7. Insertion Sort

Program Name: Insertion.java Input File: insertion.dat

Rick wants you to write a program for him that will sort the playing cards that he has in his hand in order of increasing value: 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King, Ace. His hand might have more than one card with the same value from different suits, but the card suit does not matter to him. You are to write a program that uses the standard insertion sort to sort the cards for him just by value.

The algorithm for a standard insertion sort is:

1. Consider the first card in the hand to be a sorted array of length one and the remaining cards to be an unsorted array of length n-1, where n is the number of cards to be sorted.
2. Remove the first card from the unsorted array and place it into the sorted array in the position that will maintain the sorted array's order and move the sorted cards by one position as needed. This increases the sorted array's length by one and decreases the unsorted array's length by one.
3. Repeat step 2 until all cards are contained in the sorted array and the unsorted array is empty.

Rick wants to trace what is happening with his data when he uses this insertion sort to sort a non-empty array of cards. You are to write a program for him that will print the order of his cards after each iteration of the insertion sort.

Input

The first line of input will contain a single integer `n` that indicates the number of hands of cards to follow. Each of the following `n` lines will contain the cards contained in a single hand. The cards will be denoted by the characters `2`, `3`, `4`, `5`, `6`, `7`, `8`, `9`, `T`, `J`, `Q`, `K`, `A` which represent 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King and Ace respectively. The characters will all be separated by a single space.

Note: You may assume that each hand will contain at least 2 cards.

Output

For each array, you will print the state of the hand of cards after each iteration of the standard insertion sort. Print a blank line after the last iteration through each hand.

Example Input File

```
2
8 3 5 7 2 A 4
5 3 7 2 9 T A 2 5
```

Example Output to Screen

```
3 8 5 7 2 A 4
3 5 8 7 2 A 4
3 5 7 8 2 A 4
2 3 5 7 8 A 4
2 3 5 7 8 A 4
2 3 4 5 7 8 A

3 5 7 2 9 T A 2 5
3 5 7 2 9 T A 2 5
2 3 5 7 9 T A 2 5
2 3 5 7 9 T A 2 5
2 3 5 7 9 T A 2 5
2 3 5 7 9 T A 2 5
2 2 3 5 7 9 T A 5
2 2 3 5 5 7 9 T A
```