DMOPC '16 Contest 2 P2 - Ebola Outbreak

Time Limit: 0.3s
Java 8: 1.0s
Python: 3.0s

Memory Limit: 64M
Python: 1G

It is recently discovered that someone in **lolzballs**'s school has contracted Ebola (an extremely dangerous viral disease). The school administrators were frightened that more people would become infected and decided to isolate those who are potentially infected. They reached out to **lolzballs** to help them resolve their dilemma.

There are a total of N people in **lolzballs**'s school, numbered 1 to N. There are a total of M classes, and the i^{th} class has a size of K_i. Each person can be part of 0 or more classes. Initially, the person numbered 1 is infected with Ebola.

A person is deemed potentially infected if:

1. The person is already infected
2. The person has class with the infected person
3. The person has class with someone that is potentially infected

Please write a program to help **lolzballs** determine who is potentially infected.

Constraints

For all subtasks:

$1 \leq \sum K_i, K_i < 10^6$

Subtask 1 [80%]

$1 \leq N, M \leq 100$

Subtask 2 [20%]

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

Input Specification

On the first line of the input are 2 integers N and M.

This line is followed by M lines which describe each class.

Every line begins with an integer K_i ($K_i \leq N$), which represents the number of students in that class. K_i integers follow, indicating the people in the i^{th} class.

Output Specification

Output the number of potentially infected people on the first line of the output.

On the second line, please output the sorted list of potentially infected people, separated by a space.

Sample Input

```
9 4
3 1 2 3
4 2 3 4 5
3 6 7 8
2 3 9
```

Sample Output

```
6
1 2 3 4 5 9
```

DMOPC '16 Contest 4 P1 - Fast Exponents

Time Limit: 2.0s **Memory Limit:** 64M

Molly's teacher assigned her very tedious homework:

> Given an integer n_i, find out if it's a power of two or not.

Molly asks Andrew, but he would much rather play Geometry Dash, so he decides to ~~enslave~~ ask you to do it instead!

Input Specification

The first line will contain a single integer, N.
Lines $2 \ldots N+1$ will each contain an integer, n_i.

Output Specification

For each of the N integers, output `T` if it is a power of 2, otherwise output `F`.

Constraints

$1 \leq N \leq 10^6$
$1 \leq n_i < 2^{63}$

Sample Input

```
2
1
3
```

Sample Output

```
T
F
```

DMOPC '21 Contest 6 P1 - Bigger Big Integer

Time Limit: 3.0s **Memory Limit:** 1G

Bob is working as a data scientist, which basically means he stares at big integers all day. Bob loves big integers, and loves making them as big as possible. He is currently staring at an integer X consisting of D non-zero digits, and wants to make it bigger. However, since he doesn't want to mess up the database too much and potentially get fired, he limits himself to swapping at most one pair of adjacent digits of the integer. What is the biggest integer he can create by doing so?

Constraints

$2 \leq D \leq 10^6$

All digits of X are non-zero.

Subtask 1 [2/15]

$D = 2$

Subtask 2 [6/15]

$2 \leq D \leq 2 \times 10^3$

Subtask 3 [7/15]

No additional constraints.

Input Specification

The first line contains an integer D.

The second line contains a D-digit integer X.

Output Specification

Output the largest integer Bob can create by swapping at most one pair of adjacent digits of X.

Sample Input 1

```
20
32249178991231416774
```

Sample Output 1

```
32429178991231416774
```

Sample Input 2

```
5
54321
```

Sample Output 2

```
54321
```