Shopee Event

Max. score: 100

In Shopee, there are **N** employees. Some of them are part of an interest group in Shopee. An employee can be a part of multiple interest groups.

One day employee **C** learns about an upcoming Shopee event. From where he/she learns this is not important.

C then shares the information about this upcoming Shopee event in all the interest groups that **C** is part of. All employees in the interest groups learn about this event at once.

Each employee who learns about the event then does the same and shares with the other employees in his/her interest groups.

This goes on until no more employee can learn about this Shopee event.

Our task is to find the number of employees who end up learning about the upcoming Shopee event if employee **C** learns it first.

Input

- The first line contains an integer **N** - denoting the number of employees ($1 \leq N \leq 5e5$)
- The next line contains an integer **k** - denoting the number of interest groups ($1 \leq k \leq 5e5$)
- Then **k** lines follow, describing all employees of each interest group.
- Each line **i** begins with an integer **m** ($0 \leq m \leq N$), number of employees in the **ith** interest group.
- Then **m** unique integers, $C_m, (1 \leq C_m \leq N)$ follow each denoting the employees in **ith** interest group.

Note: Sum of m over k lines < = 1e5.

Output

N integers where each integer at **cth** position depicts the number of employees who can learn about the event if **C** ($1 \leq C \leq N$) learns it first.

SAMPLE INPUT

```
5
3
3 1 2 3
2 2 4
1 5
```

SAMPLE OUTPUT

```
4 4 4 4 1
```

Explanation

NA

Time Limit:	2.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Score is assigned when all the testcases pass.
Allowed Languages:	Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic