Problem F. Independent set

Input file:	stdin
Output file:	stdout
Time limit:	1 second
Memory limit:	512 megabytes

bobo has a binary sequence $a_1a_2\dots a_n$. And he wants to count the number of sequences as $x_1, x_2, \dots, x_n$ satisfying the following conditions modulo $(10^9 + 7)$.

1. $x_1, x_2, \dots, x_n \in \mathbb{N}$, $x_1 + x_2 + \cdots + x_n = m$;
2. For all $1 \le i \le n$, $a_i \cdot x_i = 0$;
3. For all $2 \le i \le n$, $x_{\lfloor i/2 \rfloor} \cdot x_i = 0$.

Input

The first line contains 2 integers n, m $(1 \le n \le 5000000, 1 \le m \le 10)$.

The second line contains n integers $a_1a_2\dots a_n$ $(0 \le a_i \le 1)$.

Output

A single number denotes the number of sequence.

Sample input and output

stdin	stdout
2 2 00	2
10 3 0101010101	26