

## Problem G. Or Max

Input file: *standard input*  
Output file: *standard output*  
Time limit: 1 second  
Memory limit: 512 mebibytes

bobo has a sequence  $a_1, a_2, \dots, a_n$ . He would like to choose  $k$  consecutive elements and maximize the value  $S$  that is defined as their maximum plus their bitwise or.

For all  $1 \leq k \leq n$ , find the maximal value bobo can achieve.

### Input

The first line contains an integer  $n$  ( $1 \leq n \leq 10^5$ ).

The second line contains  $n$  integers  $a_1, a_2, \dots, a_n$  ( $0 \leq a_i < 2^{16}$ ).

### Output

$n$  integers, where the  $i$ -th integer is maximal  $S$  for  $k = i$ .

### Examples

standard input	standard output
3	4
1 0 2	4
	5