**Problem 2**

*You are playing a game and your goal is to collect 100 coins.*

On the first line, you will be given a **number** representing the **size of the field** with **square** shape. On the next few lines, you will be given a **field** with:

* **One player** randomly placed in it and marked with symbol "**P**"
* **Numbers** for coins placed at different positions of the field
* **Walls** marked with "**X**".

After the field state, you will be given **commands** for the **players movement**. Commands can be: "**up**", "**down**", "**left**", "**right**". If the command is invalid, you should ignore it.

If the player **goes out** of the field **or** he **hits a wall**, he **loses the game** and **his coins are reduced to 50% and rounded down** tothe next-lowest number. The program ends.

Otherwise, the player has to collect **at least** **100 coins** to win the game.

For more clarifications see the examples below.

### Input

* **Number** representing the size of the field (matrix NxN)
* **Matrix** representing the field (each position **separated by single space**)
* On each of the next lines you will get a move command.

### Output

* If the player won the game, print: "**You won! You've collected {total\_coins} coins.**"
* If the player loses the game, print: "**Game over! You've collected {total\_coins} coins.**"
* Collected coins have to be **rounded down** tothe next-lowest number.
* The field **positions** from which the player has **collected coins as lists:**

"**Your path:**

**[{row\_position1}{column\_position1}]**

**[{row\_position2}{column\_position2}]**

**[{row\_position3}{column\_position3}]**

**…**"

### Constrains

* There will be nocase in which in the field will be less than 100 coins.
* All of the given numbers will be valid integers in the range [0, 100].

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5  1 X 7 9 11  X 14 46 62 0  15 33 21 95 X  P 14 3 4 18  9 20 33 X 0  right  right  up  up  left  down | You won! You**'**ve collected 131 coins.  Your path:  [3, 1]  [3, 2]  [2, 2]  [1, 2]  [1, 1]  [2, 1] |
| 8  13 18 9 7 24 41 52 11  54 21 19 X 6 4 75 6  76 5 7 1 76 27 2 37  92 3 25 37 52 X 56 72  15 X 1 45 45 X 7 63  1 63 P 2 X 43 5 1  48 19 35 20 100 27 42 80  73 88 78 33 37 52 X 22  up  left | Game over! You**'**ve collected 0 coins.  Your path:  [4, 2] |