

## 8515 Islands

As a member of The Academy of Chtholly, you want to rush to the battle field to help Chtholly. There are  $n$  islands in the sky, and you are in island number 1.

At first, there are  $n - 1$  transportation lines, each connecting two islands, making each two islands reachable.

However, due to the continues attack of the beasts on the ground, each transportation line has 50% possibility of being destroyed.

You want to find, in all  $2^{n-1}$  possible realities (each transportation line may be destroyed or not), how many of them you can reach exactly  $k$  islands.

The answer may be large, so you just need to output the answer mod1811939329.

### Input

The input contains multiple test cases.

The first line contains a number  $T$  ( $1 \leq T \leq 20$ ) denoting the number of test cases.

In each test case:

- The first line contains a number  $n$ .
- The following  $n - 1$  lines each contains two numbers  $x, y$  denoting that there is an edge between  $x$  and  $y$ .

### Output

For each test case, output one line containing  $n$  numbers.

The  $k$ -th number is the number of possible realities that you can reach exactly  $k$  islands.

### Sample Input

```
1
5
12
23
34
45
```

### Sample Output

```
8 4 2 1 1
```