Problem K
PALINDROMIC SEQUENCE
Time limit: 1.5 seconds

In a final exam, candidates were asked to solve an Interesting Challenge in Palindromic Counting (ICPC). This challenge involves counting *K-embedded palindromic sequence*, which not only exhibit symmetry but also conform to an important rule: their elements must sum up to a given value, N.

A sequence is *palindromic sequence* if it reads the same forward and backward. Formally, a sequence $S = (s_1, s_2, \ldots, s_n)$ of length N is called a *palindromic sequence* if it satisfies $s_i = s_{n-i+1}$ for all $1 \leq i \leq n$. For example $(1, 2, 1)$ and $(4, 4)$ are *palindromic sequences* while $(1, 2)$ and $(3, 4, 5)$ are not. A *palindromic sequence* is called *K-embedded palindromic sequence* if it does not contain K at any position.

Given two integers N and K, find the number of *K-embedded palindromic sequences* of positive integers whose elements sum to N. Two sequences are considered different if they have different lengths or if they differ in at least one position. As the result may be large, it should be returned under modulo 998 244 353.

Input

The first line contains an integer T ($1 \leq T \leq 100$), the number of test cases. Each of the following T lines contains two numbers N and K ($1 \leq N \leq 10^{18}$, $1 \leq K \leq 20$) describing a test case.

Output

For each test case, output the residue of the result after dividing 998 244 353 on a single line.

Sample Input	Sample Output
3 6 2 10 3 40 1	4 8 1037630