# Mental Abuse To Humans

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|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 3 seconds |
| Memory limit: | 1024 megabytes |

Bobo is asked to solve the following math problem:

Given $m$ pairs of integers $(x_1, t_1), (x_2, t_2), \ldots, (x_m, t_m)$ where $0 \le x_i < n$ and $t_i \in \{0, 1\}$, count the number of subsets $A \subseteq S_n = \{0, 1, \ldots, n-1\}$ satisfying

- $\forall 1 \le i \le m$, $x_i \in A$ if and only if $t_i = 1$.
- $A +_n (S_n \setminus A) = S_n$.

For any two sets $A, B$ consisting of nonnegative integers, $A +_n B$ is defined by

$$A +_n B = \{(a + b) \bmod n \mid a \in A, b \in B\}.$$

The answer might be enormous, and you should output the answer modulo 998 244 353.

## Input

Each test contains multiple test cases. The first line contains an integer $T$ ($1 \le T \le 5$) — the number of test cases. The following lines contain the description of each test case.

The first line of each test case contains two integers $n$ and $m$ ($1 \le n \le 10^{18}$, $0 \le m \le 5$), denoting the size of the universe and the number of integer pairs, respectively.

Then $m$ lines follow. The $i$-th line contains two integers $x_i, t_i$ ($0 \le x_i < n, t_i \in \{0, 1\}$), describing the $i$-th integer pair.

It is guaranteed that $x_1, x_2, \ldots, x_m$ are pairwise distinct.

## Output

For each test case, output a single integer, denoting the desired answer modulo 998 244 353.

## Example

| standard input | standard output |
|---|---|
| 2<br>3 0<br>6 2<br>0 0<br>1 1 | 0<br>4 |