CrossOver

This problem is all about share prices and moving averages!

You are given n integers $p_1, p_2, \ldots, p_n$, where p_i denotes the price of the stock at day i.

Then, we define:

- $STMA(i)$:= the average price of the stock over days $i, i-1, i-2, \ldots, i-59$, so it is an average measured at day i over the most recent 60 days. This value is called Short term moving average.
- $LTMA(i)$:= the average price of the stock over days $i, i-1, i-2, \ldots, i-299$, so it is an average measured at day i over the most recent 300 days. This value is called Long term moving average.

Notice that $STMA(i)$ is defined for $60 \leq i \leq n$, while $LTMA(i)$ is defined for $300 \leq i \leq n$.

In this problem, values of $STMA(i)$ and $LTMA(i)$ are rounded to **exactly 2** decimal points, so for example 44.3449 is rounded to 44.34, while 35.11511 is rounded to 35.12.

Now, let's say that a **crossover** occurs at day i if and only if both $STMA(i)$ and $LTMA(i)$ are defined at days $i-1$ and i, and either one of the below conditions is fulfilled:

- $STMA(i-1) > LTMA(i-1)$ and $STMA(i) \leq LTMA(i)$
- $STMA(i-1) < LTMA(i-1)$ and $STMA(i) \geq LTMA(i)$
- $STMA(i-1) = LTMA(i-1)$ and $STMA(i) \neq LTMA(i)$

Given the stock prices across n days, detect all crossovers. For each crossover, print the day at which it occurred along with the values of $STMA$ and $LTMA$ for this day.

Input Format

The first line of input contains a single integer n (the number of days).

The second line of input contains n space-separated integers $p_1, p_2, \ldots, p_n$ denoting the stock prices for each day.

Constraints

- $300 < n \leq 1000$
- $1 \leq p_i \leq 100000$

Output Format

For each occurrence of a crossover, print three space-separated values for the date at which it occurred, the value of $STMA$ for this date, and the value of $LTMA$ for this date. Print each crossover on its own line and order the crossovers in order from the smallest date to the largest. The values of both $STMA$ and $LTMA$ must be correct to 2 decimal places.

Example

For the purpose of explanation, let's assume that $STMA$ is measured across 2 days instead of 60, and that $LTMA$ is measured across 5 days instead of 300. This will be our input for 10 days:

```
10
4 5 6 4 5 7 3 4 5 6
```

The first day at which a crossover can be measured is day 6. Let's write down the values of $STMA(i)$ and $LTMA(i)$ for all days starting from day 5:

$$STMA(5) = (4+5)/2 = 4.5$$
$$STMA(6) = (5+7)/2 = 6$$
$$STMA(7) = (7+3)/2 = 5$$
$$STMA(8) = (3+4)/2 = 3.5$$
$$STMA(9) = (4+5)/2 = 4.5$$
$$STMA10 = (5+6)/2 = 5.5$$

$$LTMA(5) = (4+5+6+4+5)/5 = 4.8$$
$$LTMA(6) = (5+6+4+5+7)/5 = 5.4$$
$$LTMA(7) = (6+4+5+7+3)/5 = 5$$
$$LTMA(8) = (4+5+7+3+4)/5 = 4.6$$
$$LTMA(9) = (5+7+3+4+5)/5 = 4.8$$
$$LTMA(10) = (7+3+4+5+6)/5 = 5$$

From the above values it can be deduced that crossovers occur only at days: $6, 7, 8$, and 10, so our output will be the following:

```
6 6.0 5.4
7 5.0 5.0
8 3.5 4.6
10 5.5 5.0
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