Binary

Time limit: 2.0s **Memory limit:** 64M

Your computer science teacher has kindly requested that you write a program to convert a number, inputted in decimal, to binary to help in teaching students about binary. Also to aid in human processing of numbers, you should group every four bits and separate the groups by space.

Input Specification

The first line will be integer N ($1 \leq N \leq 20$), the number of numbers to convert to binary. The next N lines will be i such that ($i \in \mathbb{Z}, 0 \leq i \leq 10^9$).

Output Specification

For every integer i, output the binary representation, grouped into four bit groups, separated by spaces. If necessary, you must pad the first group to have exactly four bits.

Sample Input

```
3
1
10
255
```

Sample Output

```
0001
1010
1111 1111
```