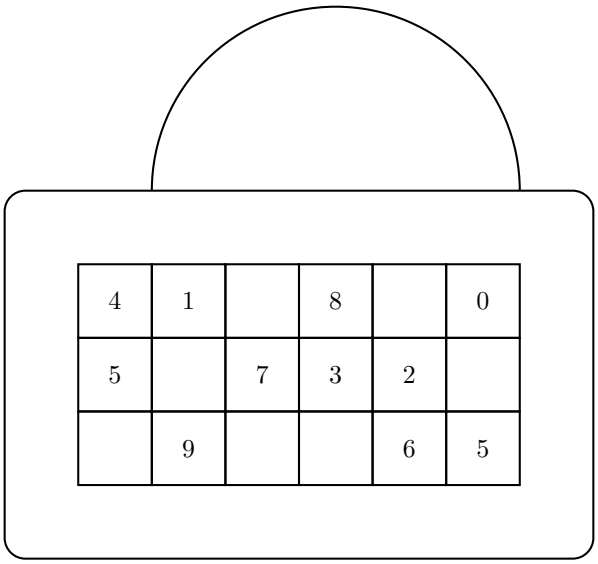
Super Lock

Time Limit: 2 Seconds
Memory Limit: 2048 MB

A super lock is a rectangular grid with n rows and m columns.

Each cell can either be **blank** or filled with a digit from 0 to 9.



You must create a password satisfying the following rules:

- Each row must have at least one cell filled with a digit (non-empty).
- Each column must have at least one cell filled with a digit.
- Every digit from 0 to 9 must appear at least once somewhere in the grid.

Two passwords are considered different if there exists at least one cell where the contents differ.

Determine the number of distinct valid passwords, modulo 998244353.

Input

The first line of the input file is T ($1 \leq T \leq 700$) the number of testcases in the file.

Each of the T testcases consists of a single line with two integers n, m ($1 \leq n, m \leq 1000$).

Output

Output a single integer — the number of valid passwords modulo 998244353.

Sample Inputs

```
1
2 5
```

Sample Outputs

```
3628800
```

In the test input, there are 2 rows and 5 columns.

Each cell can either be blank or filled with a digit from 0 to 9.

Requirements:

- Each row and column has at least one non-empty cell.
- Digits $0 \sim 9$ must all appear at least once.

There are a total of 3628800 (10!) valid ways to form such a password.