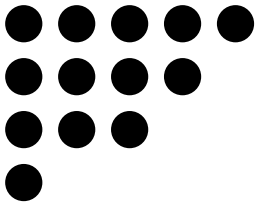
Pathfinding partitions

A *Ferrers board* is a way of representing a partition, $(a_1, a_2, \ldots, a_k)$ as a set of rows of dots, where the i^{th} row has a_i dots. For example, the partition $(5, 4, 3, 1)$ is represented by the following Ferrers board:



We could choose one of the columns of the Ferrers board, remove it, and replace it with a row of the same length as shown below.

Call such a rearrangement a *move*. The purpose of this étude is to find a sequence of moves that will transform one partition into another, whenever this is possible.

Task

Write a program that takes input from `stdin` a data file formatted according to the rules of the *Parsing Partitions* étude where each scenario in the file will consist of exactly two partitions of the same integer.

The output (to `stdout`) should be in standard form and represent the solution to each scenario, i.e., a shortest sequence of moves that transforms the first partition to the second. Each scenario in the output should be in standard form and should start with a comment line of the form:

```
# Moves required: <number of moves>
```

(with a suitable replacement for `<number of moves>`). This should be followed by a sequence of lines, starting with the first partition, and ending with the last, so that each line is obtained from the previous one by a move, and the number of moves used is minimal. In the event that no such sequence of moves exists, the output should start with:

```
# No solution possible
```

followed just by the two given partitions.

Standards

For an achieved standard, the program must work correctly on valid input representing partitions of size 25 or less.

Merit criteria include the ability to handle much larger partitions efficiently, handling poorly-formatted input gracefully, and clearly written code.

Excellence criteria include some significant extension to the functionality of the program, or an investigation of general properties of the problem.

Example

Input:

```
1 1 1
3
---
2 2
1 1 1 1
```

Output:

```
# Moves required: 1
1 1 1
3
---
# Moves required: 2
2 2
2 1 1
1 1 1 1
```

Objectives

1.2, 2.2-2.4, 2.7-2.10, 3.3-3.7

(Individual)