

# Euler Totient Function

In number theory, the totient  $\phi$  of a positive integer  $n$  is defined to be the number of positive integers less than or equal to  $n$  that are coprime to  $n$ .

Given an integer  $n$  ( $1 \leq n \leq 10^6$ ). Compute the value of the totient  $\phi$ .

## Input

First line contains an integer  $T$ , the number of test cases. ( $T \leq 20000$ )

$T$  following lines, each contains an integer  $n$ .

## Output

$T$  lines, one for the result of each test case.

## Example

**Input:**

```
5
1
2
3
4
5
```

**Output:**

```
1
1
2
2
4
```