**Stack ‘em Up**

The Big City has many casinos. In one of them, the dealer cheats. She has perfected several shuffles; each shuffle rearranges the cards in exactly the same way whenever it is used. A simple example is the ``bottom card" shuffle, which removes the bottom card and places it at the top. By using various combinations of these known shuffles, the crooked dealer can arrange to stack the cards in just about any particular order.

You have been retained by the security manager to track this dealer. You are given a list of all the shuffles performed by the dealer, along with visual cues that allow you to determine which shuffle she uses at any particular time. Your job is to predict the order of the cards after a sequence of shuffles.

A standard playing card deck contains 52 cards, with 13 values in each of four suits. The values are named *2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King, Ace*. The suits are named *Clubs, Diamonds, Hearts, Spades*. A particular card in the deck can be uniquely identified by its value and suit, typically denoted < *value* > of < *suit* >. For example, ``9 of Hearts" or ``King of Spades." Traditionally a new deck is ordered first alphabetically by suit, then by value in the order given above.

**Input**

The input begins with a single positive integer on a line by itself indicating the number of test cases, followed by a blank line. There is also a blank line between two consecutive inputs.

Each case consists of an integer n$ \le$100, the number of shuffles that the dealer knows. Then follow n sets of 52 integers, each comprising all the integers from 1 to 52 in some order. Within each set of 52 integers, i in position j means that the shuffle moves the ith card in the deck to position j.

Several lines follow, each containing an integer k between 1 and n. These indicate that you have observed the dealer applying the kth shuffle given in the input.

**Output**

For each test case, assume the dealer starts with a new deck ordered as described above. After all the shuffles had been performed, give the names of the cards in the deck, in the new order. The output of two consecutive cases will be separated by a blank line.

**Sample Input**

1

2

2 1 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 52 51

52 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 1

1

2

**Sample Output**

King of Spades

2 of Clubs

4 of Clubs

5 of Clubs

6 of Clubs

7 of Clubs

8 of Clubs

9 of Clubs

10 of Clubs

Jack of Clubs

Queen of Clubs

King of Clubs

Ace of Clubs

2 of Diamonds

3 of Diamonds

4 of Diamonds

5 of Diamonds

6 of Diamonds

7 of Diamonds

8 of Diamonds

9 of Diamonds

10 of Diamonds

Jack of Diamonds

Queen of Diamonds

King of Diamonds

Ace of Diamonds

2 of Hearts

3 of Hearts

4 of Hearts

5 of Hearts

6 of Hearts

7 of Hearts

8 of Hearts

9 of Hearts

10 of Hearts

Jack of Hearts

Queen of Hearts

King of Hearts

Ace of Hearts

2 of Spades

3 of Spades

4 of Spades

5 of Spades

6 of Spades

7 of Spades

8 of Spades

9 of Spades

10 of Spades

Jack of Spades

Queen of Spades

Ace of Spades

3 of Clubs