Round 1B 2008

A. Crop Triangles
B. Number Sets
C. Mousetrap

Contest Analysis
Questions asked 3

Submissions

Crop Triangles
5pt | Not attempted **1445/2197 users** correct (66%)
10pt | Not attempted **457/1287 users** correct (36%)

Number Sets
10pt | Not attempted **777/1351 users** correct (58%)
25pt | Not attempted **100/448 users** correct (22%)

Mousetrap
15pt | Not attempted **610/862 users** correct (71%)
35pt | Not attempted **95/387 users** correct (25%)

Top Scores

mystic	100
nika	100
bmerry	100
dgozman	100
ilyaraz	100
misof	100
tourist	100
vlad89	100
lordmonsoon	100
falagar	100

Problem C. Mousetrap

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 15 points	Solve C-small
Large input 35 points	Solve C-large

Problem

Mousetrap is a simple card game for one player. It is played with a shuffled deck of cards numbered 1 through **K**, face down. You play by revealing the top card of the deck and then putting it on the bottom of the deck, keeping count of how many cards you have revealed. If you reveal a card whose number matches the current count, remove it from the deck and reset the count. If the count ever reaches **K**+1, you have lost. If the deck runs out of cards, you win.

Suppose you have a deck of 5 cards, in the order 2, 5, 3, 1, 4. You will reveal the 2 on count 1, the 5 on count 2, then the 3 on count 3. Since the value matches the count, you remove the 3 from the deck, and reset the count. You now have 4 cards left in the order 1, 4, 2, 5. You then reveal the 1 on count 1, and remove it as well (you're doing great so far!). Continuing in this way you will remove the 2, then the 4, and then finally the 5 for victory.

You would like to set up a deck of cards in such a way that you will win the game and remove the cards in increasing order. We'll call a deck organized in this way "perfect." For example, with 4 cards you can organize the deck as 1, 4, 2, 3, and you will win by removing the cards in the order 1, 2, 3, 4.

Input

The first line of input gives the number of cases, **T**. Each test case starts with a line containing **K**, the number of cards in a deck. The next line starts with an integer **n**, which is followed by **n** integers ($\mathbf{d}_1$,$\mathbf{d}_2$, ...), indices into the deck.

Output

For each test case, output one line containing "Case #**x**: " followed by **n** integers ($\mathbf{k}_1$,$\mathbf{k}_2$, ...), where $\mathbf{k}_i$ is the value of the card at index $\mathbf{d}_i$ of a perfect deck of size **K**. The numbers in the output should be separated by spaces, and there must be at least one space following the colon in each "Case #**x**:" line.

Limits

Small dataset

T = 100, 1 ≤ **K** ≤ 5000, 1 ≤ **n** ≤ 100, 1 ≤ $\mathbf{d}_i$ ≤ **K**.

Large dataset

T = 10, 1 ≤ **K** ≤ 1000000, 1 ≤ **n** ≤ 100, 1 ≤ $\mathbf{d}_i$ ≤ **K**.

Sample

Input	Output
2 5 5 1 2 3 4 5 15 4 3 4 7 10	Case #1: 1 3 2 5 4 Case #2: 2 8 13 4


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