The highest sales by day

You are given a list of transactions, each of them includes date, product code, quantity and selling price.

Your task is to write a program to print the products with the highest revenue day from minimum date to maximum date (Note: print all days from minimum date to maximum date).

If there is more than one product with the same highest revenue, print them too. For any date that has no transaction, print date, product code as 0 and selling price as 0.

Input

- The first line contains one integer N - the number of transactions ($1 \leq N \leq 10^5$).
- Each line in the next N lines contains 4 integers representing a transaction. All of these do not exceed 10^9, the difference between the maximum date and the minimum date is not more than 10^5.
- Dates are in ascending order.

Output

For each row, output the date, product code and its revenue. Dates are listed in ascending order; product codes are listed in ascending order.

Sample

Input	Output
8	10 1 4000
10 1 20 200	11 0 0
10 2 10 150	12 3 1800
12 3 18 100	13 0 0
14 2 20 180	14 2 3600
14 4 30 80	14 3 3600
14 3 40 90	15 0 0
16 4 15 90	16 1 1800
16 1 10 180	