Problem 4 – Couples Frequency

Write a program that reads a sequence of **n integers** and calculates and prints the **frequencies of all couples** of two consecutive numbers. For example, for the input sequence **{ 3 4 2 3 4 2 1 12 2 3 4 }**, we have 10 couples (6 distinct), shown on the right with their occurrence counts and frequencies (in percentage).

Couple	Occurrences	Percentage
3 4	3 times	30.00%
4 2	2 times	20.00%
2 3	2 times	20.00%
2 1	1 times	10.00%
1 12	1 times	10.00%
12 2	1 times	10.00%

Input

The input data should be read from the console. At the first line, we have the **input sequence of integers**, separated by a space.

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

Output

Print all **distinct couples** of two consecutive numbers (without duplicates) found in the input sequence (from left to right) along with their **frequency of appearance** in the input sequence (in **percentages**, with two decimal digits, with traditional rounding). Use the format: "**couple -> percentage**" (see the examples below). Beware of **formatting**!

Constraints

- All input numbers will be integers in the range [-100 000 … 100 000].
- The **count** of the numbers will be in the range [2..1000].
- Time limit: 0.5 sec. Memory limit: 16 MB.

Examples

Input
3 4 2 3 4 2 1 12 2 3 4
Output
3 4 -> 30.00% 4 2 -> 20.00% 2 3 -> 20.00% 2 1 -> 10.00% 1 12 -> 10.00% 12 2 -> 10.00%

Input
5 10 5 10 10 5 5 10 5 10 10 5
Output
5 10 -> 36.36% 10 5 -> 36.36% 10 10 -> 18.18% 5 5 -> 9.09%

Input
10 20 10 10 10
Output
10 20 -> 25.00% 20 10 -> 25.00% 10 10 -> 50.00%