Input File: `therace.in` **100 Points**
Output File: `therace.out` **Time Limit:** 8 s
Source Code: `therace.pas/.c/.cpp` **Memory Limit:** 16 MB

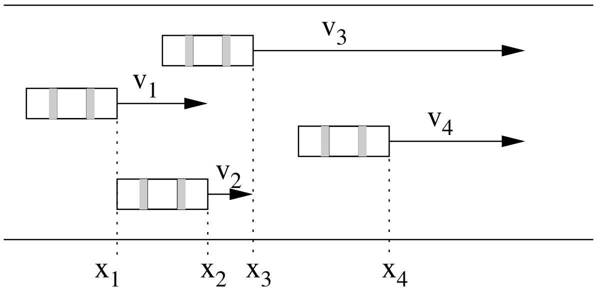
The Race

During the Annual Interstellar Competition for Tuned Spaceships, N spaceships will be competing. Each spaceship i is tuned in such a way that it can accelerate in zero time to its maximum speed V_i and remain cruising at that speed. Due to past achievements, each spaceship starts at a starting position X_i, specifying how many kilometers the spaceship is away from the starting line.

The racecourse is infinitely long. Because of the high speeds of the spaceships, the racecourse has the form of a simple straight line. On that straight line, spaceships can pass one another very easily, without interfering with each other.

Many people in the audience have not realized yet that the outcome of the race can be determined in advance. It is your task to show this to them, by telling them how many times spaceships will pass one another, and by predicting the first 10 000 times that spaceships pass in chronological order.

You may assume that each spaceship starts at a different position. Furthermore, there will never be more than two spaceships at the same position of the course at any time.



Input

The first line of the input file `therace.in` specifies the number of spaceships N ($0 < N \leq 250\,000$) that are competing. Each of the next N lines describe the properties of one spaceship. The $i + 1$th line describes the ith ship with two integers X_i and V_i, representing the starting position and the velocity of the ith spaceship ($0 \leq x_i \leq 1\,000\,000$, $0 < v_i < 100$). The spaceships are ordered according to the starting position, i.e. $X_1 < X_2 < \ldots < X_N$. The starting position is the number of kilometers past the starting line where the spaceship starts, and the velocity is given in kilometers per second.

Output

The first line of the output file `therace.out` should contain the number of times that spaceships pass one another during the race **modulo 1 000 000**. By publishing the number of passes only modulo 1 000 000, you can at the same time prove your knowledge of it and don't spoil the party for the less intelligent people in the audience.

Each of the subsequent lines should represent one passing, in chronological order. If there would be more than 10 000 passings, only output the first 10 000 passings. If there are less than 10 000 passings, output all passings. Each line should consist of two integers i and j, specifying that spaceship i passes spaceship j. If multiple passings occur at the same time, they have to be sorted by their position on the course. This means that passings taking place closer to the starting line must be listed first.

Remarks

If you give the correct number of passings, you will earn 40% of the score per test case. For correctly giving the first 10 000 passings, you will earn the remaining 60% of the score. Each part is graded separately given that the program terminates normally within the time limit.

Example

`therace.in`	`therace.out`
4 0 2 2 1 3 8 6 3	2 3 4 1 2