# 02. Treasure hunt

*Shape

Description automatically generated with medium confidence*

*You are a treasure hunter. You have found a long-lost secret map, showing the way to a hidden treasure. But is the map real or fake…*

You will be given **N** and **M** – **integers**, indicating the **field's dimensions**, shown on the secret map. On the next **N** lines, you will receive the **rows** of the field. You will be placed in a **random position**, marked with the letter '**Y**'. On random positions, there will be trees marked with the letter '**T**'. The treasure is marked with the letter '**X**'. **All of the empty positions** will be marked with **'-'**.

You will receive a few lines with commands representing which direction you need to move. The possible directions are **up, down, right,** and **left.**

If you go out of the field, you need to stay in the last possible position inside the field.

If you step on a tree (position marked with '**T**'), **go one step back** to the direction you came from (not make a move).

If the given command is **"Finish"** you need to check the position you are standing on. If it is marked with '**X**' this means you have found the treasure, and you have to print the following message: **"I've found the treasure!".** Then print the correct directions you went to in order to find the treasure.

Otherwise, print: **"The map is fake!"**.

### Input

* On the first line, you'll receive the **field dimensions** in the format: **"N M"**, where **N** is the number of **rows**, and **M** is the number of **columns**. They'll be separated by a single **space (" ")**.
* On the next **N** lines, you will receive a string representing the **respective row** of the **field**. The **positions** in every string will be **separated** by a single **space (" ").**
* On the next few lines, until you receive the command **"Finish"**, you will be given directions (**up, down, right, left**).

### Output

* There are two types of output:
* If you have **found** the treasure (the **last step** is on a position marked with '**X**') print the following output: **"I've found the treasure!".**

On the next line, print the correct directions you went to find the treasure (do not include the directions that made you **go out of the field** or **step on a tree**). The directions must be separated by a **comma** and **space** **(", ").** It should look like this:

**"The right path is {direction1}, {direction2}, …".**

* If you have **not found** the treasure, print the following message: **"The map is fake!".**

### Constraints

* The **field size** will be a 32-bit integer in the range **[0 … 2 147 483 647]**.
* The field will always have only one '**X**' and only one '**Y**'.
* If the steps are **invalid**, do **not include** them in the result.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 5 8  - - - T - - - T  - X - T T - - -  - - - - - - T -  - - Y - T - - T  - - - T - - - -  up  up  left  Finish | I've found the treasure!  The right path is up, up, left | **1. up 2. up 3. left**  - - - T - - - T - - - T - - - T - - - T - - - T  - X - T T - - - - X Y T T - - - - X/Y - T T - - -  - - Y - - - T - - - - - - - T - - - - - - - T -  - - - - T - - T - - - - T - - T - - - - T - - T  - - - T - - - - - - - T - - - - - - - T - - - - |
| 4 7  T - - T - T T  - - - - - X -  T - - - - - -  Y - - - - - T  left  right  right  up  Finish | The map is fake! | **1. left**  goes outside the field - stays in the same position.  **2. right** **3. right**  **4. up**  T - - T - T T T - - T - T T T - - T - T T  - - - - - X - - - - - - X - - - - - - X -  T - - - - - - T - - - - - - T - Y - - - -  - Y - - - - T - - Y - - - T - - - - - - T |