# 02. Pacman



*In this task, you are required to implement a simplified version of the classic Pacman game. The game is played on a square grid, and the goal is to guide Pacman to collect all the stars initially placed on the field while avoiding health loss caused by evil ghosts.*

You will be given an integer **N** for the size of the **square** **game field** (grid). On the **next lines**, you will receive the **rows** of the **field**. The **Pacman** is marked with the **letter** '**P**' and starts at a **random position** on the grid.

The **goal** is to guide **Pacman** in **collecting** **all** the **stars** while **avoiding** **health loss** caused by **ghosts**.

**Star positions** are marked with the symbol **'\*'** while the **ghost positions** are marked with **'G'**.

Pacman **initially starts** with **100** units of **health**. When **Pacman** receives a **command**, it can move in **four** directions ( **up**, **down**, **left**, and **right**) or **stop** and **finish** the **game** upon receiving a **command** **"end"**.

* When **Pacman** makes the **first move**, mark its **starting position** as **empty** with a **dash '-'**.
* If **Pacman** **reaches** an **empty position** ('**-**' **dash**), it waits for the next direction.
* Pacman **collects** a **star** '**\***' when moving onto a **star cell**. The **star** is **removed** from the grid, and the **total count** of **remaining stars** is **decreased** by **1**. The **cell** **must** be marked as **empty** with a **dash** '**-**'.

**Hint:** Consider determining the **total count** of **stars** **placed initially** on the **grid**.

* Moving onto a **ghost position** (**'G'**) **reduces** **Pacman's** **health** by **50** **units**. The **cell** **must** be marked as **empty** with a **dash** '**-**'.
  + If **Pacman** hits **two ghosts**, his **health reaches zero 0**, and the **game ends**.
* Moving onto a **freezer** **'F'** **freezes Pacman** **temporarily** and **gives** him **immunity** againstthe **next encountered ghost** (**Pacman** will **take no damage** but just **for once**). The position **must** be marked with a **dash** '**-**'.
* A movement **outside** (leaving the grid's boundaries) **positions** Pacman to the **opposite** **side**.

**Example**: Moving out of the **top** boundary **repositions** Pacman at the **bottom** of the same column.

The **program ends instantly** in one of the **following** **cases**:

* Pacman **collects all** the **stars** placed initially on the field.
* Pacman's **health** reaches **zero 0**.
* Pacman receives the **command "end"** which **forces** itto **stop moving** and **quits** the **game**.

## Input

* An integer **N** representing the **square grid** (field) **size**.
* The **next N lines** hold the values for **every** **row**.
* Following are **direction commands** or **command "end"**, each on a new line.

## Output

* If Pacman's **health** **reaches zero** **0**, print:

**"Game over! Pacman last coordinates [{row},{col}]"**

* If Pacman manages to **collect all** the **stars**, print:

**"Pacman wins! All the stars are collected."**

* If Pacman's **health** is **more than** **zero** **0** but it did **not collect** **all** the **stars** due to receiving a **command** **"end"**, print:

**"Pacman failed to collect all the stars."**

* Following print:
  + In all cases:

**"Health: {remaining\_health}"**

* If there are still stars to collect, print (otherwise skip it):

**"Uncollected stars: {uncollected\_stars\_count}"**

* Finally print the **final state** of the **grid** (field) with the **last known position** of **Pacman**, **marked** with '**P**' on it.

## Constraints

* The **square** **grid** (field) size will be between **[3…8]** inclusive.
* **Commands** will always be **valid** (up, down, left, right, end).
* **Pacman** will always have a **valid starting position 'P'**.
* **Stars** marked by **'\*'** will always be **present** on the **field**.
* **Ghosts** **'G'** will always be **at least two**.
* **Freezers** **'F'** can be **zero or one**.
* Empty cells marked with a **dash** **'-'**.

## Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  P--  \*\*\*  G-G  down  down  right  right  right  end | Game over! Pacman last coordinates [2,2]  Health: 0  Uncollected stars: 2  ---  -\*\*  --P |
| 4  P---  ----  \*\*\*\*  G-GF  right  right  right  up  left  left  left  up  right  right  right  end | Pacman wins! All the stars are collected.  Health: 50  ----  ----  ---P  ---- |
| 5  P----  --G\*-  -\*--F  -\*G\*-  -----  up  right  down  down  left  end | Pacman failed to collect all the stars.  Health: 100  Uncollected stars: 4  -----  P-G\*-  -\*--F  -\*G\*-  ----- |