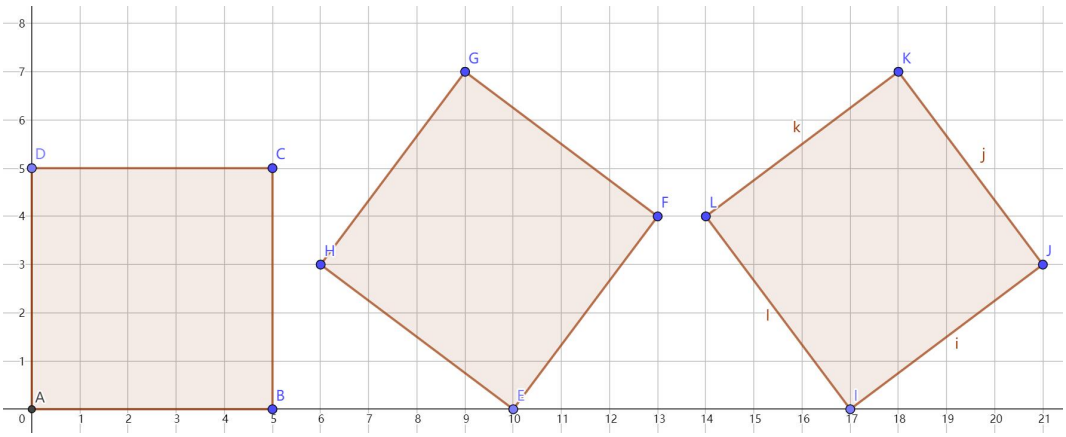
Problem D. The Pool

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

Marisa wants to build an $n \times m$ rectangular swimming pool for Alice. To do this, Marisa can select four integer points on an infinite two-dimensional grid, and cast magic. For example, the following picture shows three possible ways to build a 5×5 swimming pool.



Marisa soon learns that there are many ways to build the pool since four sides of the pool can be non-parallel to coordinate axes. Here two ways are considered different if and only if the pool in one way can't be translated (moved without rotation and flipping) to the pool in the other way. Now Marisa becomes curious about the total number of 1×1 squares completely inside the pool for all possible ways. As the result can be very large, you should print it modulo 998 244 353.

Input

The first line contains one integer T ($1 \le T \le 10^4$) denoting the number of test cases.

Each test case is given on a single line containing two integers n and m ($1 \le n, m \le 10^{18}$) denoting the size of swimming pool.

It is guaranteed that there are at most 10 cases where $\max(n, m) > 10^9$.

Output

For each test case, print one number, denoting the total number of 1×1 squares completely inside the pool for all possible ways (modulo 998 244 353).

Example

standard input	standard output
5 5 5 2 3 5 10 2197525579 1145141 91 65	51 12 228 438744975 34722

Note

As shown in the picture, there are exactly three different ways to build the pool. The corresponding numbers of 1×1 squares completely inside the pool in these three ways are 25, 13, and 13. So the total number is 51.