Problem M. A + B Problem

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

A binary string is a string consisting only of digits “0” and “1”. Given a binary string s of length $(n+m)$, please divide it into two subsequences $A = a_1a_2\dots a_n$ of length n and $B = b_1b_2\dots b_m$ of length m such that each digit in s belongs to exactly one subsequence.

Let f be the function that transforms a sequence of “0” and “1” into a binary integer. For example, $f(\{1,0,1,0\}) = 1010_2$ and $f(\{0,0,1,0\}) = 10_2$. Your task is to find such A and B that maximize $(f(A)+f(B))$.

Recall that a subsequence of a string is a sequence that can be derived by deleting some characters (possibly none) from the string without changing the order of the remaining characters.

Input

There are multiple test cases. The first line of the input contains an integer T indicating the number of test cases. For each test case:

The first line contains two integers n and m ($1 \le n, m \le 10^5$) indicating the lengths of the desired subsequences.

The second line contains a binary string s ($|s| = n+m$, $s_i \in \{\text{“0”}, \text{“1”}\}$).

It is guaranteed that the sum of $(n+m)$ of all test cases will not exceed $2 \cdot 10^6$.

Output

For each test case, output one line containing a binary integer indicating the largest possible result of $(f(A)+f(B))$. Note that $(f(A)+f(B))$ should be printed as a binary integer with no leading zeroes, while A and B are sequences, and leading zeros are allowed in the sequences.

Example

standard input	standard output
3 4 3 1000101 2 2 1111 1 1 00	1101 110 0

Note

We now use underline to indicate subsequence A in the binary string.

For the first sample test case, a valid solution is to divide the binary string into $\underline{1}000\underline{101}$ such that $f(\{1,1,0,1\}) + f(\{0,0,0\}) = 1101_2 + 0_2 = 1101_2$.

For the second sample test case, a valid solution is to divide the binary string into $\underline{1}1\underline{1}1$ such that $f(\{1,1\}) + f(\{1,1\}) = 11_2 + 11_2 = 110_2$.