3683 - Who's left? Who's right?

Description

You are given a set ***S*** initially containing two integers: **0** and **1000000**. You are also given a sequence ***A*** of exactly ***N*** integer numbers between **1** and **999999**. For each number A_i, in the same order they were given, you must perform the following steps:

1. Find the maximum element ***x*** in ***S*** which is smaller or equal to A_i
2. Find the minimum element ***y*** in ***S*** which is greater than or equal to A_i
3. Print these pair of numbers ***x*** and ***y***

4. Add A_i to the set ***S***

Notice that step 4 is done *after* printing the pair of numbers ***x*** and ***y***.

Input specification

The first line of input contains an integer ***N*** **(0 < *N* < 1000000)** representing the number of elements in the sequence ***A***. The following ***N*** lines contain one integer each, the element A_i of the sequence.

Output specification

Output ***N*** lines with a pair of space-separated integer numbers per line. In the ***i-th*** line, print the maximum element in ***S*** which is smaller or equal to A_i and the minimum element in ***S*** which is greater than or equal to A_i.

Sample input

```
4
3
1
4
2
```

Sample output

```
0 1000000
0 3
3 1000000
1 3
```

Hint(s)

Source	Óscar Dávalos Orozco
Added by	**jicote**
Addition date	2016-06-10
Time limit (ms)	0
Test limit (ms)	0
Memory limit (kb)	0
Output limit (mb)	64
Size limit (bytes)	0
Enabled languages	Bash C C# C++ C++11 Java JavaScript-NodeJS Pascal Perl PHP Prolog Python Ruby Text