

Problem H. Empty Quartz

- Time Limit: 2 sec

Problem Statement

N crystals are aligned in a row. However, some of them may be phantoms.

Jun counted the number of **real** crystals from l -th to r -th (closed interval) for every $l, r (1 \leq l \leq r \leq N)$ pair and recorded their evenness.

His $\frac{N(N+1)}{2}$ records show that there were K intervals that contained an odd number of real crystals. How many possible crystal alignments are there? Answer the remainder divided by 998244353.

Note that if there is i such that the i -th crystal from the left is real on one side and phantom on the other, the two alignments are considered different.

You are given T of the above problems. Answer each of them.

Input

$$\begin{array}{l} T \\ N_1 \ K_1 \\ \vdots \\ N_T \ K_T \end{array}$$

The input satisfies the following constraints.

- All inputs consist of integers.
- $1 \leq T \leq 10^5$
- $1 \leq N_i \leq 10^5$
- $0 \leq K_i \leq \frac{N_i(N_i+1)}{2}$

Output

Output T lines. On the line i , answer the problem when $N = N_i, K = K_i$. Add a new line at the end of each line.

Sample Input 1	Sample Output 1
1 3 4	3
Sample Input 2	Sample Output 2
5 5 9 6 10 10 24 10 25 100000 75915540	10 21 165 0 651081880

If we denote a real crystal as 1 and an phantom as 0, the following three alignments satisfy the condition at Sample Input 1.

- 0, 1, 0
- 1, 0, 1
- 1, 1, 1