

## 1011.Find different

Input file:            standard input  
 Output file:          standard output  
 Time limit:           4 seconds  
 Memory limit:        256 megabytes

You are given two integers  $n, m$ .

Two array  $x = \{x_0, x_1, \dots, x_{l-1}\}, y = \{y_0, y_1, \dots, y_{l-1}\}$  of length  $l$  are considered **different** if  $x$  couldn't become  $y$  by performing the following operations any number of times:

- operation 1: Change  $x$  to  $b$ , for each  $i$  ( $0 \leq i < l$ ),  $b_i = (x_i + 1) \bmod m$
- operation 2: Change  $x$  to  $b$ , for each  $i$  ( $0 \leq i < l$ ),  $b_i = x_{(i+1) \bmod l}$

As an example, if  $m = 3, l = 3$ ,  $(0, 2, 2)$  and  $(0, 1, 0)$  are considered **not different** because  $(0, 2, 2)$  can become  $(0, 1, 0)$  as follows:  $(0, 2, 2) \xrightarrow{\text{operation 1}} (1, 0, 0) \xrightarrow{\text{operation 2}} (0, 0, 1) \xrightarrow{\text{operation 2}} (0, 1, 0)$

For each  $i$  ( $1 \leq i \leq n$ ), find the number of different integer array  $a$  of length  $i$ , satisfied  $\forall j \in (0, 1, \dots, i-1), 0 \leq a_j \leq m-1$ .

Since the answer may be too large, print it modulo 998244353.

### Input

The first line of the input contains one integer  $T$  ( $1 \leq T \leq 100$ ) — the number of test cases. Then  $T$  testcases follow.

Each of the next  $T$  lines contains two integers  $n, m$  ( $1 \leq n, m \leq 100000$ ).

The sum of  $n$  over all testcases doesn't exceed  $10^6$ .

### Output

For each testcase, output one line contains  $n$  integers, separated by space, the  $i$ -th integer indicating the number of different  $a$  of length  $i$ , modulo 998244353.

### Example

standard input	standard output
2	1 2 2 4 4 8 10 20 30 56
10 2	1 50001 338600275 682529035 345997022 799071125 76757396
10 100000	