Balancing the Stone

You are given scales for weighing loads. On the left side lies a single stone of known weight $W<2^N$. You own a set of N different weights, weighing 1, 2, 4, ..., 2^{N-1} units of mass respectively. Determine how many possible ways there are of placing some weights on the sides of the scales, so as to balance them (put them in a state of equilibrium). Output this value modulo a small integer D.

Input

The input begins with the integer t, the number of test cases. Then t test cases follow.

For each test case, the first line contains three integers: N L D, where N denotes the number of weights at your disposal, L is the length of the binary representation of number W, and D is the modulus (1<= L<= N<= 1000000, 2<= D<=100). The second line contains the value of W, encoded in the binary system as a sequence of exactly L characters 0 or 1 without separating spaces.

Output

For each test case, output a single line containing one integer - the calculated number of possible weight placements, modulo D.

Example

Sample input:
2
6 4 6
1000
6 6 100
100110

Sample output:
3
5

Warning: large Input/Output data, be careful with certain languages