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Interesting XOR!

 Problem Code: **IRSTXOR**
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You are given an integer C . Let d be the smallest integer such that 2^d is strictly greater than C .

Consider all pairs of non-negative integers (A, B) such that $A, B < 2^d$ and $A \oplus B = C$ (\oplus denotes the bitwise XOR operation). Find the maximum value of $A \cdot B$ over all these pairs.

Input

- The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.
- The first and only line of each test case contains a single integer C .

Output

For each test case, print a single line containing one integer — the maximum possible product $A \cdot B$.

Constraints

- $1 \leq T \leq 10^5$
- $1 \leq C \leq 10^9$

Subtasks

Subtask #1 (30 points): $1 \leq C \leq 10^3$

Subtask #2 (70 points): original constraints

Example Input

```
2
13
10
```

Example Output

```
70
91
```

Explanation

Example case 1: The binary representation of 13 is "1101". We can use $A = 10$ ("1010" in binary) and $B = 7$ ("0111" in binary). This gives us the product 70. No other valid pair (A, B) can give us a larger product.

Example case 2: The binary representation of 10 is "1010". We can use $A = 13$ ("1101" in binary) and $B = 7$ ("0111"). This gives us the maximum product 91.

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Time Limit: 1 secs

Source Limit: 50000 Bytes

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