# CS1020 Take-home Lab #4

## Exercise #3: Railway Station

(http://www.comp.nus.edu.sg/~cs1020/3_ca/labs.html)

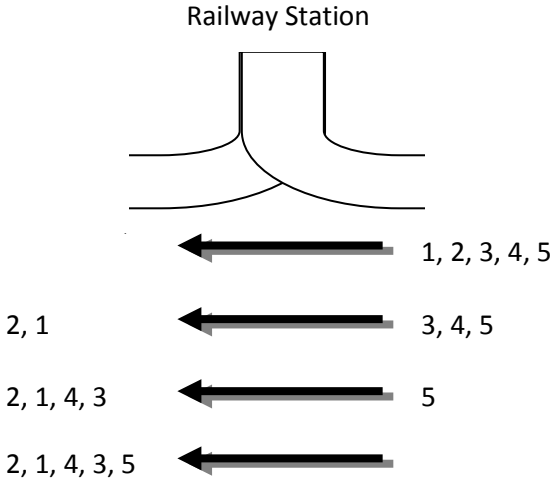
### Objective

The objective of this problem is to test the use of **stack** and **queue** concepts.

### Task Statement

There is a famous railway station in the Mystery City. It is a dead-end station with only one track in and out of the station. All the trains move from East to West. Prior to entering the station, a train may choose to disconnect its coaches. The disconnected coaches can then move independently in and out of the station. However, once a coach has left the station, it is not allowed to return to the station.

For example, we have a train with 5 coaches numbered 1 to 5. The coaches may be rearranged according to the sequence as shown in the figure below to arrive at a different permutation of 1 to 5. The train master wishes to know whether it is possible for a train with **N** coaches numbered from 1 to **N** (**N** ≤ 1000), to be rearranged to achieve some given permutations of 1, 2, …, **N**.




### Input

The input consists of blocks. Each block contains several lines. The first line of the block describes the number of coaches in the train. The next line specifies the number of permutation queries by the chief master. This is followed by the permutations themselves. The input ends with a line containing only 0.

### Output

The output contains the lines corresponding to the permutation queries in the input. A “Yes” is printed if the permutation can be achieved and a “No” is printed otherwise.

**Sample Input**

```
5 //block1: 5 coaches
2 //2 permutations
1 2 3 4 5 //permutation 1
5 4 1 2 3 //permutation 2
6 //block2: 6 coaches
1 //1 permutation
1 4 3 2 6 5 //permutation 1
3 //block3: 3 coaches
3 //3 permutations
1 3 2 //permutation 1
3 1 2 //permutation 2
2 3 1 //permutation 3
0
```

Yes
No
Yes
Yes

**Sample Output**

```
Yes
No
Yes
Yes
No
Yes
```