

Lazy Bob

Assignment 2

Data Structures & Algorithms

Due date: xx February, 2020

Problem Statement: There are N cities in Bopylon and there is only one outgoing road from a city (though a city can have multiple incoming roads) denoted by $r[i]$. Bob starts from a city and keep moving from one city to another until he comes to a city which he has already visited before (where he stops).

Now Bob wants to know that for each city where will he stop. Help him find that.

Input

The first line of input has T , the number of test cases.

For each test case, there are 2 lines of input where the first line specifies the number of cities and the second line has n space separated integers specifying the city to which the i^{th} city has an outgoing road to ($r[i]$).

Constraints

$$1 \leq T \leq 10^5$$

$$1 \leq N \leq 10^5$$

$$1 \leq r[i] \leq N$$

Sum of N over all test cases doesn't exceed 10^6

Output

For each test case print a line containing n space separated integers specifying the stopping city if Bob starts at i^{th} city.

Time Limit: 1 sec

Memory Limit: 256 MB

Sample Test Case

Input	Output
2	1 2
2	1 4 3 4
2 1	
4	
4 4 1 3	