2003 Canadian Computing Competition, Stage 2
Day 2, Question 1

Input file: `perm.in`
Output file: `perm.out`
Source file: `n:\perm\perm.___`

Constrained Permutations

A *permutation* on the numbers $1, 2, \ldots, n$ is a linear ordering of the numbers. For example, there are 6 permutations of the numbers 1,2,3. They are 123, 132, 213, 231, 312 and 321. Another way to think of it is removing n disks numbered 1 to n from a bag (without replacement) and recording the order in which they were drawn out.

Mathematicians (and other smart people) write down that there are $n! = n \cdot (n-1) \cdots 3 \cdot 2 \cdot 1$ permutations of the numbers $1, \ldots, n$. We call this "n factorial."

For this problem, you will be given an integer n ($1 \leq n \leq 9$) and a series of k ($k \geq 0$) constraints on the ordering of the numbers. That is, you will be given k pairs (x, y) indicating that x must come before y in the permutation.

You are to output the number of permutations which satisfy all constraints.

Input

Your input will be $k + 2$ lines. The first line will contain the integer n. The second line will contain the integer k, indicating the number of constraints. The remaining k lines will be pairs of distinct integers which are in the range $1, \ldots, n$.

Output

Your output will be one integer, indicating the number of permutations of $1, \ldots, n$ which satisfy the k constraints.

Sample Input 1

```
3
2
1 2
2 3
```

Sample Output 1

```
1
```

Sample Input 2

```
4
2
1 2
2 1
```

Sample Output 2

```
0
```

Sample Input 3

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

Sample Output 3

```
4
```