Problem B. Traversing Tree

Time limit	1000 ms
Mem limit	1572864 kB
Code length Limit	50000 B
OS	Linux

Because you just finished your course in Binary Search Tree, your teacher gave you a very simple problem.

First, you are given some data and you should insert them to a binary search tree. Datas that are smaller than the current node go to the left sub-tree. Otherwise, they go to the right sub-tree.

Then, you should print all data in the tree by traversing it pre-orderly, in-orderly, and post-orderly.

Input

First line contains a number **n** ($0 < n <= 100$).
Second line contains **n** datas $\mathbf{p_i}$ ($0 < p_i <= 50000$) that have to be inserted into the tree.

Output

Output consists of 3 lines.
First line starts with 'Pre order :' and is continued by printing the data pre-orderly.
Second line starts with 'In order :' and is continued by printing the data in-orderly.
Third line starts with 'Post order:' and is continued by printing the data post-orderly.

Example

Input:

```
7
5 3 7 2 4 6 8
```

Output:

```
Pre order : 5 3 2 4 7 6 8
In order  : 2 3 4 5 6 7 8
Post order: 2 4 3 6 8 7 5
```

Warning!

There is 1 space right after 'Pre order'.

There are 2 spaces right after 'In order'.

There is no space right after 'Post order'.

There is no space (enter immediately) right after the last number is printed.