

1105 – Fi Binary Number

A Fi-binary number is a number that contains only 0 and 1. It does not contain any leading 0. And also it does not contain 2 consecutive 1. The first few such number are 1, 10, 100, 101, 1000, 1001, 1010, 10000, 10001, 10010, 10100, 10101 and so on. You are given n . You have to calculate the n^{th} Fi-Binary number.

Input

Input starts with an integer T (≤ 10000), denoting the number of test cases.

Each case contains an integer n ($1 \leq n \leq 10^9$).

Output

For each case, print the case number and the n^{th} Fi-Binary number

Sample Input	Output for Sample Input
4	Case 1: 10010
10	Case 2: 101010
20	Case 3: 1010001
30	Case 4: 10001001
40	