his account.

You may receive the following commands:

- **`Install {game}`** - **add** the game at the **last** position in the account, but only if it **isn't** installed already.
- **`Uninstall {game}`** - **delete** the game if it **exists**.
- **`Update {game}`** - **update** the game **if it exists** and place it in the **last position**.
- **`Expansion {game}-{expansion}`** - check if the game exists and **insert** after it the expansion in the following format: "**`{game}:{expansion}`**";

Input

- On the **first input line** you will receive Peter`s **account** - a **sequence** of game names, **separated** by space.
- Until you receive **"Play!"** you will be receiving **commands**.

Output

- As output, you must print Peter`s Tseam **account**.

Constraints

- The **command will always be valid.**
- The **game** and **expansion** will be strings and will contain any character, except **'-'**.
- Allowed working **time** / **memory**: **100ms** / **16MB**.

Examples

Input	Output	Comments
['CS WoW Diablo', 'Install LoL', 'Uninstall WoW', 'Update Diablo', 'Expansion CS-Go', 'Play!']	CS CS:Go LoL Diablo	We receive the account => CS, WoW, Diablo We Install LoL => CS, WoW, Diablo, LoL Uninstall WoW => CS, Diablo, LoL Update Diablo => CS, LoL, Diablo We add expansion => CS, CS:Go, LoL, Diablo We print the account.
['CS WoW Diablo', 'Uninstall XCOM', 'Update PeshoGame', 'Update WoW', 'Expansion Civ-V', 'Play!']	CS Diablo WoW	

Multidimensional Arrays

We will mainly work with 2-dimensional arrays. The concept is as simple as working with a simple 1-dimensional array. It is just an array of arrays.

6. Magic Matrices

Write a function that checks if a given **matrix** of numbers is magical. A matrix is magical if the **sums of the cells** of every row and every column are equal.

Input

The input comes as an array of arrays, containing numbers (number 2D matrix). The input numbers will **always be positive**.

Output

The **output** is a **`Boolean`** result indicating whether the matrix is magical or not.

Examples

Input	Output

`[[4, 5, 6],`
` [6, 5, 4],`
` [5, 5, 5]]`
	`true`

Input	Output

`[[11, 32, 45],`
` [21, 0, 1],`
` [21, 1, 1]]`
	`false`

Input	Output

`[[1, 0, 0],`
` [0, 0, 1],`
` [0, 1, 0]]`
	`true`

Hints

- You can read more about the magic square here.

7. Spiral Matrix

Write a function that generates a **Spirally filled** matrix with numbers, with given dimensions.

Input

The **input** comes as 2 numbers that represent the **dimension of the matrix**.

Output

The **output** is the matrix filled spirally starting from **1**. You need to print **every row on a new line**, with the cells **separated by a space**. Check the examples below.

Examples

Input	Output

`5, 5`	`1 2 3 4 5`
	`16 17 18 19 6`
	`15 24 25 20 7`
	`14 23 22 21 8`
	`13 12 11 10 9`

Input	Output

`3, 3`	`1 2 3`
	`8 9 4`
	`7 6 5`

8. Diagonal Attack

Write a function that reads a given matrix of numbers, and checks if both main diagonals have **an equal sum**. If they have, set every element that is **NOT** part of **the main diagonals** to that sum, alternatively just print the matrix unchanged.

Input

The input comes as an array of strings. Each element represents a **string of numbers**, with **spaces** between them. Parse it into a **matrix of numbers**, so you can work with it.

Output

The **output** is either the new matrix, with all cells not belonging to a main diagonal changed to the diagonal sum, or the original matrix if the two diagonals have different sums. You need to print **every row on a new line**, with cells **separated by a space**. Check the examples below.

Examples

Input	Output
['5 3 12 3 1', '11 4 23 2 5', '101 12 3 21 10', '1 4 5 2 2', '5 22 33 11 1']	5 15 15 15 1 15 4 15 2 15 15 15 3 15 15 15 4 15 2 15 5 15 15 15 1

