Problem 4 – Orders

You are given a sequence of **n** orders in format **<customer> <amount> <product>**. Example:

- steve 8 apples
- maria 3 bananas
- kiro 3 bananas
- kiro 9 apples
- maria 2 apples
- steve 4 apples
- kiro 1 bananas
- kiro 1 apples

Write a program that prints **all products** in the **order of their first appearance**. For each product print the customers and their aggregated ordered amounts. Order the customers by name alphabetically. Print the result in the following format: **<product>: <customer> <amount>, <customer> <amount>, …** For the orders above the output should be:

- apples: kiro 10, maria 2, steve 12
- bananas: kiro 4, maria 3

Input

The input comes from the console. At the first line the number **n** stays alone. At the next **n** lines, we have **n** orders in format **<customer> <amount> <product>**.

The input data will always be valid and in the format described. There is no need to check it explicitly.

Output

Print **one line for each product**. Product lines should be ordered in the same way in which the products first appear in the input. For each product print the **customers** ordered this product in **alphabetical order**, along with the total ordered amount for each customer in format **<product>: <customer> <amount>, <customer> <amount>, …**

Constraints

- The **count** of the order lines **n** will be in the range [1…100].
- The **<customer>** and **<product>** will consist of only of **Latin characters**, with length of [1…20].
- The **<amount>** will be integer number in the range [1…100].
- Time limit: 0.3 sec. Memory limit: 16 MB.

Examples

Input	Output
8 steve 8 apples maria 3 bananas kiro 3 bananas kiro 9 apples maria 2 apples steve 4 apples kiro 1 bananas kiro 1 apples	apples: kiro 10, maria 2, steve 12 bananas: kiro 4, maria 3

Input	Output
7 bob 3 whiskeys kiro 1 beers mimi 2 beers alex 4 beers alex 1 beers kiro 1 vodkas bob 10 beers	whiskeys: bob 3 beers: alex 5, bob 10, kiro 1, mimi 2 vodkas: kiro 1