Weekly Puzzle #3

Tayeb has a unique calculator. This calculator only has a display, a plus button, and a minus button. Currently, the integer **N** is displayed on the calculator display.

Pressing the plus button increases the current number displayed on the calculator display by 1. Similarly, pressing the minus button decreases the current number displayed on the calculator display by 1. The calculator does not display any leading zeros. For example, if `100` is displayed on the calculator display, pressing the minus button once will cause the calculator to display `99`.

Tayeb does not like odd digits, because he thinks they don't look aesthetically pleasing. Therefore, he wants to display an integer with only even digits in its decimal representation, using only the calculator buttons. Since the calculator is a bit old and the buttons are hard to press, he wants to use a minimal number of button presses.

Determine the minimum number of button presses to make the calculator display an integer with no odd digits.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each begins with one line containing an integer **N**: the integer initially displayed on Tayeb's calculator.

Output

For each test case, output one line containing `Case x: y`, where `x` is the test case number (starting from 1) and `y` is the minimum number of button presses, as described above.

Limits

$1 \leq \mathbf{T} \leq 100$
$1 \leq \mathbf{N} \leq 10^5$.

Sample

Input	Output
4 42 11 1 2018	Case 1: 0 Case 2: 3 Case 3: 1 Case 4: 2

In Case #1, the integer initially displayed on the calculator has no odd digits, so no button presses are needed.

In Case #2, pressing the minus button three times will cause the calculator to display `8`. There is no way to satisfy the requirements with fewer than three button presses.

In Case #3, either pressing the minus button once (causing the calculator to display `0`) or pressing the plus button once will cause the calculator to display an integer without an odd digit.

In Case #4, pressing the plus button twice will cause the calculator to display `2020`. There is no way to satisfy the requirements with fewer than two button presses.