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

Here $\gcd(A, B)$ means the greatest common divisor of the numbers A and B. And A 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

```
Case 1: 4
Case 2: 34866117
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