Candies

A supermarket sells N varieties of candies. Each candy has a type, a manufacturer and a price. The names of the candy types and the names of the manufacturing companies may only contain the letters of the English alphabet and the underscore character ("_"), their maximum length is 50 characters.

Write a program that determines the following:

1. The cheapest candy.
2. A type of candy that is produced by only one company.
3. The set of candy types sold in the supermarket.
4. The company which produces the most types of candies.
5. A company that sells all of its candies at a lower price than any other company's candy of the same type.

Input

The first line of the *standard input* contains the number of candies ($1 \leq N \leq 1000$). In the next N*3 lines, there is a description of a candy in every 3 lines: the manufacturing company, the type of the candy, and the price ($500 \leq P_i \leq 30\,000$). There are no duplicate entries: each (manufacturer, candy type) pair appears at most once in the input.

Output

The *standard output* should contain a line with a single **# character** before the solution of **each subtask**. This # character line is followed by as many lines as needed for the output of a subtask. If you cannot solve a subtask, you should output only the line containing the # character. If the output format is not correct (less/more # characters are in the output), you will get "Output format error", even if you have correct solutions for some subtasks.

Subtask 1 (20 points): A single line should contain the type and the manufacturer of the cheapest candy, separated by a space. (If there are multiple possible answers, print the one that occurs first in the input.)

Subtask 2 (20 points): Print a type of candy that is produced by only one company. (If there are multiple possible answers, print the one that occurs first in the input.) If there is no such type of candy, then print the word NONE.

Subtask 3 (20 points): In the first line you should print the number of different candy types (S). The next S lines should contain the names of the candy types (in any order, each of them in a separate line).

Subtask 4 (20 points): Print the name of the company that produces the most types of candies. (If there are multiple possible answers, print the one that occurs first in the input.)

Subtask 5 (20 points): Print a company that sells all of its candies at a lower price than any other company's candy of the same type. (If there are multiple possible answers, print the one that occurs first in the input.) If there is no such company, then print the word NONE.

Example

Input	Output
5 Bonbonetti caramel 1000 Szamos chocolate 1200 Bonbonetti marzipan 1500 Stuhmer jelly 700 Szamos caramel 800	# jelly Stuhmer # chocolate # 4 caramel chocolate marzipan jelly # Bonbonetti # Szamos