1399 – Politeness

A number is called polite if it can be written as a sum of some (at least two) consecutive positive integers. For example, 6 (1+2+3) is a polite number while 4 is not. Politeness of a number is the number of ways it can be expressed as sum of consecutive positive integers. For example 6(1+2+3) is a politeness of 1 while 18(5+6+7 = 3+4+5+6) has a politeness of 2. Obviously, non polite number has a politeness of 0.

You are given a politeness **P**, you have to find out the smallest number that has the politeness **P**.

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case starts with a line containing an integer **P ($0 \le P \le 10^{12}$)**.

Output

For each case, print the case number and the integer that has the politeness **P**. If there are several integers having politeness **P**, choose the smallest one. As the integer can be big; print the integer modulo **1000 000 007**.

Sample Input	Output for Sample Input
7 0 1 5 852281891999 975018442254 986350945007 511	Case 1: 1 Case 2: 3 Case 3: 45 Case 4: 343299432 Case 5: 129653419 Case 6: 221997673 Case 7: 3917908

Note

For case 7, 1003917915 is the smallest number with politeness 511, so the result is (1003917915 modulo 1000000007), which is 3917908.