

Splits

Za permutaciju $p = p[0] p[1] p[2] \dots p[n-1]$ brojeva $1, 2, 3, \dots, n$ definiramo *split* kao permutaciju q koja se može dobiti sljedećim postupkom:

1. Odaberu se dva skupa brojeva $A = \{i_1, i_2, \dots, i_k\}$ i $B = \{j_1, j_2, \dots, j_l\}$ takva da vrijedi $A \cap B = \emptyset$, $A \cup B = \{0, 1, 2, \dots, n-1\}$, $i_1 < i_2 < \dots < i_k$ i $j_1 < j_2 < \dots < j_l$
2. Permutacija q će tada biti $q = p[i_1]p[i_2] \dots p[i_k]p[j_1]p[j_2] \dots p[j_l]$

Nadalje, definiramo $S(p)$ kao skup svih *splito*va permutacije p .

Zadan je broj n i skup T od m permutacija duljine n . Prebroji koliko permutacija p duljine n postoji takvih da vrijedi $T \subseteq S(p)$. Budući da taj broj može biti velik, pronađi ga modulo 998 244 353.

Implementation Details

You should implement the following procedure:

```
int solve(int n, int m, std::vector<std::vector<int>>& splits);
```

- n : the size of the permutation
- m : the number of splits
- *splits*: array containing m **pairwise distinct** permutations, the elements of the set T , which is a subset of $S(p)$
- This procedure should return the number of possible permutations modulo 998 244 353.
- This procedure is called exactly once for each test case.

Constraints

- $1 \leq n \leq 300$
- $1 \leq m \leq 300$

Subtasks

1. (6 points) $m = 1$
2. (7 points) $1 \leq n, m \leq 10$
3. (17 points) $1 \leq n, m \leq 18$
4. (17 points) $1 \leq n \leq 30, 1 \leq m \leq 15$
5. (16 points) $1 \leq n, m \leq 90$

6. (16 points) $1 \leq n \leq 300, 1 \leq m \leq 15$

7. (21 points) No additional constraints.

Examples

Example 1

Consider the following call:

```
solve(3, 2, {{1, 2, 3}, {2, 1, 3}})
```

In this sample, the size of the permutation p is 3 and we are given 2 splits:

- 1 2 3
- 2 1 3

The function call will return 4 as there are only four permutations p that can generate both of those splits:

- 1 2 3
- 1 3 2
- 2 1 3
- 2 3 1

Sample grader

The sample grader reads the input in the following format:

- line 1: $n \ m$
- line $2 + i$: $s[i][0] \ s[i][1] \ \dots \ s[i][n - 1]$ for all $0 \leq i < m$

and outputs the result of the call to `solve` with the corresponding parameters.