1032 - Fast Bit Calculations

A bit is a binary digit, taking a logical value of either 1 or 0 (also referred to as "true" or "false" respectively). And every decimal number has a binary representation which is actually a series of bits. If a bit of a number is 1 and its next bit is also 1 then we can say that the number has a 1 adjacent bit. And you have to find out how many times this scenario occurs for all numbers up to N.

Examples:

Number	Binary	Adjacent Bits
12	1100	1
15	1111	3
27	11011	2

Input

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

Each case contains an integer N ($0 \le N \le 2^{31}$).

Output

For each test case, print the case number and the summation of all adjacent bits from 0 to N.

Sample Input	Output for Sample Input
7	Case 1: 0
0	Case 2: 2
6	Case 3: 12
15	Case 4: 13
20	Case 5: 13
21	Case 6: 14
22	Case 7: 16106127360
2147483647	