## Miner

We receive **the size** of the **field** in which our miner moves. The field is **always a square**. After that, we will receive the commands, which represent the directions, in which the miner should move. The miner **starts** from position - '**s'**. The commands will be: **left**, **right**, **up** and **down**. If the miner has reached the edge of the field and the next command indicates that he has to get out of the field, he must **remain on his current possition and ignore the current command**. The possible characters that may appear on the screen are:

* **\*** - a regular position on the field.
* **e** - the end of the route.
* **c -** coal
* **s** - the place where the **miner starts**

When the miner finds a coal, he collects it and **replaces it with '\*'**. Keep track of the **count of the collected coals**. If the miner collects **all of the coals** in the field, the program stops and you have to print the following message: **"You collected all coals! ({rowIndex}, {colIndex})"**.

If the miner **steps at 'e', the game is over (the program stops)** and you have to print the following message: **"Game over! ({rowIndex}, {colIndex})"**.

If there are no more commands and none of the above cases had happened, you have to print the following message: **"{remainingCoals} coals left. ({rowIndex}, {colIndex})"**.

### Input

* **Field size** - an integer number.
* **Commands to move** the miner - an array of strings separated by **" "**.
* **The field: some of the following characters (\*, e, c, s),** separated by whitespace (" ");

### Output

* There are three types of output:
  + If all the coals have been collected, print the following output: **"You collected all coals! ({rowIndex}, {colIndex})"**
  + If you have reached the end, you have to stop moving and print the following line: **"Game over! ({rowIndex}, {colIndex})"**
  + If there are no more commands and none of the above cases had happened, you have to print the following message: "{totalCoals} coals left. ({rowIndex}, {colIndex})"

### 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 **'s'**.
* Allowed working time for your program: **0.1 seconds.**
* Allowed memory: **16 MB.**

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5  up right right up right  \* \* \* c \*  \* \* \* e \*  \* \* c \* \*  s \* \* c \*  \* \* c \* \* | Game over! (1, 3) |
| 4  up right right right down  \* \* \* e  \* \* c \*  \* s \* c  \* \* \* \* | You collected all coals! (2, 3) |
| 6  left left down right up left left down down down  \* \* \* \* \* \*  e \* \* \* c \*  \* \* c s \* \*  \* \* \* \* \* \*  c \* \* \* c \*  \* \* c \* \* \* | 3 coals left. (5, 0) |