## The Heigan Dance

At last, level 80. And what do level eighties do? Go raiding. This is where you are now – trying not to be wiped by the famous dance boss, Heigan the Unclean. The fight is pretty straightforward - dance around the Plague Clouds and Eruptions, and you’ll be just fine.

Heigan’s chamber is a 15-by-15 two-dimensional array. The player always starts at the **exact center.** For each turn, Heigan uses a spell that hits a certain cell and the neighboring **rows/columns**. For example, if he hits (1,1), he also hits (0,0, 0,1, 0,2, 1,0 … 2,2). If the player’s current position is within the area of damage, the player tries to move. First he tries to move **up**, if there’s **damage/wall**, he tries to move **right**, then **down**, then **left**. If he **cannot move** in any direction, because **the cell is damaged** or there is **a wall**, the player **stays** in place and takes the damage.

**Plague cloud** does 3500 damage **when it hits**, and 3500 damage **the next turn**. Then it **expires. Eruption** does 6000 damage **when it hits.** If a spell will hit a player that also has an active Plague Cloud from the previous turn, the **cloud** damage is applied **first**. **Both** Heigan and the player **may** die in the same turn. If Heigan is **dead**, the spell he **would** have casted is **ignored**.

The player always starts at **18500** hit points; Heigan starts at **3,000,000** hit points. **Each** turn, the player does damage to Heigan. The fight is over either when the player is **killed**, or Heigan is **defeated**.

### Input

* On the first line you receive a floating-point number **D –** the damage done to Heigan each turn
* On the next several lines – you receive input in format **{spell} {row} {col}** – **{spell}** is either **Cloud** or **Eruption**

### Output

* On the first line
  + If Heigan is defeated: “**Heigan:** **Defeated!**”
  + Else: “**Heigan: {remaining**}”, where remaining is rounded to two digits after the decimal separator
* On the second line:
  + If the player is killed: “**Player:** **Killed by {spell}**”
  + Else “**Player: {remaining}”**
* On the third line: “**Final position: {row, col}**” -> the last coordinates of the player.

### Constraints

* **D** is a floating-point number in range [0 … 500000]
* A damaging spell will always affect at least one cell
* Allowed memory: 16 MB
* Allowed working time: 0.25s

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 10000  Cloud -1 15  Eruption 6 7  Eruption 8 7  Eruption 8 7 | Heigan: 2960000.00  Player: Killed by Eruption  Final position: 8, 7 |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 500000  Cloud 7 6  Eruption 7 8  Eruption 7 7  Cloud 7 8  Eruption 7 9  Eruption 6 14  Eruption 7 11 | Heigan: Defeated!  Player: 12500  Final position: 7, 11 |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 12500.66  Cloud 7 7  Cloud 7 7  Cloud 7 7  Cloud 7 7 | Heigan: 2949997.36  Player: Killed by Plague Cloud  Final position: 7, 7 |