Replacement

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Given a binary string s of length n (01 string). You need to replace one character in $s[2 \ldots n-1]$ with $\oplus$, so that the final value of the expression is as large as possible.

$\oplus$ represents the binary XOR operation. After the replacement, both sides of $\oplus$ are treated as binary numbers.

Input

A single test case contains multiple data sets.

The first line of input is the number of data sets T ($1 \leq T \leq 10^5$), representing the number of data sets in this test case.

For each data set, there is one line containing a binary string s ($3 \leq |s| \leq 5 \cdot 10^5$).

It is guaranteed that in a single test case, $\sum |s| \leq 5 \cdot 10^5$.

Output

For each data set, output one line containing a binary string that represents the largest result in binary form (the number string cannot contain leading 0s except for the single digit 0).

Example

standard input	standard output
5 010 0110 1000 10101 01000	0 10 10 100 10