## OOP Exam – Vegetable Ninja

Vegetable Ninjas fight over in a small rectangular field, and increase their power and stamina by eating healthy vegetables.

## Overview

You will be given 2 names, dimensions of a matrix, and a matrix layout. You need to implement a game field by that input. There will always be only 2 ninjas, in the game field, a bunch of vegetables and some blank spaces, which hold no functionality. The controls are simple… They come in the form of **lines** of strings containing one of the four characters ‘U’,’R’,’D’,’L’… which are the directions Up, Right, Down, Left. The starting ninja is the one whose first name was inputted.

Every ninja has a name, power and stamina. The default starting power and stamina are 1. The stamina of a ninja reduces by 1 with every step it makes on the matrix. Every time it steps on a vegetable, it collects it, therefore, it leaves a blank space there. The blank space stays a specific amount of time, before the vegetable that was there regrows itself. In this case that time is equal to several moves, **regardless** of the ninja. During that time, if a ninja steps on the blank space, nothing happens.

The vegetables that are eaten are left as blank spaces after the ninja moves from the place on which it has eaten the vegetable. Vegetables grow every time a direction move is processed, however, only vegetables that **DO NOT** have a player on them grow. The others get **delayed** because of being stepped on.

When the stamina of one ninja ends, it eats the vegetables it collected, and switches turn with the other ninja. If a ninja tries to go out of the game field it still gets its stamina reduced but it stays on its place. This **counts** as a move. The Ninjas will **always** make **atleast** **one move** per turn. In other words… If a ninja’s stamina falls to 0, it still makes a move when it is its turn. If by some rare chance one of the ninjas steps on the other, they engage in a fight in which the winner is the one with more power. When that happens the game ends and the winner is printed in the following format:

“Winner: {winnerName}

Power: {winnerPower}

Stamina: {winnerStamina}”

## Vegetables

There are 5 vegetables in total:

* **Asparagus** – the asparagus vegetable increases the power of the ninja by 5 and reduces the stamina of it by 5. Takes 2 player moves to regrow. Char value on the matrix is ‘A’.
* **Broccoli** – the broccoli vegetable increases the power of the ninja by 10. Takes 3 player moves to regrow. Char value on the matrix is ‘B’.
* **CherryBerry** – the cherryberry is an unusual vegetable which apparently increases the ninja stamina by 10. Takes 5 player moves to regrow. Its Char value on the matrix is ‘C’.
* **Mushroom** – we are not sure if it is a vegetable but it is in the game field anyways. It’s not good for the ninja stomach though. Takes 5 player moves to regrow. The mushroom decreases the power and stamina of the ninja by 10 and has a char value on the matrix – ‘M’.
* **Royal** – The royal is the most powerful ninja vegetable. It’s extremely rare because of its majestic properties. Takes 10 player moves to regrow. The royal increases the ninja power by 20 and the ninja stamina by 10. Its char value on the matrix is ‘R’.
* **BlankSpace** – The blank space is not a vegetable. It is just blank. When a ninja steps on it, nothing happens. The ninja **does not** collect anything. Its char value on the matrix is ‘-‘. If a blank space is entered trough the input, it stays so. It does not grow anything if it is initially there.

## Ninjas

The ninjas will be only 2. Their char values in the matrix will be the initials of the given names. The first entered is the first ninja, the second entered is the second ninja.

## Commands

* The commands will be in the form of strings of chars as it was explained above.
* Example – “UUDDLRLR” etc.

## Additional Notes

* If a ninja steps on another ninja, it attacks it. The attacker is the winner if he has more or equal to the target’s power.
* The ninjas eat their vegetables **only after** they have ended their turn.
* The ninjas’ start positions and the blank spaces that were initially entered (**through the input**) do **NOT** grow any vegetables.
* One ninja will always make at least **one** move.

## Input

* On the first two lines of input you will receive the names of the first and second ninja.
* On the third line you will receive **n** and **m** - the dimensions of the game field which will be integers in the range [0, 100] separated by a single whitespace.
* On the next **n** lines you will receive strings consisting of **m** elements containing characters with values equal to the explained above, **and nothing else.**
* After you have received the game field layout, the game starts, and you will begin receiving **lines** of strings with directions, until there is one winner.

## Output

* As explained above the output is simple.
* You should just print the Winner when one wins.

## Constraints

* There will be no invalid input. All lines will be in the explained above format.
* The dimensions of the matrix will always be integers in the range [0, 100].
* There will always be two ninjas, and their names will always be unique.
* The Ninjas’ Stamina and Power must not fall below 0.
* The Ninjas’ names will never start with one of the vegetable char values.

## BONUS TASK:

* Implement the following vegetable:
* **MeloLemonMelon** – The melolemonmelon is a magical ninja vegetable, which by some unknown properties of matter, when **EATEN** by a ninja, **creates an event**, which makes the other ninja eat 5 **mushrooms**. It’s char value on the matrix is ‘ \* ’. There is a special third zero test just for this case. The melolemonmelon does **NOT** regrow.

## Examples

## Zero test 0:

|  |  |
| --- | --- |
| **Input** | **Output** |
| Pesho  Ivo  3 3  PCR  -MB  R-I  RURD | Winner: Ivo  Power: 11  Stamina: 0 |

## Zero test 1:

|  |  |
| --- | --- |
| **Input** | **Output** |
| Pesho  Ivo  3 3  PRA  B-B  RCI  LRRU  RD | Winner: Pesho  Power: 21  Stamina: 8 |

## BONUS: Zero test 3:

|  |  |
| --- | --- |
| **Input** | **Output** |
| Ivo  Viktor  3 3  C\*R  V-R  --I  UUUUUUUUUUUU LLLLLLLLLRUR | Winner: Viktor  Power: 1  Stamina: 0 |

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