

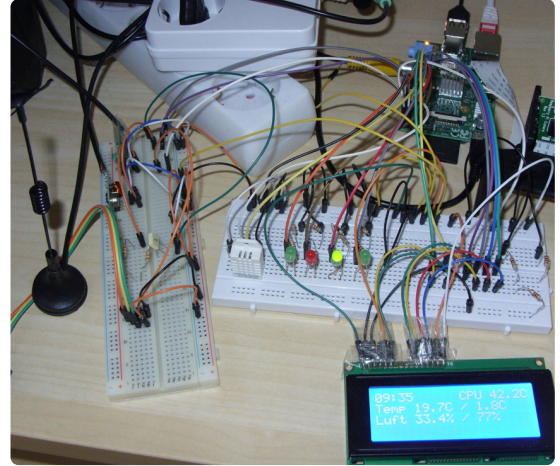
Problem F. Jumbled Communication

Time limit 2000 ms

Mem limit 1048576 kB

OS Linux

Your best friend Adam has recently bought a Raspberry Pi and some equipment, including a wireless temperature sensor and a 433MHz receiver to receive the signals the sensors sends. Adam plans to use the Raspberry Pi as an in-door display for his weather sensor. As he is very good with electronics, he quickly managed to get the receiver to receive the signals of the sensor. However, when he looked at the bytes sent by the sensor he could not make heads or tails of them. After some hours looking through a lot of websites, he found a document explaining that his weather sensor scrambles the data it sends, to prevent it from being used together with products from other manufacturers.



Luckily, the document also describes how the sensor scrambles its communication. The document states that the sensor applies the expression $x \oplus (x \ll 1)$ to every byte sent. The \oplus operator is bit-wise XOR¹, e.g., $10110000 \oplus 01100100 = 11010100$. The \ll operator is a (non-circular) left shift of a byte value², e.g., $10111001 \ll 1 = 01110010$.

In order for Adam's Raspberry Pi to correctly interpret the bytes sent by the weather sensor, the transmission needs to be unscrambled. However, Adam is not good at programming (actually he is a pretty bad programmer). So he asked you to help him and as a good friend, you are always happy to oblige. Can you help Adam by implementing the unscrambling algorithm?

Input

The input consists of:

- one line with an integer n ($1 \leq n \leq 10^5$), the number of bytes in the message sent by the weather sensor;
- one line with n integers b_1, \dots, b_n ($0 \leq b_i \leq 255$ for all i), the byte values of the message.

Output

Output n byte values (in decimal encoding), the unscrambled message.

Sample 1

Input	Output
5 58 89 205 20 198	22 55 187 12 66