Problem 4 – Population Counter

So many people! It's hard to count them all. But that's your job as a statistician. You get raw data for a given city and you need to aggregate it.

On each input line you'll be given data in format: **"city|country|population"**. There will be **no redundant whitespaces anywhere** in the input. Aggregate the data **by country and by city** and print it on the console. For each country, print its **total population** and on separate lines the data for each of its cities. **Countries should be ordered by their total population in descending order** and within each country, the **cities should be ordered by the same criterion**. If two countries/cities have the same population, keep them **in the order in which they were entered.** Check out the examples; follow the output format strictly!

Input

- The input data should be read from the console.
- It consists of a variable number of lines and ends when the command "**report**" is received.
- The input data will always be valid and in the format described. There is no need to check it explicitly.

Output

- The output should be printed on the console.
- Print the aggregated data for each country and city in the format shown below.

Constraints

- The name of the city, country and the population count will be separated from each other by **a pipe ('|')**.
- The **number of input lines** will be in the range [2 … 50].
- A city-country pair will not be repeated.
- The **population count** of each city will be an integer in the range [0 … 2 000 000 000].
- Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

Examples

Input	Output
Sofia|Bulgaria|1000000 report	Bulgaria (total population: 1000000) =>Sofia: 1000000

Input	Output
Sofia|Bulgaria|1 Veliko Tarnovo|Bulgaria|2 London|UK|4 Rome|Italy|3 report	UK (total population: 4) =>London: 4 Bulgaria (total population: 3) =>Veliko Tarnovo: 2 =>Sofia: 1 Italy (total population: 3) =>Rome: 3