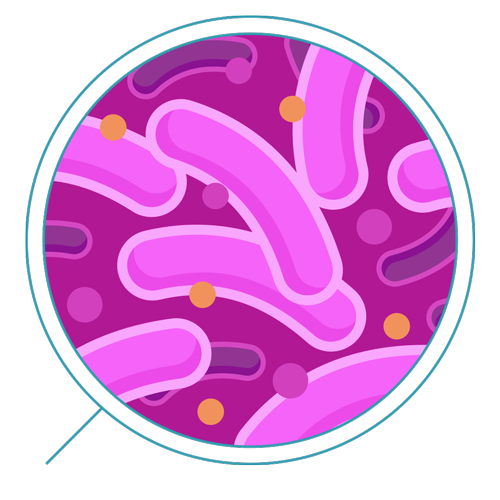
# Infection Spreading



*Your final task is to protect the world from massive infections. The fate of humanity is in your hands.*

Write a program that calculates how many infected people are there around the world. On the **first line** of input you will be given **names of countries**. All the countries start with **infection** percentage equal to **0**. On the **next line** you will be given the amount of **days** that the people will be infected. For **each day**, you will be given one of the following **commands**:

* **Fast\_Infect {country\_name}** - increase the infection percentage by **20**
* **Slow\_Infect {country\_name}** - increase the infection percentage by **10**
* **Quarantine {country\_name}** - the country is under quarantine (**more infections** are **no longer possible**)
* **Cure {country\_name}** - the country is completely cured (**infection**s are again equal to **0**)

There are some **special** cases:

* If the country is **under quarantine** and the infection is trying to spread (**fast/slow**), it should **not** be **possible** and you should print: **"{country\_name} is under quarantine"** and should **not increase** the infections
* If the country is **under quarantine** and the **"quarantine"** command is passed **again** print: **"{country\_name} is already under quarantine"**

After all the days are passed, **sort** the result by **infections in descending** order an print the infections of each country in the format:   
**"{country\_name} - {percent\_infections}% infected"**

### Input

On the first line you will receive **all the countries**

On the second line you will be given the **days (n)**

On the next **n** lines you will be given one of the **commands** described above

### Output

Print the output as described above

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| Bulgaria, USA, Germany  5  Fast\_Infect USA  Fast\_Infect USA  Slow\_Infect Germany  Quarantine Bulgaria  Fast\_Infect Bulgaria | Bulgaria is under quarantine  USA - 40% infected  Germany - 10% infected  Bulgaria - 0% infected |
| Norway, Australia, Romania, Bulgaria  7  Slow\_Infect Australia  Fast\_Infect Romania  Cure Romania  Slow\_Infect Bulgaria  Fast\_Infect Norway  Quarantine Romania  Quarantine Romania | Romania is already under quarantine  Norway - 20% infected  Australia - 10% infected  Bulgaria - 10% infected  Romania - 0% infected |

*Never trust an atom, they make up everything!…*