

12716 GCD XOR

Given an integer N , find how many pairs (A, B) are there such that: $\text{gcd}(A, B) = A \text{ xor } B$ where $1 \leq B \leq A \leq N$.

Here $\text{gcd}(A, B)$ means the greatest common divisor of the numbers A and B . And $A \text{ xor } B$ is the value of the bitwise **xor** operation on the binary representation of A and B .

Input

The first line of the input contains an integer T ($T \leq 10000$) denoting the number of test cases. The following T lines contain an integer N ($1 \leq N \leq 30000000$).

Output

For each test case, print the case number first in the format, 'Case X :' (here, X is the serial of the input) followed by a space and then the answer for that case. There is no new-line between cases.

Explanation

Sample 1: For $N = 7$, there are four valid pairs: $(3, 2)$, $(5, 4)$, $(6, 4)$ and $(7, 6)$.

Sample Input

```
2
7
20000000
```

Sample Output

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Case 1: 4
Case 2: 34866117
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