Painting Polygons

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

SuperBeetleGamer is now aspiring to become SuperBeetlePainter. He has a canvas, which is a regular polygon with n sides ($4 \leq n \leq 10^5$, n even). He divides the canvas into sections by drawing several lines from a vertex to its opposite vertex. Afterwards, he has m colors available $2 \leq m \leq 10^9$ to color each section.

If the soon-to-be SuperBeetlePainter considers two paintings the same if they can be rotated to match each other, please find the number of distinct paintings that SuperBeetlePainter can paint, modulo 10^9+7.

Input

The first line has two integers n and m.

The second line contains a binary string s of length $\frac{n}{2}$. If $s_i = 1$, that means that SuperBeetlePainter has drawn a line from vertex i to the opposite vertex to divide the canvas.

Output

Please output one number: the number of distinct paintings that SuperBeetlePainter can paint, modulo $10^9 + 7$.

Example

standard input	standard output
6 2 110	10