

Snowwhite

Snow White loves her dwarfs, but there are so many and she doesn't know how to order them. Does she order them by name? Or by color of their hat? Or by physics? She can't decide, so it's up to you to write a program that does it for her.

You will be receiving **several input lines** which contain **data** about **dwarfs** in the following format:

{dwarfName} <:> {dwarfHatColor} <:> {dwarfPhysics}

The **dwarfName** and the **dwarfHatColor** are **strings**. The **dwarfPhysics** is an **integer**.

You must **store** the **dwarfs** in your program. There are several rules though:

- If **2 dwarfs** have the **same name** but **different hat color**, they should be **considered different dwarfs**, and you should store **both** of them.
- If **2 dwarfs** have the **same name** and the **same hat color**, store the **one** with the **higher physics**.

When you receive the command "**Once upon a time**", the input ends. You must **order** the **dwarfs** by **physics** in **descending order** and then by **total count** of **dwarfs** with the **same hat color** in **descending order**.

Then you must print them all.

Input

- The input will consist of **several input lines**, containing **dwarf data** in the format, specified above
- The input **ends** when you receive the command "**Once upon a time**"

Output

- As output you must print the **dwarfs**, **ordered** in the way, specified above
- The output format is: **({hatColor}) {name} <-> {physics}**

Constraints

- The **dwarfName** will be a **string** which may contain **any ASCII** character except ' ' (**space**), '<', ':", '>'
- The **dwarfHatColor** will be a **string** which may contain **any ASCII** character except ' ' (**space**), '<', ':", '>'
- The **dwarfPhysics** will be an **integer** in **range** **[0, 2³¹ - 1]**
- There will be **no invalid** input lines
- If **all sorting criteria fail**, the order should be by **order of input**
- Allowed working **time/memory**: **100ms/16MB**

Examples

Input	Output
Pesho <:> Red <:> 2000 Tosho <:> Blue <:> 1000 Gosho <:> Green <:> 1000 Sasho <:> Yellow <:> 4500 Prakasho <:> Stamat <:> 1000 Once upon a time	(Yellow) Sasho <-> 4500 (Red) Pesho <-> 2000 (Blue) Tosho <-> 1000 (Green) Gosho <-> 1000 (Stamat) Prakasho <-> 1000
Pesho <:> Red <:> 5000 Pesho <:> Blue <:> 10000 Pesho <:> Red <:> 10000 Gosho <:> Blue <:> 10000 Once upon a time	(Blue) Pesho <-> 10000 (Blue) Gosho <-> 10000 (Red) Pesho <-> 10000