

12995 Farey Sequence

The Farey sequence of order n is the sequence of completely reduced fractions between 0 and 1 which, when in lowest terms, have denominators less than or equal to n , arranged in ascending order. Farey sequence for different values of n are shown in the figure on the left below:

$$\begin{aligned}
 F_1 &= \left\{ \frac{0}{1}, \frac{1}{1} \right\} \\
 F_4 &= \left\{ \frac{0}{1}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{1}{1} \right\} \\
 F_7 &= \left\{ \frac{0}{1}, \frac{1}{7}, \frac{1}{6}, \frac{1}{5}, \frac{1}{4}, \frac{2}{7}, \frac{1}{3}, \frac{2}{5}, \frac{3}{7}, \frac{1}{2}, \frac{4}{7}, \frac{3}{5}, \frac{2}{3}, \frac{5}{7}, \frac{3}{4}, \frac{4}{5}, \frac{6}{7}, \frac{1}{1} \right\}
 \end{aligned}$$

Figure 1:

It is very well known that if $\frac{m_1}{n_1}$ and $\frac{m_2}{n_2}$ are two consecutive fractions of a Farey Sequence then $m_2n_1 - m_1n_2 = 1$. But many fractions which are not consecutive also show this property. For example, in F_7 , $\frac{2}{5}$ and $\frac{1}{2}$ also show this property although they are not consecutive fractions in F_7 . Given the value of n , your job is to find number of pair of non-consecutive fractions $\frac{m_i}{n_i}$ and $\frac{m_j}{n_j}$, such that $m_jn_i - m_in_j = 1$.

Input

Input file contains at most 20000 lines of input. Each line contains a positive integer which denotes the value of n ($0 < n < 1000001$). Input is terminated by a line containing a single zero. This line should not be processed.

Output

For each line of input produce one line of output. This line contains number of pair of non-consecutive fractions $\frac{m_i}{n_i}$ and $\frac{m_j}{n_j}$, ($j - i > 1$) in Farey Series F_n , such that $m_jn_i - m_in_j = 1$.

Sample Input

1
4
0

Sample Output

0
5

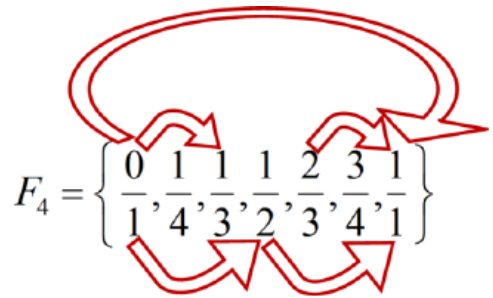


Figure 2: Five desired pairs in F_4