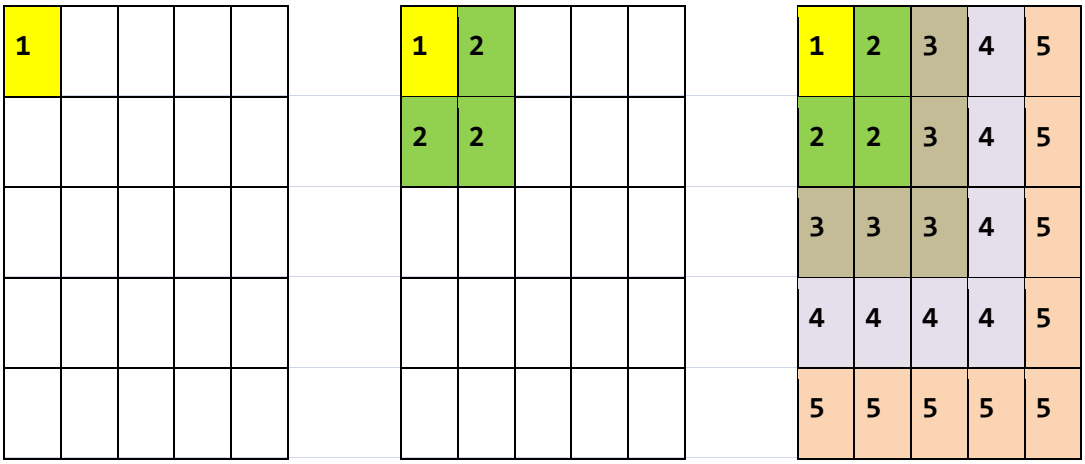
Input	Output
['1 1 1', '1 1 1', '1 1 0']	1 1 1 1 1 1 1 1 0

9. Orbit

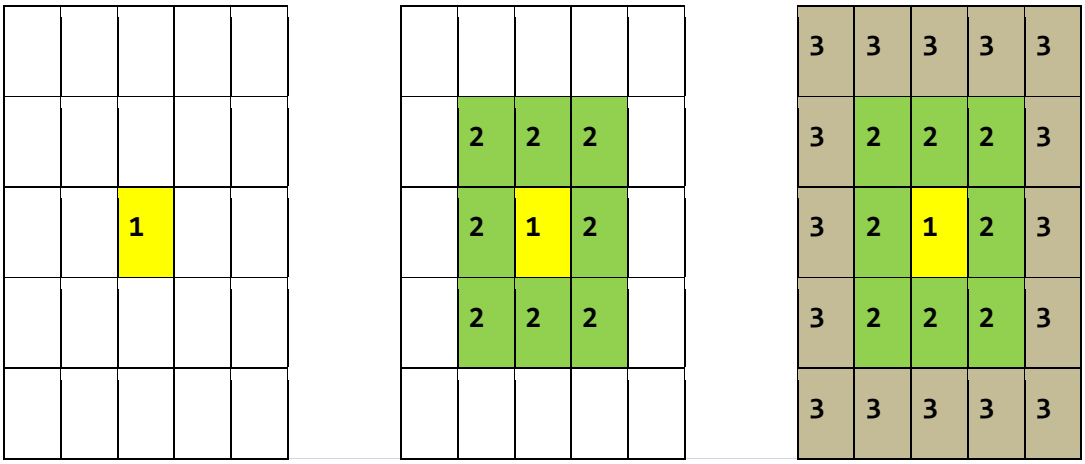
You will be given an empty rectangular space of cells. Then you will be given the position of a star. You need to build the orbits around it.

You will be given a coordinate of a cell, which will **always be inside the matrix**, on which you will put the value - **1**. Then you must set the values of the cells **directly surrounding that cell**, including the **diagonals**, **to 2**. After which you must set the values of the next surrounding cells to 3 and so on. Check the pictures for more info.

For example, we are given a matrix that has 5 rows and 5 columns and the star is at coordinates - **`0, 0`**. Then the following should happen:



If the coordinates of the star are somewhere in the middle of the matrix for example - **2, 2**, then it should look like this:



Input

The input comes as an array of 4 numbers **[`width, height, x, y`]**, which represents the **dimensions** of the matrix and the **coordinates** of the star**.**

Output

The output is the filled matrix, with the cells **separated by a space**, each **row on a new line**.

Examples

Input	Output

`[4, 4, 0, 0]`	`1 2 3 4`
	`2 2 3 4`
	`3 3 3 4`
	`4 4 4 4`

Input	Output

`[5, 5, 2, 2]`	`3 3 3 3 3`
	`3 2 2 2 3`
	`3 2 1 2 3`
	`3 2 2 2 3`
	`3 3 3 3 3`

Input	Output

`[3, 3, 2, 2]`	`3 3 3`
	`3 2 2`
	`3 2 1`

Hints

- Check if there is some **dependency** or **relation** between the **position of the numbers** and the **rows** and **columns** of those positions.