The Problem:

Every morning, the roti prata boy in the science canteen is to prepare some roti pratas, all of them of different diameter and placed on a stack. Before he opens his stall, he wants to display the roti pratas nicely. He needs your help as you have studied stack. He promises to give you the top 2 roti pratas for free if the job is well done.

Given a stack of roti pratas, you are to write a program that indicates how the roti pratas can be sorted so that the largest roti prata is at the bottom and the smallest roti prata is at the top.

Sorting roti pratas can be done by a sequence of roti prata ``flips''. A flip consists of inserting a forceps(used for lifting food) between roti pratas in a stack and flipping (reversing) the roti pratas held within the forceps (reversing the sub-stack). A flip is specified by giving the position(relative to the whole stack) of the roti prata at the bottom of the sub-stack to be flipped. The roti prata at the bottom of the whole stack has position 1 and the roti prata at the top of a stack of n roti pratas has position n.

A stack is specified by giving the diameter of each roti prata in the stack in the order the roti pratas appear.

For example, consider the three stacks of roti pratas below (in which roti prata 8 is the top-most roti prata of the left stack):

8	7	2
4	6	5
6	4	8
7	8	4
5	5	6
2	2	7

The stack on the left can be transformed to the stack in the middle via flip(3) which will reverse the substack of {8, 4, 6, 7} into {7, 6, 4, 8}. The middle stack can be transformed into the right stack via the command flip(1).

Since this is an exercise for you to practice on the use of stack, all operations (input, flip, sort) should be done on stacks and no arrays should be used. For example, you should read the diameters and put them into a stack directly instead of storing them temporary in an array. Similary, you should not use temporary array for flipping and sorting. It is fine if you use more than one stack to solve the problem.

The Input:

The input consists of a sequence of roti pratas found in a stack from the top to the bottom. There are not more than 30 roti pratas and each roti prata has an integer diameter not larger than 100. The input is either terminated by an end-of-

file or an empty line. A stack is described in one line of input with the top roti prata appearing first, the bottom roti prata appearing last, and all roti pratas are separated by blanks in between.

The Output:
For each stack of roti pratas, the program should print 2 lines:
1. the original input on one line, followed by
2. a sequence of flips that are needed to sort the stack of roti pratas, terminated by a 0 (indicating no more flips necessary).

Once a stack is sorted, no more flips should be made.

Sample Input 1
1 2 3 4 5

Sample Output 1
1 2 3 4 5
0

Sample Input 2
5 4 3 2 1

Sample Output 2
5 4 3 2 1
1 0

Sample Input 3
5 1 2 3 4

Sample Output 3
5 1 2 3 4
1 2 0

Note:
1. We can regard the solution as the selection sort implemented on stack. It brings the pratas to their right positions, starting with the largest, then the second largest, etc, one prata at a time in each iteration of the sort. The result may not be optimal but it should give us a unique flipping sequence.
2. There should not be any blank or extra characters at the end of the lines printed.
3. Focus on passing all dynamic tests. You should worry about the low marks, zero marks or F¡¯s given based on other assessment criteria.