Problem A. Adding Integers

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	1024 mebibytes

You are given integers n and k.

For a positive integer q, $f(q)$ is defined as the sum of $\binom{n}{a_1} \cdot \binom{a_1}{a_2} \cdot \ldots \cdot \binom{a_{q-1}}{a_q}$ for all integer sequences $(a_1, a_2, \ldots, a_q)$ that satisfy the condition $n \geq a_1 \geq a_2 \geq \ldots \geq a_q \geq 0$.

Calculate the value $\sum_{q=1}^{k} f(q)$ modulo 998 244 353.

Here, $\binom{A}{B}$ is the binomial coefficient: the number of ways to select B distinct items from A distinct items.

Input

The first line of input contains an integer t: the number of test cases ($1 \leq t \leq 10^5$).

Each of the following t lines contains two integers: n and k ($0 \leq n \leq 10^9$; $1 \leq k \leq 2 \cdot 10^5$).

The total sum of k over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print the value of the sum modulo 998 244 353.

Example

standard input	*standard output*
4 2 2 0 1 271 818 141 42	13 1 812506614 405709861