34 Hoverboard Olimpics
38 points

Introduction

The amazing Hoverboard Olimpics have arrived for one more year one year more. The participants are super excited to give their best and be the winners of the competition. The one with the higher score will be the winner. Could you help the judges to evaluate each participant?

Input

The first line is a number with the height of the map, which will be followed by that amount of lines. These lines describe the terrain of the competition, and they will only contain the character '_', '/', '\' and '|'. The character '|' indicates the finish line of the race, which is placed at the end of all the lines of the map.

Then, there will be a list of participants, where each participant will start with the keyword "Participant", followed by the name and the number of actions that they do during the race. Each action is defined by an integer representing the horizontal position at which the action is executed and the name of the action. The horizontal position starts at 0 and will be always less than the length of the race map lines.

There are 3 types of actions:

- ramp-up: this action must occur in the previous position just before a '/', and the

participant must then follow the '/' characters until the end of this ramp.

- ramp-down: this action must occur in the previous position just before a '\', and the participant must then follow the '\' characters until the end of this ramp.

- jump: this action may occur at any position, and the participant will go one row up in the following position and will continue on that row until the jump finishes. This action is followed by a positive number indicating the length of the jump.

- loop: this action must occur in any of the '_' characters of a valid loop (which is a closed sequence as you can see in the examples below) and the participant will follow the whole loop.

Tips:

- Only one action is executed at a time (example: no ramp-up will be executed during a jump).

- You can assume that all actions are valid (example: "ramp" actions will always be in positions just before '/' or '\').

- You can also assume that the top row of the map is always an empty line ending with the '|', so the participant will be always inside the map even if they do a jump in the highest '_' of the map.

- All the lines of the map are of the same length (so the map is always a 2D rectangle).

- A participant may take the same loop twice, but at different positions

Output

For each participant, the map describing the path that they follow and their score. Use the symbol '.' to indicate the jumps of the participant.

The score is very easy to compute: it is just adding the height of the participant at each position, including during the execution of an action.
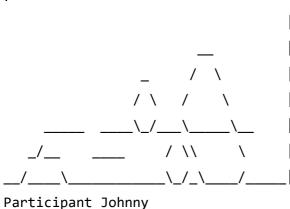
Tips:

- The participants use a hoverboard, so they 'hover', but they do not 'fly'! So their path must always be on a ground character '_' when they are not in the middle of an action. For example, if the jump of a participant ends and that ending position has no ground, the participant will immediatley fall until some ground is reached.

- Note that '/' and '\' are used to create ramps, but also loops, so the same character can be part of a ramp and a loop at the same time, it depends on the path of the participant.

Example 1

Input

```
7
                              |
                    __        |
          _      /  \       |
         / \   /    \      |
   ____   ___\_/_____   |
  _/__    ___       / \\     \    |
__/_____/_\____/____|
Participant Johnny
```

Action 1 ramp_up

Action 3 ramp_up

Action 9 jump 3

Action 17 loop

Participant Emma

Action 1 ramp_up

Action 3 ramp_up

Action 9 jump 2

Action 13 jump 1

Action 27 jump 10

Participant Colton

Action 1 jump 3

Action 6 ramp_down

Action 10 jump 4

Action 21 loop

Participant Sakura
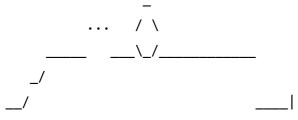
Action 1 ramp_up

Action 21 loop

Action 25 loop

Action 26 loop

Action 27 loop

Action 28 loop

Output

```
                 _
         ...    / \
     _____    ___\_/_____
   _/
 __/                         ___|
```

Johnny score is 73

```
       ..  .              .......|
    ____   __ _____
   _/
__/
```

Emma score is 75

```
                _
   ...__     ....       / \
__      \___     ____\_/_____|
```

Colton score is 13

```
                    __
                  /   \
                 /     \
                _\      \
    ____       / \\      \
__/     _____/_\____/____|
```

Sakura score is 128

Example 2

Input

6

```
                                                                |
                        _____  ____               __        |
                   __/                  _____     /  \       |
     ___     _____/                      ___   \   /    \     |
    /     \                    _____  ___/    \_      \   /       |
__/_____/_____|
```

Participant Natasha

Action 1 ramp_up

Action 7 jump 7

Action 20 ramp_up

```
Action 24 ramp_up

Action 33 jump 2

Action 62 loop

Action 63 loop

Participant John

Action 1 ramp_up

Action 7 jump 4

Action 19 jump 6

Action 30 jump 2

Action 38 jump 4

Action 44 ramp_up

Action 49 ramp_down

Participant Alex

Action 1 ramp_up

Action 7 jump 5

Action 20 ramp_up

Action 24 ramp_up

Action 33 jump 4

Action 41 jump 6

Action 63 loop
```
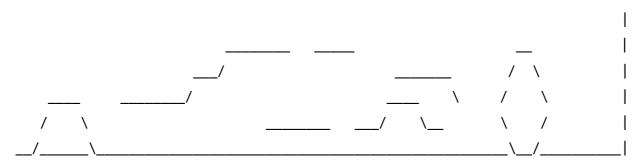
Output

```
                         ..
                   _____                              __
      .......    __/                                  /  \
   ____     _____/                                   /    \
  /                              __                  \    /
__/                                _____/_____|
```
Natasha score is 141

```
     ....
    ____                        ....  ____
   /             ......    .._____    __/     \__
 __/        _____    ____                 _____|
```

John score is 57

```
                                  ....      ......
                       _____     ____                         __
      .....          ___/                          _____        /  \
    ____      _____/                                         /    \
   /                                                            \    /
__/                                                        _____/_____|
```

Alex score is 190