

Problem D. Hard Problem

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

You are given an integer array $a_1, \dots, a_n$. A subsegment of even length $a_i, \dots, a_{i+2m-1}$ is called **good** if $|\max(a_i, \dots, a_{i+m-1}) - \max(a_{i+m}, \dots, a_{i+2m-1})| \leq k$.

Let us define an integer sequence f as follows:

- $f_1 = 3240$
- $f_2 = 3081$
- $f_3 = 2841$
- $f_4 = 343$
- $f_i = f_{i-1} \cdot 223 + f_{i-2} \cdot 229 + f_{i-3} \cdot f_{i-4} \cdot 239 + 17$ for $i > 4$

Calculate the sum $(a_{i+m-1} + 10) \cdot f_m$ among all good subsegments. Since this number can be large, print it modulo 998 244 353.

Input

The first line contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases. Description of test cases follows.

The first line of each test case contains two integers n, k ($1 \leq n \leq 5 \cdot 10^5$, $0 \leq k \leq \min(n, 10)$).

The next line contains n integers $a_1, a_2, \dots, a_n$ ($1 \leq a_i \leq n$).

It is guaranteed that the sum of n for all test cases does not exceed $5 \cdot 10^5$.

Output

For each test case, print a single integer — the answer to the problem.

Example

standard input	standard output
3	144768
6 0	745933
3 1 3 1 3 1	448953
8 4	
5 8 4 6 5 7 8 5	
7 3	
2 1 3 2 2 1 3	