Coding Challenge

We would like to ask you to do a fun coding exercise for us.

Please keep in mind that it is not a classical algorithmic problem, **so your task is not limited to producing a correct result**. Imagine that your code will be read and modified by other developers, so they should be able to understand it easily.

You should also remember that code should be easily extensible and maintainable, but at the same time beware of overly complicated solutions and speculative design (we value the **KISS** principle 😉).

Last but not least: there is no single best solution, so we encourage you to design and implement the solution in a way you think is right, just make sure you document the assumptions you make.

Problem Description

You were asked by a doctor to prepare a *Hospital Simulator*, which can simulate the future patients' health state, based on their current health state and a list of drugs they are administered.

Patients can have one of these states:

F	Fever
H	Healthy
D	Diabetes
T	Tuberculosis
X	Dead

In the *Hospital Simulator* drugs are provided to all patients. It is not possible to target a specific patient. This is the list of available drugs:

As	Aspirin
An	Antibiotic
I	Insulin
P	Paracetamol

Drugs can change patients' states. They can **cure**, **cause side effects** or even **kill** a patient if not properly prescribed.

Drug effects are described by the following rules:

- ➔ *Aspirin* cures *Fever*
- ➔ *Antibiotic* cures *Tuberculosis*
- ➔ *Insulin* prevents diabetic subjects from dying, does not cure *Diabetes*
- ➔ *Insulin* mixed with *Antibiotic* causes *Healthy* people to catch *Fever*
- ➔ *Paracetamol* cures *Fever*
- ➔ *Paracetamol* kills subjects if mixed with *Aspirin*
- ➔ One time in a million the *Flying Spaghetti Monster* shows his noodly power and resurrects a *Dead* patient, the patient becomes *Healthy*

Input

The simulator's input should be read **directly** from *command line arguments*.

Parameter 1

List of patients' health status codes, separated by a comma, e.g. `D,F,F` means we have 3 patients, one with *Diabetes* and two with *Fever*.

Parameter 2

List of drug codes, separated by a comma, e.g. `As,I` means patients will be treated with *Aspirin* and *Insulin*.

Output

The simulator's output should be printed **directly** to *stdout*.

It should be a comma separated string with number of patients with a given state, following **exactly** this format, please don't get creative here:

```
F:#P,H:#P,D:#P,T:#P,X:#P
```

Where:

`F,H,D,T,X`	The patients' health status codes
`#P`	The number of patients for a given state

E.g. `F:0,H:2,D:0,T:0,X:1` means there are two healthy patients and one is dead.

Examples

Example #1

Input	`D,D`
Output	`F:0,H:0,D:0,T:0,X:2`
Comment	*Diabetic patients die without Insulin.*

```
$ java -jar hospital-simulator.jar D,D
F:0,H:0,D:0,T:0,X:2
```

Example #2

Input	`F P`
Output	`F:0,H:1,D:0,T:0,X:0`
Comment	*Paracetamol cures Fever.*

```
$ java -jar hospital-simulator.jar F P
F:0,H:1,D:0,T:0,X:0
```

Example #3

Input	`T,F,D An,I`
Output	`F:2,H:0,D:1,T:0,X:0`
Comment	*Insulin* prevents *Diabetic* patient from dying, *Antibiotics* cure *Tuberculosis*, but in combination with *Insulin* causes *Healthy* people to catch *Fever.*

```
$ java -jar hospital-simulator.jar T,F,D An,I
F:2,H:0,D:1,T:0,X:0
```

Evaluation

Your solution will be evaluated based on these criteria:

- ➔ Test Quality
- ➔ Logging / Validation / Exceptions
- ➔ I/O
- ➔ Separation of concerns
- ➔ Extensibility
- ➔ Maintenance
- ➔ Code Simplicity & Readability

Result

When you feel pleased with your solution, create a zip and upload it, to a cloud drive of your preference. Then, send us an email sharing the link of the zip file. Do not hesitate to add instructions on how to build and run it, and the assumptions you made in a `README.md`. Also, feel free to use a build automation tool (Maven / Gradle) or any other tool / library that you might find useful.

Make sure you put your full name in the file name of the zip file.