J. Energy exchange

time limit per test: 2 seconds

memory limit per test: 256 megabytes

It is well known that the planet suffers from the energy crisis. Little Petya doesn't like that and wants to save the world. For this purpose he needs every accumulator to contain the same amount of energy. Initially every accumulator has some amount of energy: the i-th accumulator has a_i units of energy. Energy can be transferred from one accumulator to the other. Every time x units of energy are transferred (x is not necessarily an integer) k percent of it is lost. That is, if x units were transferred from one accumulator to the other, amount of energy in the first one decreased by x units and in other increased by $x - \frac{xk}{100}$ units.

Your task is to help Petya find what maximum equal amount of energy can be stored in each accumulator after the transfers.

Input

First line of the input contains two integers n and k ($1 \le n \le 10000, 0 \le k \le 99$) — number of accumulators and the percent of energy that is lost during transfers.

Next line contains n integers $a_1, a_2, \ldots, a_n$ — amounts of energy in the first, second, .., n-th accumulator respectively ($0 \le a_i \le 1000, 1 \le i \le n$).

Output

Output maximum possible amount of energy that can remain in each of accumulators after the transfers of energy.

The absolute or relative error in the answer should not exceed 10^{-6}.

Examples

input	Copy
3 50 4 2 1	
output	Copy
2.000000000	

input	Copy
2 90 1 11	
output	Copy
1.909090909	

ICPC Assiut University Training - Juniors Phase 1 Sheets-2022

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→ **Group Contests** ⌄

- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search , Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

Juniors Phase 1 Practice #4 (Binary search , Two pointers)

Finished

Practice

⭐

→ **About Time Scaling** ⌄

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the link.

→ **Virtual participation** ⌄

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Submit?**

Language: GNU G++20 13.2 (64 bit, win ⌄