Artificium

Raid Time!

Runtime Limit – 3s

Problem Statement

In the popular online game Rust developed by Facepunch Studios™, players build bases, then destroy other players' bases in the form of a Raid. In a Raid, the goal is to get to the center of the enemy base, expending the fewest **C4** possible. A base contains *walls*, and *doors* to defend it. Raids use **C4** to get to the center of the base.

Note:

- Your only way to damage obstacles is by using **C4**.
- **1 C4** will do **2 damage**, taking away **2 health**.
- Damage does not carry over. You cannot use half of a C4.
- You must remove all obstacles (either doors or walls) to get to the center of the base.
- You must use a C4 on every *wall* or *door* to remove it, no matter the health (this includes 0 health).
- In the event that the *doors* & *walls* need the same amount of C4, go through walls.

Wall types, and *health*:

- **Wood wall** = **2 health**
- **Stone wall** = **4 health**
- **Metal wall** = **8 health**
- **Armored wall** = **16 health**

Door types, and *health*:

- **Wood door** = **0 health**
- **Sheet door** = **2 health**
- **Garage door** = **4 health**
- **Armored door** = **6 health**

Given the amount of *walls* and *doors* to the center of the base, along with their types, determine whether you should go through *doors* or *walls*, and how many you'll need to go through.

Format

Input

Line 1: An integer *w* - The amount of walls leading to the center of the base.

Next *w* lines: A string *wall* for the type of wall in the path through walls.

Next Line: An integer *d* - The amount of doors leading to the center of the base.

Next *d* lines: A string *door* for the type of door in the path through doors.

Output

A string, written as follows:

amountOfC4 C4 needed to go through *amount of walls or doors* wall(s) **or** door(s)

Constraints

w > 0

d > 0

wall type & *door* type will be alphabetic strings with a singular space, no longer than 12 characters, and no shorter than 9.

Each *wall* type & *door* type will contain the material of the door/wall (Wood/Stone/Metal/Garage/Sheet/Armored) and a space-separated type (door/wall).

Sample

Input

1

Stone wall

2

Sheet door

Sheet door

Output

2 C4 needed to go through 1 wall(s)