Selling

You successfully started your cooking journey, so now you need to sell the products from your basket in the bakery in order to collect your price.

You will be given an integer **n** for the **size** of the bakery with **square** shape. On the next **n** lines, you will receive the **rows** of the bakery. You will be placed on a **random position**, marked with the letter **`'S'`**. On random positions there will be clients, marked with a **single digit**. There **may** also be **pillars**. Their **count** will be either **0** or **2** and they are **marked** with the **letter** - **`'O'`**. **All of the empty positions** will be marked with **`'-'`**.

Each turn, you will be given **commands** for the **your movement**. Move commands will be: **`"up"`**, **`"down"`**, **`"left"`**, **`"right"`**. If you **move** to a **client**, you **collects the price equal** to the **digit there** and the client **disappears**. If you move to a **pillar**, you move on the **position** of the **other pillar** and then **both** pillars **disappear**. If you **go out** of the bakery, you **disappear** from the bakery and you are out of there. You need **at least 50 dollars** to rent your own Bakery

When **you are out of the bakery or you collect enough money,** the program **ends**.

Input

- On the first line, you are given the integer **n** – the size of the **square** matrix.
- The **next n lines** holds the values for every **row**.
- On each of the next lines you will get a move command.

Output

- On the first line:
  - If the player goes to the void, print: **`"Bad news, you are out of the bakery."`**
  - If the player collects enough star power, print: **`"Good news! You succeeded in collecting enough money!"`**
- On the second line print all star power collected: **`"Money: {money}"`**
- In the end print the matrix.

Constraints

- The size of the **square** matrix will be between **[2…10].**
- There will **always** be **0** or **2** pillars, marked with the **letter** - **`'O'`**.
- Your position will be marked with **`'S'`**.
- You will **always** go out of the bakery or collect enough money.

Examples

Input	Output	Comments
5 SO--- ----- ----- ----- ----O right right	Bad news, you are out of the bakery. Money: 0 ----- ----- ----- ----- -----	The first command is right. You move to **one of the pillars** and then **appears** on the other side of it (4,4). The bakery looks like this after the first command: ----- ----- ----- ----- ----S The second command is right. You go of the bakery.
6 S98--- 99---- 666666 ------ --77-- -6-6-6 right right down left left down right right	Good news! You succeeded in collecting enough money! Money: 53 ------ ------ --S666 ------ --77-- -6-6-6	Here we have **no** pillars and bakery rich of clients. You manage to collect **enough** money **without going out** of the bakery. The clients you have selled food to have disappeared and we can see where you were when you collected the last neeeded money (2,2).