Schedule

Problem Statement

At Quora, we run all our unit tests across many machines in a test cluster on every code push.

One day, we decided to see if we could optimize our test cluster for cost efficiency by using only one machine to run all N tests.

Suppose we know two things about each test: the time needed to run this test, T_i, and the probability that this test will pass, P_i.

Given these as input, come up with the minimum expected time (based on the optimal ordering of the tests) of getting "go or no go" feedback on the code push, i.e. the expected time when we understand that either i) at least one test has failed, or that ii) all tests have passed.

Constraints

- Accuracy threshold for evaluating floats: 10^{-6}
- $1 \le N \le 100$
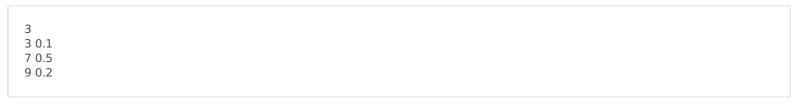- $1 \le T_i \le 100$
- $0 \le P_i \le 1$

Input Format

Line 1: One integer N

Line 2..$N + 1$: One integer T_i and one float P_i separated by one space.

Output Format

Line 1: One float, the minimum expected time

Sample Input

```
3
3 0.1
7 0.5
9 0.2
```

Sample Output

```
4.04
```